FRTC Modernization EIS

Supporting Study

Class I Cultural Resources Overview

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Final:
Class I Cultural Resources Overview for 680,000-Acres Associated with the Fallon Range Training Complex Modernization Environmental Impact Study

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Prepared for:

Naval Air Station Fallon
4755 Pasture Road
Fallon, Nevada 89496

Prepared by:

Mark B. Estes, M.A., RPA
Shannon S. Mahoney, Ph.D., RPA
Sarah E. Branch, M.A., RPA

ASM Affiliates, Inc.
433 West Plumb Lane
Reno, Nevada 89509

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ADMINISTRATIVE SUMMARY

This document presents the results of a Class I Cultural Resources Overview and Research Design in support of the Fallon Range Training Complex (FRTC) proposed land expansion withdrawal Environmental Impact Study (EIS). The Study Areas described in this report were identified by Navy as areas needing review to match the proposed withdrawals for the alternatives. The Study Areas described herein cover approximately 680,000 acres within Churchill, Lyon, Mineral, Nye, and Pershing counties, Nevada. This report provides a summary of the recorded cultural resources as well as cultural resource studies conducted within the Study Area. Data gaps have been identified where data management or additional cultural resource studies may be needed. Based on the review of the known resources and inventories, as well as detailed historic research into the Study Areas, historic contexts are presented for both the prehistoric and historical record. The information within each context was used to develop specific research themes and data needs useful in future cultural resource eligibility evaluations for inclusion in the National Register of Historic Places (NRHP). The goals of this project are to provide a baseline study of the cultural context for the FRTC Modernization EIS that can be used to assist management of historic properties on the proposed expansion and to facilitate continued compliance with Section 106 of the National Historic Preservation Act (NHPA) of 1966 (as amended). Research was completed under subcontract to ManTech International Corporation (ManTech) under Task Order FZ15 in support of development of the FRTC Modernization EIS through Naval Facilities Engineering Command (NAVFAC) Southwest (Contract N62742-14-D-1863) and is held to the conditions of ASM’s Nevada Bureau of Land Management Cultural Use Permit No. N77810.

1. INTRODUCTION AND PROJECT DESCRIPTION

Naval Air Station (NAS) Fallon and the Fallon Range Training Complex (FRTC) is located approximately 65 miles east of Reno, Nevada and encompasses approximately 230,000 acres of land and 14,100 square nautical miles of airspace in western Nevada. Their primary mission is to support Navy and Marine Corps tactical training through realistic strike and integrated air warfare training while providing services and equipment to various Navy and Marine operating forces across the U.S. and around the world. The FRTC lands include both closed Navy administered and lands withdrawn from, and jointly administered by, the Bureau of Land Management (BLM). Despite the addition of over 120,000 acres in 1999, the FRTC training ranges have changed little since the 1960s. Increased need for expanded bombing ranges for training and public safety, mountainous regions for surface training, and air space for aerial training exercises prompted the FRTC to propose a modernization effort that requires preparation of an Environmental Impact Study (EIS) and all supportive documentation required therein.

The proposed modernization project involves a withdrawal expansion of public lands from all forms of appropriation under public land laws, including mining laws, mineral leasing laws, and geothermal leasing laws, subject to valid existing rights. Lands proposed to be withdrawn discussed in this report include Federal (BLM, Bureau of Reclamation [BOR], and U.S. Fish and Wildlife Service [FWS]) and non-Federal lands (State and private) for use by the Department of Defense (DOD) NAS Fallon and the FRTC to expand the footprints of training ranges Bravo 16 (B-16), Bravo 17 (B-17), Bravo 20 (B-20), and the Dixie Valley Training Area (DVTA) to meet FRTC requirements for military use to support pre-deployment combat training for U.S. naval aviation and Naval Special Warfare forces.

The lands proposed for withdrawal are referred to as Study Areas in this report. Table 1 lists the total acreage of each proposed Study Area as well as the current land managers of the acres proposed to be withdrawn. The proposed Study Areas cover nearly 680,000 acres in western Nevada, spanning Churchill, Lyon, Mineral, Nye, and Pershing counties (Figure 1). Overviews of each Study Area are shown in Figures 2a through 2d.

Table 1. Proposed Study Area Acreage and Location

Land Manager	Acres	County
Bravo-16 Study Area	**32,201.17**	
BLM	32,201.17	Churchill, Lyon
Bravo-17 Study Area	**178,013.53**	
BLM	176,977.16	Churchill, Nye, Mineral
Non-Federal	1,036.37	Churchill, Nye, Mineral
Bravo-20 Study Area	**180,328.55**	
BLM	49,986.79	Churchill, Pershing
BOR	65,375.88	Churchill
FWS	3,201.00	Churchill
Non-Federal	61,764.88	Churchill, Pershing
Dixie Valley Training Area Study Area	**288,120.96**	
BLM	277,046.69	Churchill, Mineral
DOD Fee Owned	8,722.47	Churchill, Mineral
Non-Federal	2,351.80	Churchill, Mineral
TOTAL	**678,664.21**	

This document provides a summary of the information gleaned from record searches of the approximately 680,000 acres proposed for withdrawal from Federal and non-Federal management for FRTC training range expansion and tactical exercises involving Naval Special Warfare training, air-to-surface, and surface fires training operations. It is a support document for the FRTC Modernization EIS that identifies the current state of cultural resource investigations within the proposed Study Areas. It serves as a convenient summary of where cultural resource investigations have taken place, their findings, locations of historic properties, and identifies data gaps. This document should be used as a baseline of the current state of knowledge for NAS Fallon land and cultural resource managers to use when considering impacts of federal undertakings on cultural resources and historic properties.

Following this introduction and project description, Chapter 2 presents an environmental context covering much of western Nevada, including specific data concerning valleys and mountain ranges in the Study Areas. Chapter 3 details the methodology ASM used to tabulate cultural resources and cultural resource inventories within the proposed Study Area. Results of the record search and literature review are presented in Chapter 4. This includes summaries of various categories of cultural resources, including “known, but not recorded” cultural resources, architectural resources, important tribal resources, and previously recorded archaeological resources, as well as potential cultural resources that appear on historic maps. Tables of resource types and completed resource projects are presented by proposed Study Area. Following the results of this review, Chapter 5 provides a summary of the prehistoric cultural background and historic context with associated research themes. Similarly, Chapter 6 details the historic cultural background and historic context with associated research themes. The specific research themes are developed with data needs that will be useful to evaluate cultural resources for their ability to address the criteria for determining eligibility for listing in the National Register of Historic Places as outlined in 36 CFR 60.4. Finally, Chapter 7 provides a summary of the findings of this record search and review along with management recommendations for cultural resource managers.

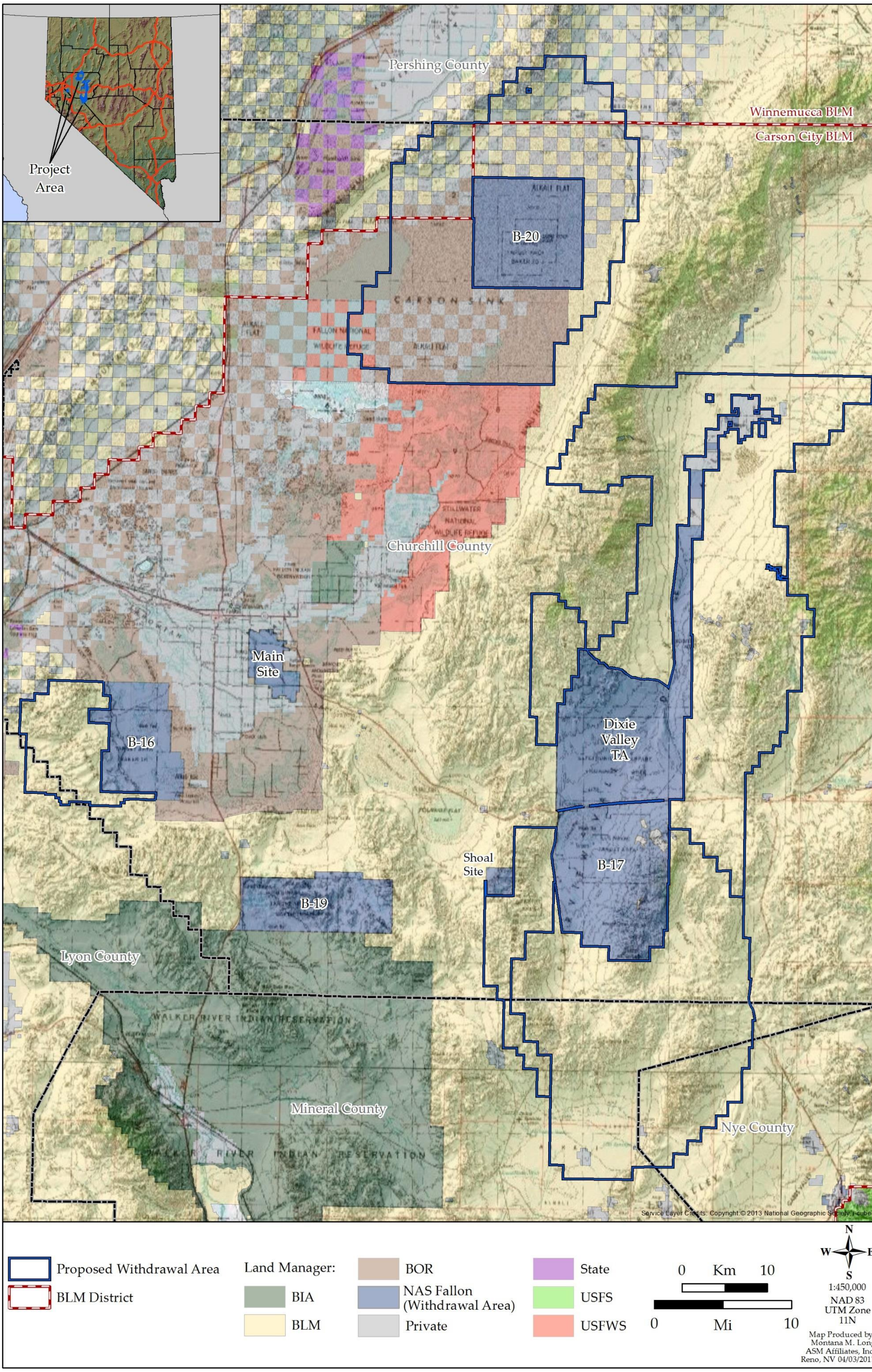

Figure 1. Project overview.

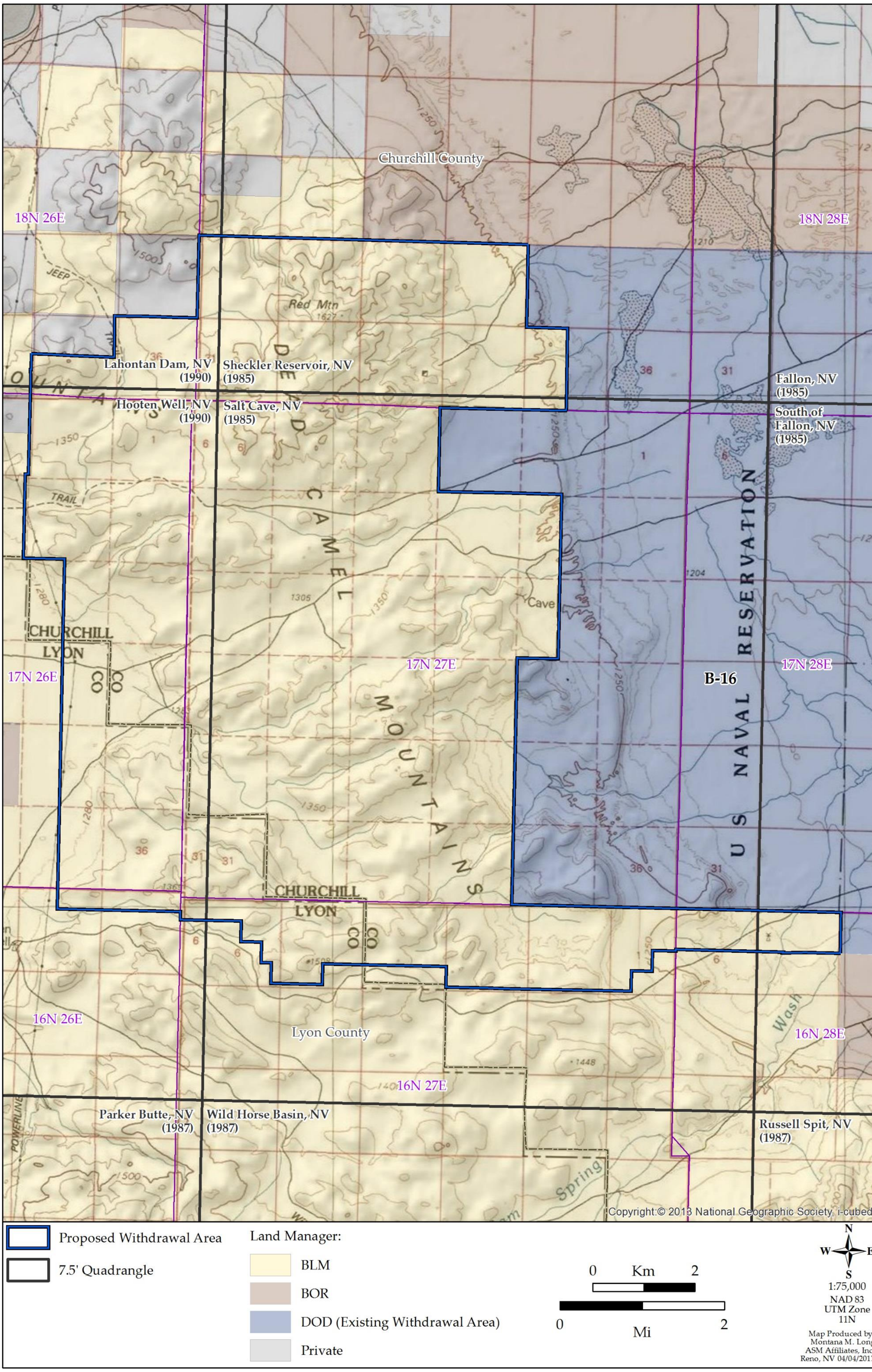

Figure 2a. Proposed B-16 Study Area overview.

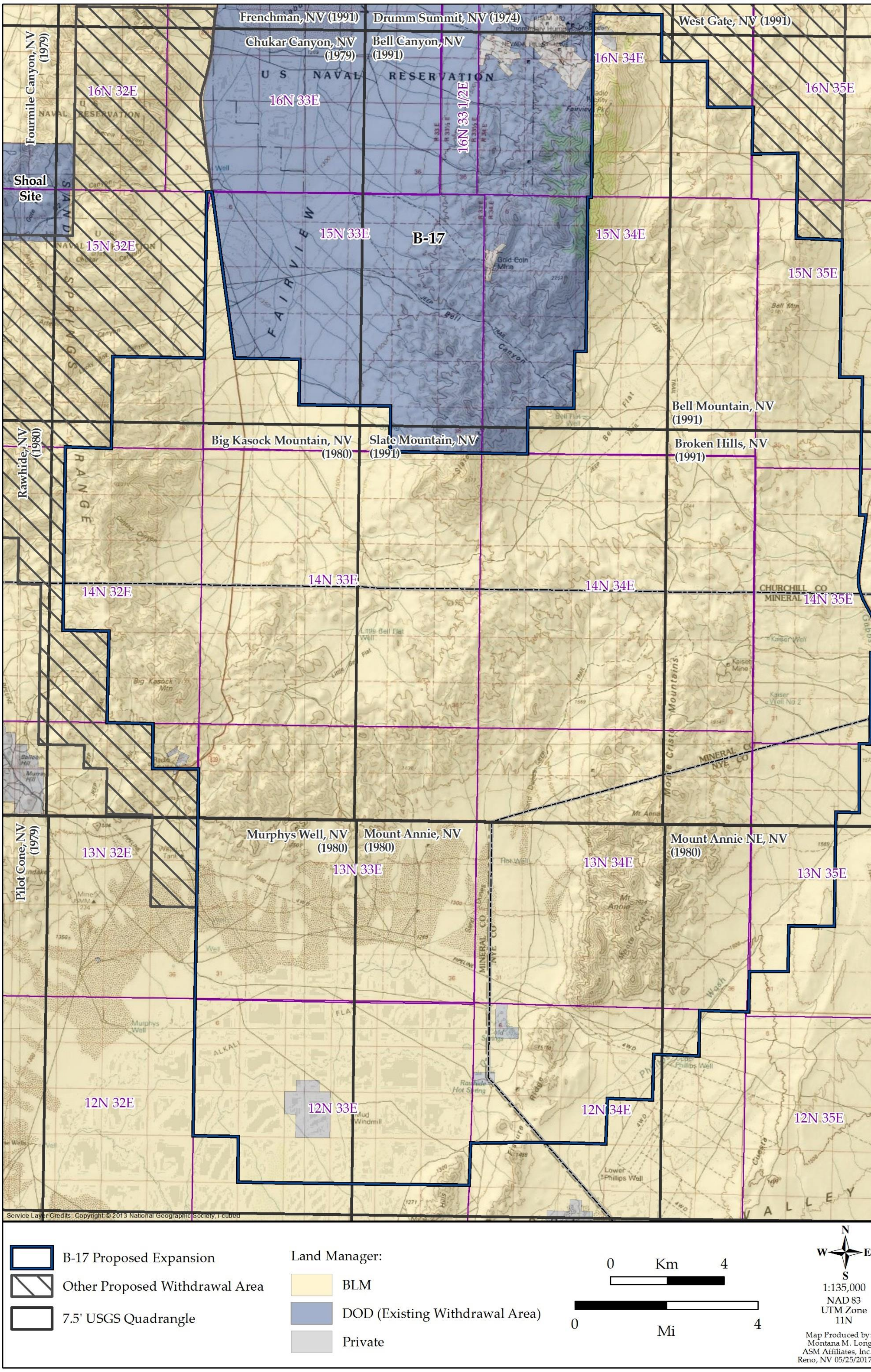

Figure 2b. Proposed B-17 Study Area overview.

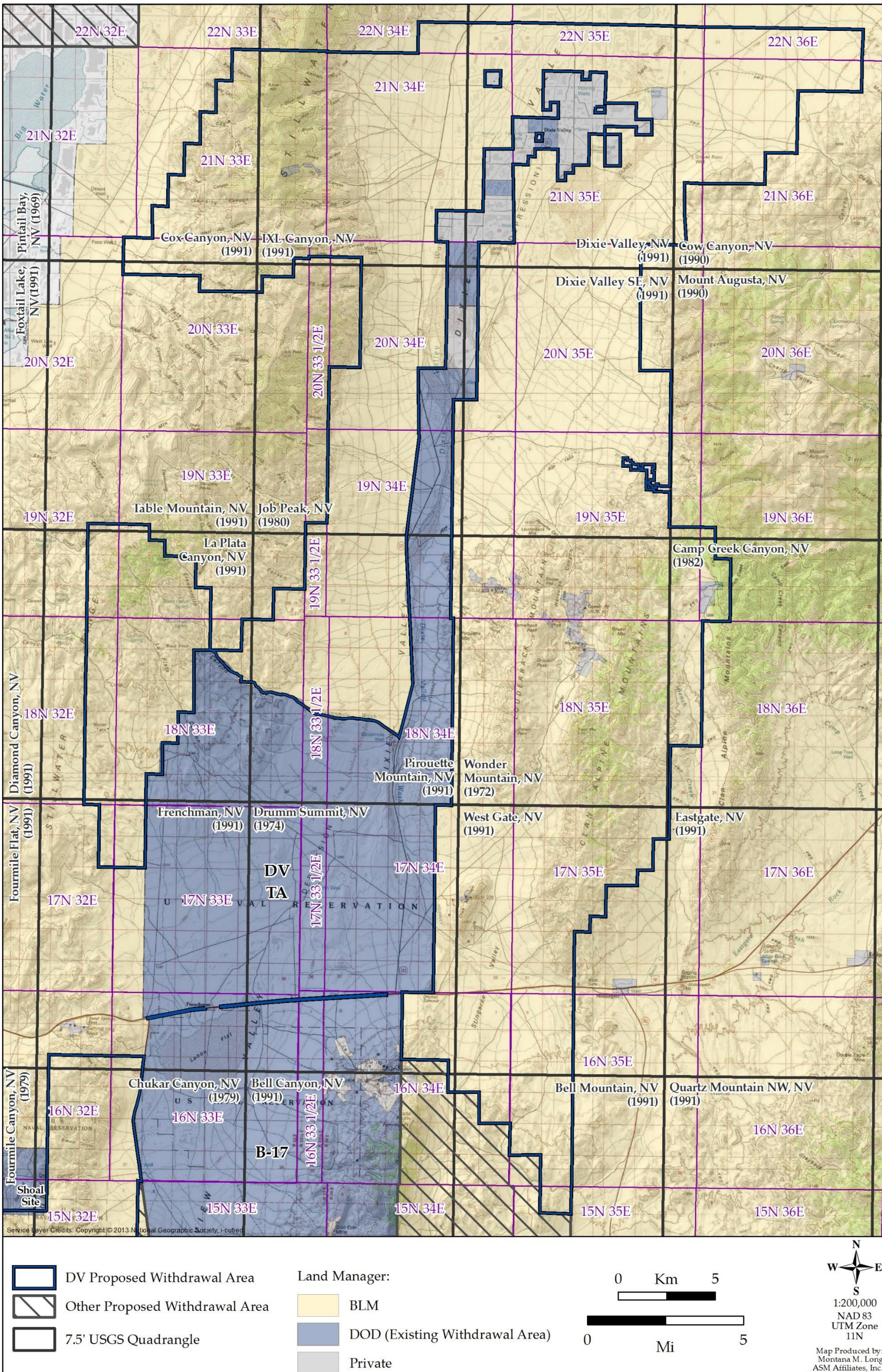

Figure 2c. Proposed DVTA Study Area overview.

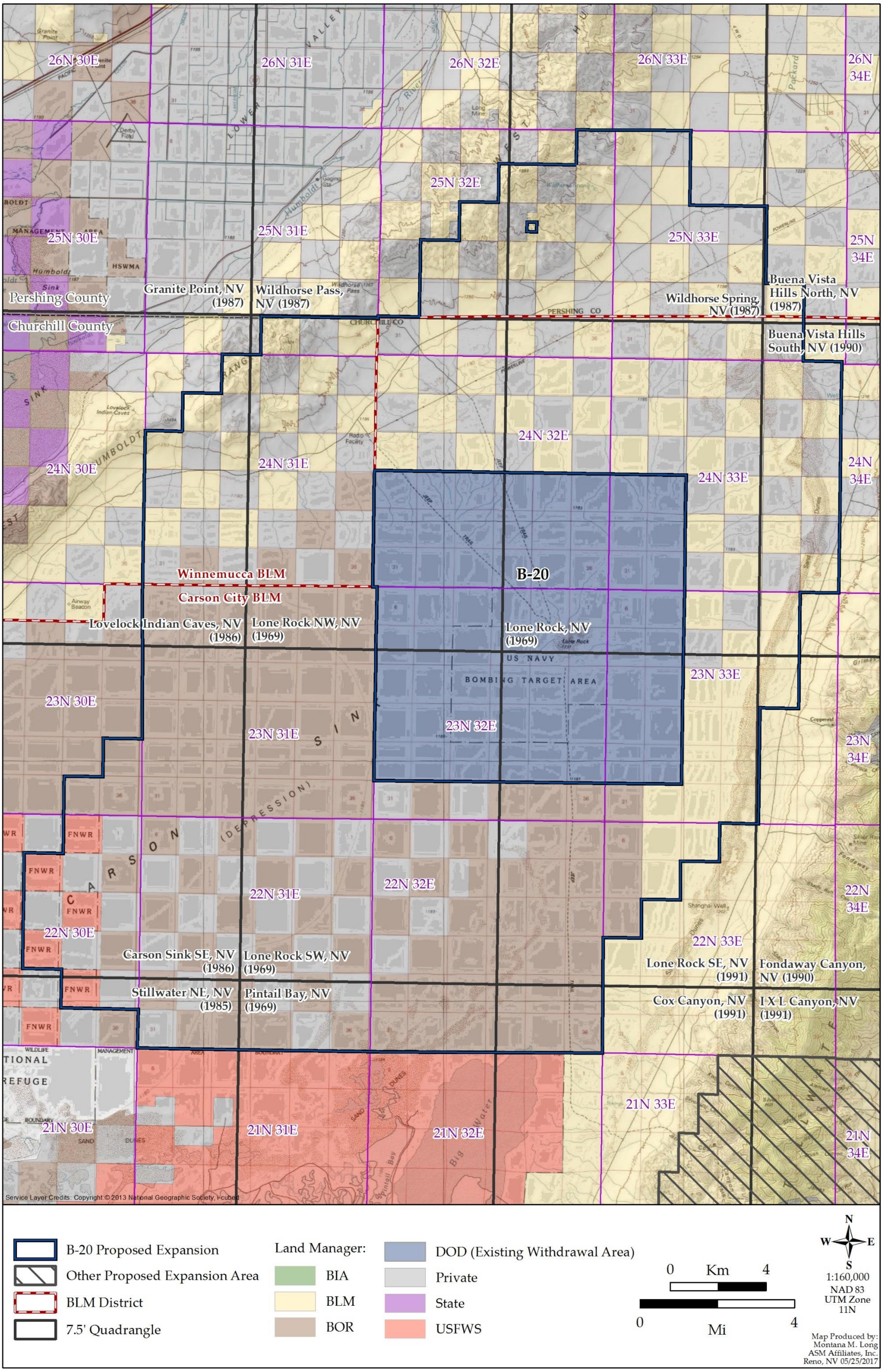

Figure 2d. Proposed B-20 Study Area overview.

2. ENVIRONMENTAL SETTING

This chapter provides an overview of the environmental settings of Lahontan, Dixie, Fairview, and Gabbs valleys and the mountainous regions separating them that are located within the proposed Study Areas. More extended treatises on the environments and culture history of the Carson Desert can be found in Zeanah et al. (1995) and Kelly (2001). A brief overview of the natural setting of the project area is necessary to help place evaluation results within a basic environmental setting. The following narrative discusses the contemporary environment, geology, contemporary climate and hydrology, modern vegetation, and modern fauna followed by an overview of the paleoenvironment of Carson Desert and Carson Lake history with a brief discussion of how that may affect prehistoric archaeological resources.

CONTEMPORARY ENVIRONMENT

Geography and Physiography

The Carson Desert (Lahontan Valley) is a formidable intermontane basin located approximately 100 kilometers (km) east of Reno that spans some 2,800 km^2 (Kelly 2001; Kelly and Hattori 1985). It is one of several adjacent basins that once contained the vast waters of pluvial Lake Lahontan. The Carson Desert is rimmed by the Dead Camel Mountains and Hot Spring Mountains to the west, the West Humboldt Range to the north, the Desert Mountains to the south, and the Cocoon Mountains, Lahontan Mountains, and Stillwater Range to the east. Kelly (2001:9) notes one or more water bodies were contained in Carson Desert in the past. From north to south these include: the Carson Sink (a.k.a. North [Lower] Cason Lake), Stillwater Marsh, and Carson Lake (a.k.a. South [Upper] Carson Lake). Two major drainages feed the basin: the Humboldt River from the north (which is active only in times of excessive flow) and the Carson River from the west. The latter is the primary water source for the Carson Desert, initiating in the Sierra Nevada and currently emptying into the Stillwater Marsh and Carson Lake (Raven and Elston 1989).

The existing Range B-16 withdrawal totals 27,523 acres and lies about 6 miles (mi.) south of U.S. Highway 50, 5.5 mi. southwest of Fallon, Nevada, and approximately 6 mi. west-southwest of NAS Fallon Main Station in the southwestern corner of the Carson Desert in Lahontan Valley. Most of the range encompasses the nearly flat terrain of the Carson River floodplain, but the western edge envelops the east edge of the Dead Camel Mountains. Elevations across Range B-16 vary from roughly 1200 m (3940 feet [ft.]) on the floodplain to about 1500 m (4920 ft.) in the western mountains. Lowlands consist primarily of sodic flats and sand dunes vegetated mainly by black greasewood, while the slopes of the Dead Camel Mountains constitute alluvial deposits supporting Bailey’s greasewood and ricegrass. The proposed expansion Study Area (over 32,000 acres) is situated almost entirely within the Dead Camel Mountains (Figure 3), but expands eastward into the low foothills and valley of Carson Desert as well as to the west into Churchill Valley, adjacent to Lahontan Reservoir. Red Mountain is the highest point in the expansion area at 1626 m (5335 ft.) and the lowest point is about 1203 m (3947 ft.). A low pass covered in wind-blown silts and sands allows easy access across the Dead Camel Mountains, following Sand Springs Road west from Fallon. The Dead Camel Mountains are covered in greasewood and cheatgrass, with little to no sagebrush. No springs are evident in the Dead Camels, but several large drainages cut through the steep and rugged terrain and some small playettes capture and pool water during wet episodes. The Dead Camel Mountains comprise the Old Gregory Formation, a Miocene-age rhyolitic tuff that is overlain by silicified Tertiary-age basalt, and andesite flows called the Chloropagus Formation (Willden and Speed 1974:40). Wonderstone, a banded silicified tuff, is common in the Dead Camel Mountains and is frequently found in debitage assemblages at local prehistoric sites.

Figure 3. Overview of proposed B-16 Study Area lands in the southern Dead Camel Mountains.

The existing Range B-17 withdrawal encompasses 52,830 acres in the southern portion of the Dixie Valley/Fairview Valley basin (south of U.S. 50) roughly 35 mi. southeast of Main Station. The playa at Labou Flat accounts for the northwest portion of the range but alluvial fans, ridges, and peaks of the Fairview Range makeup the remainder. Elevations range from about 1270 m (4165 ft.) at Labou Flat to 2250 m (7380 ft.) at an unnamed peak in the Fairview Range. Surfaces just above the elevation of the barren Labou Flat playa support Bailey's greasewood and associated shrubs, while lands above 1600 m (5250 ft.) transition to big sagebrush cover. Areas above 2000 m (6560 ft.) in the Fairview Range support pinyon-juniper woodland. The proposed expansion Study Areas (over 178,000 acres) are located primarily south and east of the existing withdrawal. To the east it includes Fairview Peak and the eastern flank of the Fairview Range (2530 m [8303 ft.]), as well as Bell Mountain (2180 m [7152 ft.]) and the intervening grassland of Bell Flat (1670 m [5480]). To the south, the proposed Study Area includes the southern flank of Slate Mountain (primarily Jurassic to Tertiary aged granitic rock and Upper Triassic to Middle Jurassic volcaniclastic rocks) with its peak at 2177 m (7144 ft.), the southern end of Fairview Valley (Figure 4), Little Bell Flat, and the Sinkavata Hills (Miocene-age rhyolite/rhyodacite), a low range that separates Fairview Valley from Gabbs Valley with numerous peaks, the highest at 1950 m (6399 ft.) (Willden and Speed 1974:Plate 1). Sandy alluvial fans spread south from the Sinkavata Hills into Gabbs Valley (lowest depth at 1250 m [4102 ft.]), of which much of the north-central portion is encompassed within the proposed B-17 Study Area. It also includes the Monte Cristo Mountains with its peak, Mount Anna, at 2105 m (6908 ft.) and a few smaller chains including the northern portion of the Black Hills, and Fissure Ridge, each rises no higher than 1520 m (4987 ft.). Just west of Fissure Ridge are the Rawhide Hot Springs and a chain of cold springs, both of which are outside the proposed Study Area.

The existing DVTA withdrawal and Navy-owned lands total 79,444 acres in Dixie Valley, north of U.S. 50. This training range is confined within the valley, bordered to the east by the Clan Alpine Mountains and the Louderback Mountains and to the west by the Stillwater Range. These mountain ranges rise to 3040 m (9966 ft.) at Mount Augusta (Clan Alpine Mountains) and 2679 m (8785 ft.) at Job Peak (Stillwater Range). The proposed Study Area (over 288,000 acres) includes lands north of U.S. 50 such as lower portions of the Clan Alpine Mountains, the entire Louderback Mountains, Chalk Mountain, and portions of the southern and central Stillwater Range. The southern Stillwater Range is composed of Pliocene-aged sedimentary and basaltic/andesitic formations, whereas the central portion is composed of Upper Triassic shales, sandstones, and siltstones, Oligocene granites, basalts, andesites, as well as limestone and felsite (Willden and Speed 1974:Plate 1). The Clan Alpine and Louderback Mountains are formed primarily of Miocene rhyodacites. The proposed DVTA Study Area also includes portions south of U.S. 50, mostly encompassing the Sand Springs Range (mostly Jurassic to Tertiary granite) on the west side of Fairview Valley and Stingaree Valley to the east. Numerous springs bubble in the Stillwater Range with canyons that drain into the Carson Sink and Dixie Valley. Pinyon-juniper woodland is common in the Stillwater Range and Clan Alpine Mountains that gives way to sagebrush steppe on the upper fans and more saline-tolerant shrubs (greasewood, shadscale, saltbush, ricegrass, etc.) lower on the fans and into the valley floor.

Figure 4. Overview of proposed B-17 Study Area lands in the southern portion of Fairview Valley.

The existing B-20 Navy-owned and withdrawn lands (approximately 41,007 acres) are situated approximately 30 mi. northeast of Fallon in the Carson Sink. The topography is almost entirely flat (1180-1187 m [3879-3895 ft.]), punctuated only by Lone Rock, a Pliocene age basaltic outcrop near the center of the training range, that rises to 1230 m (4038 ft.). It is surrounded by the Stillwater Range to the east and the West Humboldt Range to the north and west. Vegetation is absent due to the highly alkaline sediments on the playa surface. Water drains into the sink from the mountain ranges and pools during heavy winters or intense precipitation events, occasionally forming shallow standing water before it evaporates. Prior to the dramatic alteration of the landscape of the Carson River irrigation projects (Newlands), the Carson River once fed directly into the sink, or by way of Carson Lake to the south with a slough channeling water north to the Stillwater Marsh which would overflow and drain north into the sink. The proposed Study Area (more than 180,000 acres) encircles the existing training range area within the Carson Sink (primarily to the southwest and northeast) (Figure 5) and includes small portions of the West Humboldt Range, and shorelines along the West Humboldt and Stillwater ranges, extending south towards the Stillwater Marsh.

Climate and Hydrology

The climate in the central Great Basin and Carson Desert is relatively arid. It is characterized as having "wide diurnal temperature swings, low humidity, and sunshine prevail(s) throughout the year" (Far Western and JRP 2007:18). Precipitation varies between the valley floor and mountains and occurs more frequently in the winter. Data from the Western Regional Climate Center (WRCC 2014) indicate temperatures in Fallon, Nevada, over the past century averaged 51.3 degrees Fahrenheit (F). The average high temperature in July is 92.2° F and average low temperature in January is 18.1° F. Rainfall averages 5 inches (in.) yearly and snowfall averages 5.7 in. Permanent water is available primarily from the Carson River, as well as various springs scattered throughout mountainous areas.

Figure 5. Overview of proposed B-20 Study Area lands in the Carson Sink.

Flora

Contemporary drylands and marshes in the project area support a wide variety of plant and animal life. The arid desert basin is mostly dominated by little greasewood (*Sarcobatus baileyi*), shadscale (*Atriplex confertifolia*) and four-wing sagebrush (*A. canescens*). Pickleweed (*Salicornia* spp.), quail brush (*Atriplex lentiformis*), samphire (*Salicornia europaea*), budsage (*Artemisia spinecens*), winterfat (*Ceratoides lanata*), and wolfberry (*Lycium cooperi*) also occur in lesser frequencies but are also adapted to alkaline playa soils. Rabbitbrush (*Chrysothamnus nauseosus*), horsebrush (*Tetradymia canescens*, *T. spinosa*), dalea (*Dalea polydenia*), and Indian ricegrass (*Oryzopsis hymenoides*) grow in more sandy areas where dunes have formed and stabilized. In the wetlands, vegetation favoring freshwater and alkaline conditions are present. Tall and hardy plants such as American bulrush (*Scirpus americanus*), hardstem bulrush (*S. acutus*), alkali bulrush (*S. maritimus*), cattails (*Typha domingensis*, *T. latifolia*, *T. angustifolia*), and an assortment of rushes (*Eleocharsis* spp., *Juncus* spp.) can be found in local freshwater marshes (Far Western and JRP 2007; Fowler 2002). Alkaline wetlands host desert saltgrass (*Distichlis stricta*, *D. spicata*), pickleweed, and iodinebush (*Allenrolfea occidentalis*). Grasses, such as Great Basin wildrye (*Elymus cinereus*), wheatgrass (*Agropyron* spp.), lovegrass (*Eragrostis* spp.), and Indian ricegrass (*Oryzopsis hymenoides*) also are common in areas where groundwater levels are high or standing water is present (Fowler 2002). Fewer plants grow on playa surfaces, mostly pickleweed and greasewood (*Sarcobatus baileyi*); tamarisk (*Tamarix* spp.) and western samphire (*Salicornia rubra*) are also present (Kelly 2001; Grayson 1993). Higher on the fans and foothills (above 1500 m [5000 ft.]) moisture increases and salinity decreases, allowing big sagebrush (*Artemisia tridentate*) to dominate landscapes, mixed with small sagebrush (*A. arbuscular*) and needlegrass (*Stipa* spp.) (NAS ICRMP 2007). Higher mountain ranges (typically above 1830 m [6000 ft.]), such as in the Stillwater, Clan Alpine, and Fairview ranges, pinyon-juniper woodland is present, consisting of single-leaf pinyon (*Pinus monophylla*) and Utah juniper (*Juniperus occidentalis* var. *utahensis*).

Fauna

Many fauna occupy habitats across the project area. Large mammals native to the area are bighorn sheep (*Ovis canadensis*), mule deer (*Odocoileus hemionus*), coyote (*Canis latrans*), and the desert kit fox (*Vulpes macrotis*). Horses (*Equus caballus*) and burros (*E. asinus*) were introduced during historic times and now roam in feral herds. Small mammals include the badger (*Taxidea taxus*), striped skunk (*Mephitis mephitis*), porcupine (*Erethizon dorsatum*), black-tail jackrabbit (*Lepus californicus*), yellow-bellied marmot (*Marmoto flaviventris*), white-tailed antelope squirrel (*Ammospermophilus leucurus*), pocket gopher (*Thomomys* spp.), meadow vole (*Microtus* spp.), grasshopper mouse (*Onychomys* spp.), kangaroo rat (*Dipodomys* spp.), and desert woodrat (*Neotoma lepidia*), among others (Fowler 2002). Common reptiles include the western fence lizard (*Sceloporus occidentalis*), sagebrush lizard (*S. graciosus*), side-blotched lizard (*Uta stansburiana*), and Great Basin whiptail (*Cnemidophorus tigris*), and many snakes such as the striped whipsnake (*Masticophis taeniatus*), Great Basin gopher snake (*Pituophis melanoleucus*), kingsnake (*Lampropeltis getulus*), western garter (*Thamnophis elegans*), and Great Basin rattlesnake (*Crotalus viridis*).

In addition to many of the taxa already listed, marsh habitats support a wide range of waterfowl and fish. Over 160 species of water birds migrate to the shallow lakes and wetlands in the region. The most common are mallards (*Anas platyrhycos*), pintails (*A. acuta*), cinnamon teal (*A. cyanoptera*), redhead (*Aythya americana*), canvasback (*Aythya valisineria*), and coots (*Fulica americana*) (Kelly 2001). Other birds that inhabit the area include the mourning dove (*Zenaida macroura*), robin (*Turdus migratorius*), western meadowlark (*Sturnella neglecta*), northern flicker (*Colaptes auratus*), horned lark (*Eremophila alpestris*), northern oriole (*Icterus galbula*), great horned owl (*Bubo virginianus*), and short-eared owl (*Asio flammeus*). Fish, such as the Tahoe sucker (*Catostomus tahoensis*), Lahontan redside shiner (*Richardsomius* *egregius*), speckled dace (*Rhinichthys osculus robustus*), and tui chub (*Gila bicolor*) are also abundant. Freshwater mussels (*Anodonta* spp.) occupy slough habitats where muddy bottoms are present.

PALEOENVIRONMENT

During the terminal Pleistocene, around 16,000 years before present (B.P.), the Carson Desert was submerged under pluvial Lake Lahontan following a climatic shift that caused northern glaciers to melt. The water level of Lake Lahontan rose to an elevation of ca. 1330-1335 m (4364-4380 ft.) by about 13,500-13,000 B.P. (Kelly 2001; Nials 1999), and lake margins spread as far north as the Nevada/Idaho border and south to Walker Lake (Far Western and JRP 2007). Shortly thereafter, during the warm Bølling-Allerød interstadial (12,100-11,000 B.P.), Lake Lahontan began to desiccate. Sometime between 12,500 and 12,000 B.P. the lake level dropped more than 100 m, temporarily stabilizing as a single lake around 11,300-11,200 B.P. (Kelly 2001) or possibly as three or four smaller lakes (Davis 1985) with the Carson Sink at about 1190 m (3904 ft.) (Goebel et al. 2011). Immediately following this warm period, a dramatic return to cold temperature event (Younger Dryas, roughly 11,000-10,000 B.P.) resulted in a lake rebound forming a shoreline at about 1203 m (3947 ft.) and perhaps rising higher to 1230 m (4035 ft.) by the end of the Younger Dryas (Adams et al. 2008; Goebel et al. 2011). Beginning in the Holocene, Lake Lahontan began declining again in stages from about 11,000 B.P. to 6900 B.P. (Benson et al. 1992; Fiero 1986; Kelly 2001). By 9500 B.P., Carson Lake may have been reduced to a series of low lakes and marshlands (Davis 1985; Far Western and JRP 2007), but Kelly (2001:33) claims that by 6900 B.P. the Carson Desert was still covered by water to some unknown extent and depth based on the presence of Mazama tephra found within lacustrine deposits. Adams and colleagues (2008) suggest Lake Lahontan was around 1193-1200 m (3914-3937 ft.) during this time.

In contrast, Wigand and Mehringer (1985) have argued that the period between 8300 and 7200 B.P. exhibited relative environmental stability in which soils developed from aeolian sediments that had been accumulating since the initial, terminal Pleistocene recession of Lake Lahontan (Far Western and JRP 2007); this is unlikely to have occurred during major shifts in lake levels. Sometime during this series of recessive and infilling events, caves and overhangs developed at Grimes Point due to repeated wave action that eventually cut into the jutting landform at the west end of the Stillwater Range (Kelly 2001). Whatever the actual sequence and timing of post-Pleistocene lake fluctuations, there is little doubt that the environment of the Carson Desert during the early Holocene was quite different than it is today. Though warmer and drier than preceding times, conditions were on average cooler and wetter than at present. Artemisia steppe vegetation remained dominant in the area until at least 6900 B.P., implying the persistence of a relatively moist climate (Zeanah et al. 1995).

The gradual warming trend continued into the middle Holocene, and from about 7,000 to 4,500 or 4,000 years ago, the Great Basin grew increasingly arid. The severity of aridity during this interval is the subject of ongoing debate, but it now seems to find support in a variety of evidence, from the presence of higher bristlecone tree lines in the White Mountains (LaMarche 1973), lake stands below modern levels in Pyramid Lake, Walker Lake, and Lake Tahoe (Lindstrom 1990), and the arrival of pinyon in the central Great Basin near Gatecliff Shelter (Thompson and Hattori 1983). Precipitation was highest during summer and lowest in winter, perhaps creating seasonal plant and animal abundances that were considerably different than those of modern times. While the Walker River may have been rerouted north into the Carson River drainage during this time, potentially increasing the inflow into the Carson Desert, Morrison and Davis (1984) indicate the lake level was at least as low as it is today from 6500-3500 B.P.

Between 4000 and 2000 B.P, mesic conditions returned and a winter-based precipitation pattern emerged; snowpack from the Sierra Nevada Mountains provided water to the wetlands and lakes in the Carson Desert and increased runoff from a re-routed Walker River might have sent additional water into the area from 2800 B.P. to 2000 B.P. (Benson and Thompson 1987). This may have helped wetland habitats to stabilize, mature, and generate a greater abundance of plant and animal life. Warmer, drier conditions followed from 2000 to 1000 B.P. as a spring/summer precipitation mode returned to support a habitat of grasses and desert scrub. Archaeological sites dating to this period in the Stillwater Marsh imply that a wetland environment dominated the Carson Sink area (Zeanah et al. 1995) and that clay dunes ceased forming as a result of increased aridity and stabilized lake levels (Kelly 2001). At this time, pinyon may have finally arrived in the Stillwater Range east of the Carson Desert, perhaps around 1500 to 1200 B.P.

Morrison (1964, 1991) and others (Adams 2003; Currey 1988; Raven and Elston 1989; Rhode et al. 2000; Zeanah et al. 1995) have identified and discussed a series of Holocene-age recessions and lake cycles in the Carson Desert. Lacustrine changes in the Carson Desert involved fluctuations of South (Upper) and North (Lower) Carson Lake. Morrison (1964) identified five distinct but shallow Holocene highstands in South Carson Lake, referred to as the “Fallon Lakes.” From oldest to youngest, these highstands (Fallon Lakes 1-5) varied in elevation from highest to lowest and, according to Adams (2003:296), are currently “expressed as a series of roughly concentric shore features and deposits that rim the Carson Desert between about 1204 m and 1186 m.” Adams (2003) suggests that below about 1195 m, lakes in the Carson Desert were divided into two separate bodies, one in the broad Carson Sink to the north and one in Carson Lake to the south. Any Holocene highstands at elevations between 1195 and 1204 m would have joined the two lakes into one large body that would have covered much of the proposed B-20 Study Area. Research by Adams (2003) implies that at least two Holocene highstands reached elevations of 1198 m and 1204 m, the former perhaps ca. 1500-1300 B.P., and the latter about 900-650 B.P.

Conditions dried out again during an event called the “Medieval Climatic Anomaly” (MCA), which occurred between 1150 and 600 B.P.; winter precipitation was more common, and lake levels increased after having dropped for at least 1,400 years. This may have been a result of increased stream flow from the Carson River. However, there is evidence of several fluctuations between severe but brief droughts and short mesic intervals between ca. 1000 B.P. and 600 B.P. (Adam 1967; Lindstrom 1990; Stine 1990, 1994). Periods of extreme aridity would have likely transformed wetland habitats in the Carson Desert into pockets of arid zones with even greater sodicity in the soil. After 300 B.P., the climate in the Carson Desert again became wetter, with essentially modern conditions prevailing over the last 50 to 100 years.

Discussion

From the above paleoenvironmental overview we identify several main points that could affect the distribution and timing of archaeological resources within the Study Areas. First, if the Carson Desert was indeed still under water by 6900 B.P. (perhaps up to 1193-1200 m above sea level [masl]), we should not expect to find intact and unaltered sites of that age or older lower than that elevation; rather, they should be located along shoreline features. Second, due to the increased aridity of the middle Holocene and reduced lake levels, as indicated by Morrison and Davis (1984), Early Archaic archaeological signatures (post-6900 B.P.) are expected to be rare, and when present should be lower in elevation, closer to the lake margin or situated nearer to reliable water sources. Third, if pinyon really was a late arrival in the area, it seems that the full ethnohistoric Toedökadö (Toidɨkadɨ, or “cattail eaters”) subsistence pattern, which involved the procurement of pinyon in the Stillwater Range, could not have emerged prior to about 1500 B.P. This may have implications for the kinds of archaeological sites and constituents that occur in the Carson Desert, if residential base camps on the valley floor were not necessarily situated in proximity to pinyon groves prior to that time. Fourth, the general lack of permanent water in the Dead Camel Mountains, Fairview Range, Dixie Valley, and Fairview Valley will affect the type of archaeological resources located in these settings. As opposed to the residential pattern present within the Carson Desert, these areas are likely to contain more task-specific site types with a more narrow focus on the extraction of a particular resource.

3. METHODOLOGY

ASM received final shapefile boundaries for the FRTC Modernization EIS Study Area from ManTech on July 27, 2016. Because the Nevada BLM cultural resource reporting standard mandates use of the Universal Transverse Mercator (UTM) North American Datum 83 (NAD83) projection (BLM Nevada 2012: Appendix C), client-provided data in other projections was reprojected to UTM NAD83 for this report. Any discrepancies in acreage reported here compared to the EIS are likely due to subtle differences between the projections carried out over the Study Areas; large distances. These shapefiles were used as a reference to conduct the record search at various cultural resource repositories. Per the Naval Facilities Engineering Command (NAVFAC) Task Order FZ15 Scope of Work, this record search encompassed the lands exclusively within the Study Area and did not include a 1-mi. buffer around the project area. After receiving and reprojecting the Study Area boundaries, a Nevada Cultural Resources Information System (NVCRIS) data cut was submitted to the Nevada State Historic Preservation Officer (SHPO). The returned data provided a baseline for the number and types of cultural resources and cultural resource inventories previously conducted within the Study Area. However, NVCRIS results rarely contain complete information in a given area and are most useful as a “first pass” to get a very general sense of findings in the area. To complement this dataset, ASM accessed cultural resource data files at the BLM Carson City District Office (CCDO) and BLM Winnemucca District Office (WDO). The CCDO manages the large majority of public lands within this Study Area and was visited from August 22-25, 2016 and again February 9-15, 2017 to obtain all pertinent and available resource and project report documents. The WDO manages a much smaller proportion of public lands in the Study Area and was visited on September 7, 2016. At both locations, ASM was provided a list of resources and inventories present within their respective GIS database. In addition to the digital lists, ASM reviewed the hard copies of United States Geological Survey (USGS) Quadrangle maps on which early cultural resource managers at each office depicted known cultural resources and completed inventory projects. This method helped verify the results of the digital database lists. By reviewing both datasets, ASM compiled a more complete listing of known cultural resources and inventories within the proposed Study Areas.

In addition, the BOR Mid-Pacific Region office was contacted on September 20, 2016 regarding any records at their office for public lands that they manage within the Study Area. They informed ASM that all BOR records are on file at Nevada SHPO. The U.S. Fish and Wildlife Service (FWS) was contacted on January 11, 2017 for any additional records on their managed lands (~3,200 acres). Similarly, they noted all records were on file with NVCRIS. Nevada State Museum (NSM) was also contacted for resources not available at other federal agency repositories. Finally, NAS Fallon provided GIS shapefiles of their current Study Area to use as a reference for any additional site records and known cultural resource reports.

The Nevada State Register and the NRHP were also reviewed for listed historic properties. Library and online resources were consulted to check historic land survey maps and patent data, mining data, national Historic American Engineering Records, Historic American Buildings Survey Records, topographic maps, photographs, and other pertinent historical documents.

The combined data on cultural resource inventories, archaeological sites, historic sites, buildings, structures, historic transportation routes, rock art, and the like are provided and described in Chapter 4.

4. RECORD SEARCH RESULTS

CULTURAL RESOURCE REPORTS/STUDIES

As a result of the record searches at the various institutions and agencies listed above, ASM identified 200 cultural resource reports within or adjacent to the Study Areas, including Class III inventories, NRHP testing and evaluation reports, data recovery reports, architectural history reports, ethnographic overviews, and mine closure reports (Table 2). The bulk of these reports (n = 142) are older than 20 years, indicating that their findings are in need of review for adequacy with contemporary identification purposes in locating and evaluating historic properties.

Bravo-16 Study Area

Cultural resource reports conducted within or immediately adjacent to the proposed B-16 Study Area are few (n = 19, of which one is a large ethnographic overview that covers multiple Study Areas), and primarily consist of linear surveys that cross the Dead Camel Mountains. Included in these are the Pacific Northwest-Pacific Southwest Intertie KVE transmission line project (Weber et al. 1977— CR5-366[P]), a perimeter fenceline (Stornetta 1992—CR3-1453[P]), several motorcycle race routes (Hatoff 1977—CR3-143[P]; Hull 1999—CR3-1950[N]—not a Class III report; Mecham 1995—CR3-1705[N]), a power line burial project (Creger 2002—CR3-2127[N]), a common-use area (Buder and Bennett 1976—CR3-107[N]), water haul locations (Bowen 2014—CR3-2696[N]), a mining claim plan of operations (Hatoff 1981—CR3-696[P]), exploration (Buder 1978—CR3-264[N]), and a historic resources inventory and evaluation of buildings and structures (JRP 2012—NASF TR-112). Report CR3-27 includes short reconnaissance trips during the 1970s. One such reconnaissance trip conducted by a small field party associated with the University of California, Berkeley relocated the Salt Caves and noted disturbance by looters, then collected coprolites from Salt Cave #1 , and representative cores and flakes from Salt Cave #2, but further work at the sites was not advised (Napton 1971:30-31). Several large block surveys are located immediately adjacent to the east of the proposed Study Area, all completed by Far Western Anthropological Group (CR3-2590[P], CR3-2616[P], CR3-2617[P], and CR3-2668[P]) on existing B-16 withdrawn lands. In addition, Far Western tested a number of archaeological sites as part of an NRHP evaluation project (CR3-2662 Vol. IIA) on B-16 including one site that extends into the proposed B-16 Study Area.

While a few projects were positive for cultural resources overall, only two of them identified cultural resources within the proposed B-16 Study Area. Both resources from are isolates, while one tested site extends from the current B-16 area into the proposed Study Area. In general, very few sites were identified in the areas adjacent to the proposed Study Area, but notable sites include a Pre-Archaic camp and three Pre-Archaic quarry sites. Most other sites are small flaked stone scatters with occasional ground stone implements or quarry sites. Finally, a Class III inventory for a perimeter fence around the southeastern portion of Lahontan State Recreation Area (also beyond the proposed B-16 Study Area) identified 30 sites (mostly prehistoric) some of which that contained obsidian, fire-cracked rock, and late Holocene projectile points, and several large chert cobble quarries.

Bravo-17/Dixie Valley Training Area Study Areas

These two Study Areas are combined in this section as they span both sides of U.S. 50 and are adjacent to each other, sharing boundaries. Many more cultural resource reports have been prepared within the proposed B-17/DVTA Study Areas (n = 156). These areas are much more varied, including numerous ranges and valleys and are closer to state and federal roads. As such, a larger range of projects have been conducted within them. Linear projects include county road reroutes, state and federal road betterments, fiber optic corridors, gas pipelines, power/transmission lines, right-of-way routes, and haul roads. Numerous geothermal projects have been conducted in Gabbs Valley, NAS Fallon projects related to electronic warfare, runways, targets, fencelines, etc., are present in Fairview and Dixie valleys, and in the mountain ranges are dozens of inventories related to projects for water tanks, haul sites, pipelines, wells, stockponds, and guzzlers. Additionally, materials pits, seismic surveys, and mineral exploration projects, as well as fuels reduction, Section 110 inventories, ethnographic overviews, site density predictive models, and independent research projects have been completed in these Study Areas. Many other large block surveys have occurred within the existing NAS Fallon withdrawal lands, several of which have recently been completed as part of Section 110 projects.

About one-third of these projects contained cultural resources and the rest were negative. Many of the negative projects were for small-acre projects completed in the 1970s and 1980s. The more recent block or linear surveys typically identified far more sites. Several projects on the western and eastern flank of Fairview Mountains also yielded Pre-Archaic through Late Prehistoric diagnostics, but this area tended to have a higher proportion of Pre-Archaic, Middle Archaic, and Late Archaic points and very few Late Prehistoric points. Recent projects in this area identified the entire spectrum of prehistoric chronology, but the Late Archaic and Late Prehistoric periods yielded the largest number of points, suggesting an increase in occupation intensity late in time. Also common in Gabbs Valley are large, dense concentrations of flaked and ground stone tools with fire-cracked rock and occasional rock alignments. These sites suggest a longer term occupation or settlement pattern than in Fairview Valley, which makes sense, given the general lack of water.

Bravo-20 Study Area

The proposed B-20 Study Area in Carson Sink also contains relatively few cultural resource reports (n = 25, two of which also expand into the DVTA) considering it is more than five times larger than the proposed B-16 Study Area. Cultural resource reports in this area include those completed for various infrastructure projects (waterlines, fiber optic routes, gravel quarries), geoseismic gradient test holes and lines, geothermal leasing, access roads, irrigation projects, UNR seismometers, corrals, as well as NAS Fallon related projects including storage space, property disposal office, access, gravel pits, and water wells. Robert Kelly completed his Ph.D. dissertation study in the Carson Desert and Stillwater Mountains, spanning portions of the B-20 and DVTA Study Areas. General overviews of prehistoric adaptations in the wetland environments and cultural resource summaries for grazing permits have also been conducted in the area. The inventories near the center of the valley were largely negative of cultural resources. Exceptions occur primarily along the edges of the sink, along shorelines, within dunes, and further south near the Stillwater Marsh wetlands. Additionally, at least seven sites in the Stillwater Marsh area have been subject to some amount of excavation or testing. Results of these studies indicate an initial occupation of the area by Early Archaic times and continued through the Late Prehistoric, though the Late Archaic period seems to represent the highest occupation intensity, based on projectile point density values and radiocarbon dates. Additional radiocarbon dates have been obtained from samples of human bones recovered from five sites impacted by flood damage during the mid-1980s.

Table 2. Cultural Resource Reports in the Study Areas

BLM Report No.[1]	NSM Report No.	Other Report No.	Year	Title	Author(s)
Bravo-16 Study Area					
3-0027(P)[2]	-	-	1971	UCB Archaeological Research in Western Nevada During the Field Season of 1971	Napton, Lewis K.
3-0107(N)	-	-	1976	Red Mountain Common-Use Area (Establishment of)	Buder, R. K., and R. E. Bennett
3-0143(P)	18-60	-	1977	Desert Bums Motorcycle Race	Hatoff, Brian W.
3-0264(N)	-	-	1978	Proposed W. Petrik Building Stone Sale (& Exploration Program)	Buder, Ronald K.
3-0696(P)	10-42	-	1981	Mining Poo, Korc Claims	Hatoff, Brian W.
3-1453(P)	1-400	-	1992	The Archaeological Reconnaissance of Proposed Fencelines at Bravo 16 and Bravo 19 Naval Air Station Fallon, Churchill County, Nevada for Woodward-Clyde Consultants	Stornetta, Susan
3-1705(N)	-	-	1995	Dead Camel Motorcycle Race - Western States Racing Association	Mecham, P.
3-1950(N)**	-	-	1999	Dead Camel Motorcycle Race	Hull, Fran
3-2127(N)	-	-	2002	A Class III Cultural Resource Survey for the B-16 West Tower Power Line Burial Project	Creger, C. Cliff
3-2590(P)	-	-	2011	Class III Inventory of 3,000 Acres on Range B-16, Naval Air Station (NAS) Fallon, Churchill County, Nevada	Clay, Vickie, A. McCabe, and D. C. Young
3-2616(P)	-	TR-113	2013	A Class III Inventory of 6,171 Acres on Ranges B-16 and B-19, Naval Air Station (NAS) Fallon, Churchill County, Nevada. Volume I: Report and Appendix A	Clay, Vickie, and Steven Neidig
3-2617(P)	-	TR-112	2012	A Class III Inventory and Evaluation of 1,800 Acres on Range B-16 in Support of a Ground Training EA, Naval Air Station (NAS) Fallon, Churchill County, Nevada	Clay, Vickie, and Allen McCabe
3-2617(P) Vol. II[2]	-	TR-112	2012	Historical Resources Inventory and Evaluation Report of Buildings and Structures on Range B-16, Naval Air Station Fallon	JRP Historical Consulting, LLC
3-2653[2,3]	-	-	2013	Ethnographic Synthesis and Context for the Carson City District Office, Bureau of Land Management, Nevada	Tiley, Shelly, and Terri McBride
3-2662(P) Vol. IIA[2]	-	TR-124 (Vol. II)	2014	National Register Evaluation of 29 Cultural Resources on Ranges B-16 and B-19, Naval Air Station (NAS) Fallon, Churchill County, Nevada: Volume IIA: Report	Clay, Vickie, Mike Lenzi, and Steven Neidig
3-2668(P)	-	TR-126	2014	Inventory and Evaluation of 500 Acres, Damage Assessment of the SEAL's ORV Training Area, Range B-16, NAS Fallon, Churchill County, Nevada	Neidig, Steven, and Vickie Clay
3-2680(P)	-	TR-127	2014	A Class III Inventory of 1,285 Acres on Range B-16 Naval Air Station (NAS) Fallon, Churchill County, Nevada	Clay, Vickie, A. Garner, and M. Lenzi
3-2696(N)	-	-	2014	Lahontan Allotment Temporary Water-Hauls	Bowen, Kristin
5-0366(P)	18-14	-	1976	Preliminary Report: Cultural Resource Assessment of the Pacific Northwest/Pacific Southwest Intertie, Western Nevada, from Arizona Border to Oregon Border	Peak, Ann S., and Tony F. Weber

BLM Report No.[1]	NSM Report No.	Other Report No.	Year	Title	Author(s)
Bravo-17/DVTA Study Areas					
3-0031(P)	1-6	-	1975	Al Aquitaine Geothermal Lease and Prospects	Dansie, Amy, and D. R. Tuohy
3-0035(P)	18-8	-	1975	Al Aquitaine Co.; Geothermal Lease and Prospects	Dansie, Amy
3-0072(P)	1-17	-	1976	Bench Creek Fence Enclosure	Dunbar, Helene R.
3-0083(N)	1-24	-	1976	Temperature Gradient Holes D-19 and D-20; Amendment to Plan of Operation on Federal Lease N-12865; AL-Aquitaine Exploration, Ltd	Bennett, Reb
3-0091(N)	-	-	1976	Archaeological Examinations of Certain Geothermal Test Sites in Gabbs Valley, Nevada	Von Werlhoff, Jay, and Sherilee Von Werlhof
3-0112(N)	1-40	-	1976	Geothermal Resource Exploration Operations, No. NV-030-31	Hatoff, Brian W., and Reb Bennett
3-0145(N)	1-55	-	1977	Geothermal Resource Exploration Operation NOI NV-030-31	Bennett, Reb
3-0179(N)	1-61	-	1977	Phillips Petroleum Temp. Gradient Holes, Dixie Valley	Hatoff, Brian W.
3-0181(N)	1-62	-	1977	11-Mile - La Platta Fence (Jdr 5124)	Abbett, Thomas
3-0189(N)	1-46	-	1977	Haul Road for Material Site Located in Dixie Valley (60' x 1298') S-615(3); EA 70523	Cunningham, Arnie L.
3-0205(N)	1-67	-	1978	Phillips Petroleum Notice of Intent NV-030-54	Bennett, Reb
3-0237(P)	1-233	-	1978	H&H Motorcycle Race 030-196	Hatoff, Brian W., and Tom Abbett
3-0241(P)	1-234	-	1978	Lizard Study Plot Fence - Dixie Valley	Hatoff, Brian W.
3-0278(N)	1-183	-	1979	Amax Geothermal Test Holes N3-03-79	Hatoff, Brian W.
3-0288(N)	1-196	-	1979	Hunt Energy, N.O.I.: N3-07-79, Dixie Valley	Hatoff, Brian W.
3-0310(P)	1-236	-	1979	Bench Creek Commercial Woodcutting Area	Hatoff, Brian W.
3-0321(N)	18-84	-	1979	Archeological Reconnaissance of Five Proposed Seismograph Lines in Dixie Valley, Nevada	Elston, Robert
3-0328(P)	18-65	-	1979	Archaeological Reconnaissance for Republic Geothermal, Inc. in Gabbs Valley	Brown, Bonita
3-0330(N)	12-150	-	1979	Archaeological Reconnaissance at proposed drill location and access road in Gabbs Valley for Al Aquitaine Expl. Limited	Rusco, Mary
3-0334(N)	-	-	1979	La Plata Pipeline	Hatoff, Brian W.
3-0353(P)	18-203	-	1979	Archeological Reconnaissance of Twenty-Two Proposed Seismic Test Lines in the Northern Portion of Dixie Valley, Nevada	Covington, Cameron
3-0368(N)	12-150	-	1980	Addendum - Archaeological Reconnaissance at proposed drill location and access road in Gabbs Valley for Al Aquitaine Expl. Limited	Brown, Bonita
3-0379(N)	18-209	-	1980	BLM-SCS Soil Test Pits, Monte Christo Mountains, Gabbs Valley, and Lodi Valley Areas	Ratzlaff, Cris Ann
3-0396(N)	1-209	-	1979	Arterial Canyon Guzzler #1	Bardwell, Pardee

BLM Report No.[1]	NSM Report No.	Other Report No.	Year	Title	Author(s)
3-0397(N)	1-210	-	1980	Gz Canyon Guzzler #1	Bardwell, Pardee
3-0399(N)	1-211	-	1980	Frenchman Well Guzzler #1	Bardwell, Pardee
3-0402(N)	1-197	-	1980	SCS-BLM Soil Test Pits, Fairview Valley Area	Ratzlaff, Cris
3-0450(P)	1-91	-	1980	Horse Creek Ranch DLE	Hatoff, Brian W., Nancy Botti, and Chuck Pope
3-0468(P)	1-5	3-0467(P)	1975	Archaeological and Historical Reconn re: S-615(3), 70523 FAS 615 from US 50 N to Jct Dixie Valley Rd. 27.44 Mi	Rusco, M.
3-0485(N)	-	-	1980	SR 23 Right of Way Survey E.A. #70905 RS-316(1)	Matranga Jr., Peter F.
3-0498(N)	1-156	-	1980	US 50 Betterment W.O. #20727	Matranga, P., and G. Tomlinson
3-0501(N)	1-219	-	1980	Right-of-Way N-29855 - State Communications Board	Pope, Charles P.
3-0503(N)	-	-	1980	Material Sale (Acquitaine Co. of Canada Limited)	Buder, Ronald K.
3-0505(N)	1-220	-	1980	JDR 6135, Slate Mountain Drift Fence	Mabe, John H.
3-0512(P)	18-211	-	1980	SCS Soil Survey Pits, Broken Hills - Gabbs - Rawhide Area	Linebaugh, James A.
3-0521(N)	1-225	IMR 358	1980	Archaeological Reconnaissance of 23 Proposed Geothermal Well Locations and CA 6.11 KM of Access Routes in the Dixie Valley Area, Churchill County, NV	Elston, Robert
3-0525(N)	1-110	-	1980	North Gore Flat Guzzler	Bardwell, Pardee
3-0526(N)	1-111	-	1980	Breccia Canyon Guzzler	Bardwell, Pardee
3-0527(N)	1-112	-	1980	Red Top Canyon Guzzler	Bardwell, Pardee
3-0530(N)	1-113	-	1980	Contact Canyon Guzzler	Bardwell, Pardee
3-0541(N)	1-114	-	1981	La Plata Well	Botti, Nancy
3-0555(N)	-	-	1981	Buckbrush Pipeline Extension	Hatoff, Brian W.
3-0557(N)	11-69	-	1981	South Bell Flat Fence	Hatoff, Brian W.
3-0565(N)	1-120	IMR 385	1981	Archaeological Reconnaissance of Two Proposed Geothermal Drilling Locations Near the Carson Sink	Callaway, Cashion
3-0571(N)	1-122	-	1981	Bell Flat Corral	Mabe, John H.
3-0575(N)	1-125	-	1981	Rawhide Road Guzzler	Bardwell, Pardee
3-0593(N)	1-126	-	1981	West Lucky Boy Guzzler	Bardwell, Pardee
3-0623(N)	-	-	1981	Little Bell Flat Stockwater Storage, JDR 6180	Mabe, John H.
3-0661(N)	11-78	-	1981	South Bell Highway Well. JDR 6188	Mabe, John H.

BLM Report No.[1]	NSM Report No.	Other Report No.	Year	Title	Author(s)
3-0663(N)	1-134	-	1981	Red Top Canyon Drift Fence	Mabe, John H.
3-0681(N)	1-137	-	1981	Proposed Sale of 25,000 Cubic Yards of Native Borrow to Bell Mountain Mining CO	Buder, Ronald K.
3-0698(N)	1-176	-	1981	Pyramid Resources, Inc. DBA Bell Mountain Mining Company Reopening of Bell Mountain Mine	Armentrout, Lynda
3-0747(N)	1-144	-	1982	Black Knob Pipeline #2 - JDR #6199	O'Brien, Susan
3-0752(N)	-	-	1982	District V Betterment, MP 0.00-15.69, WO 20730	Matranga, P.
3-0789(N)	1-149	-	1982	Churchill County US 50 Betterment from milepost CH-43.0 to CH-60.0, E.A. 71083	Bunch, J.
3-0790(P)	1-94	-	1982	Four (4) Pits from 8 Miles East of Salt Wells to Junction of Sr 121 (To Dixie Valley), E. A. 71083	Bunch, J.
3-0791(N)	1-150	-	1982	Electronic Warfare Communications Site and Powerline	Pope, Chuck
3-0813(N)	11-197	-	1988	Alteration of the S.W. Bell Flat Fenceline Course - JDR #6265	Mabe, John H.
3-0814(N)	11-198	-	1983	S.E. Bell Flat Stockwater Storage and Trough JDR	Mabe, John H.
3-0841(N)	1-160	-	1983	Fairview Communication Site & Powerline	Hatoff, Brian W.
3-0868(N)	1-165	-	1983	Union Oil Company- NOI for Geothermal Exploration in Dixie Valley, Nevada	Moore, R. K.
3-0919(N)	1-177	-	1984	Union Oil Geothermal NOI No. N3-08-84 Temperature Gradient Hole Nos. 1-11	Moore, Ron
3-0925(P)	1-98	-	1984	Installation of 3 15' x 15' Navy Remote Communication Sites (N-39510 - 39512)	Pope, Charles P.
3-0928(N)	11-205	-	1984	East Rawhide Holding Facility and Stockwater Storage JDR-6345 and JDR-6346	Mabe, John H.
3-0932(N)	1-172	-	1984	Union Geothermal NOI No. N3-11-84	Moore, Ron
3-0938(P)	18-179	-	1984	Intensive Archaeological Survey of a Proposed 11 kV Transmission Line, Dixie Valley, Nevada to Bishop, California	Stornetta, Susan
3-0940(N)	1-174	IMR 512	1984	Archaeological Reconnaissance of Three Proposed Drilling Locations in Bell Flat, Churchill County, Nevada for Dixie Valley Partnership, Ltd.	Stornetta, Susan
3-0981(N)	1-274	-	1985	Dixie Valley Allotment Boundary Fence	Hatoff, B.
3-0982(N)	1-275	-	1985	Shoal Drift Fence JDR #6357	O'Brian, Susan
3-0989(P)	1-276	-	1985	Cultural Resources Reconnaissance for U.S. Energy Corporation Powerline Corridor Roys Point to Dixie Valley Churchill County, Nevada	Botti, Nancy
3-1020(N)	-	-	1985	Westgate Fence, JDR 6390	Mabe, John H.
3-1031(P)	1-283	ARS 371	1985	Archaeological Investigation of Oxbow Geothermal Dixie Valley Alternate Route	Sutton, Paula A.
3-1034(P)	18-255	-	1985	An Intensive Archaeological Survey of 17 Electronic Warfare Threat Simulator Sites, Off-Road Access, and Transmission Line Corridor	Zeier, Charles D.

BLM Report No.[1]	NSM Report No.	Other Report No.	Year	Title	Author(s)
3-1041(P)	-	-	1985	US 50, District II Betterment, E.A. 71295, MP CH-36.8-43.0 and MP CH-60.52-70.95	Seldomridge, Jeffrey
3-1076(P)	1-253	-	1986	Oxbow Geothermal Corp. Staging Areas for Use with Oxbow's Proposed 230 KV Electrical Interconnection	Simmons, Alan H.
3-1081(N)	11-217	-	1986	Eagleville Stockwater Storage (JDR 6440).	Mabe, John H.
3-1106(N)	11-117	-	1987	JDR 6412 South La Beau Flat Boundary Fence and Cattleguard	Hatoff, Brian W., and John Mabe
3-1136(N)	-	-	1987	Lambing Cyn Pipeline (JDR 6451).	Mabe, John H.
3-1137(N)	-	-	1987	Jobs Canyon Pipeline Extension (JDR-6454).	Mabe, John H.
3-1148(P)	18-258	-	1987	An Intensive Archaeological Survey of Proposed Electronic Warfare Range Communications Line Improvements, TACTS Sites & Repeater Site: Naval Air Station, Fallon	Juell, Kenneth E., and Robert G. Elston
3-1149(P)	1-303	-	1987	An Intensive Archaeological Survey of MCON Project P-269 Facilities	Juell, Kenneth E., and Robert G. Elston
3-1224(P)	1-313	-	1988	Archaeological Investigation in Dummy Canyon, Paiute Canyon, and Sage Hen Canyon, Churchill County, NV	Hardesty, Donald L., and Renee Cranston
3-1225(N)	-	-	1988	Jack O'Connor Pipeline Extension and Storage Tank JDR 6488, 6514	Mabe, John H.
3-1235(N)	1-314	-	1988	Mt. Well Stockponds 1, 2, and 3	Gianola, James
3-1240(P)	18-319	-	1988	Archaeological Survey of Four Proposed Electronic Warfare Range Installations and Ancillary Linear Corridors	Juell, Kenneth E., and Robert G. Elston
3-1256(N)	1-320	-	1988	Churchill County Road Reroute	Orser, Lori L.
3-1268(N)	-	-	1989	UNR Seismic Data Telemetry Site	Pope, Charles P.
3-1273(N)	-	-	1989	Jack O'Connor Pipeline Extension No. 2 JDR No. 6521	Mabe, John H.
3-1357(N)	1-336	-	1989	Hercules Big Game Guzzler JDR 6573	Brigham, William R.
3-1358(N)	1-335	-	1989	Lauderback Big Game Guzzler, JDR 6575	Brigham, William R.
3-1407(P)	-	NDOT CH90-034R/MI87-008R	1991	SR 839-MI-74.82-78.9; SR 839-CH-0.00-13.92; 18.07 mile-long stretch of 200 ft. wide SR 839 highway in Fairview Valley, Churchill and Mineral counties, Nevada	Peterson, F.
3-1434(P)	1-365	-	1991	A Class III Archaeological Survey on Behalf of the Bell Mountain Mine Project	Drews, Michael P.
3-1461(P)	1-384	NDOT CH92-001P	1992	Three Material Pits; one adjacent to SR839 in Fairview Valley, and two along SR121 in southern Dixie Valley, Churchill County, Nevada	Drews, Michael P., Joe Moore, and David Mathiesen
3-1504(P)	1-378	-	1992	Noranda 1992 Drill Holes NOI	Mecham, Prill
3-1505(N)	1-370	-	1992	An Intensive Archaeological Survey of Proposed Electric Warfare Site #70 and Fiber Optic Cable Corridor, Dixie Valley, Churchill County, NV	William Self Associates
3-1525(P)	1-393	-	1993	Class III Cultural Resource Survey of Proposed Fenceline at Bravo-17 Training Range Naval Air Station Fallon, Churchill County, Nevada	Self, William, and Mariah Associates, Inc.

BLM Report No.[1]	NSM Report No.	Other Report No.	Year	Title	Author(s)
3-1531(N)	1-388	-	1992	A perm. water tank, pipeline, and trough placed within the Frenchman Flat Allotment	Starrett, Beth
3-1536(N)	1-432	-	1992	JMR Wash Guzzler	Brigham, William
3-1557(N)	1-439	-	1993	Phelps Dodge Lucky Boy Plan of Operation 1993	Clarke, Beth M.
3-1565(P)	1-499	-	1993	Desert Research Institute Cultural Reconnaissance Short Report SR062893-1: A Class II Cultural Resources Reconnaissance of the Project Shoal Area, Churchill County, Nevada	Johnson, W.G.
3-1610(N)	18-327	-	1994	LaBeau Water Haul Sites #8, 9, 10, 11, 12, 13	Irons, Tracey
3-1612(P)	-	-	1994	Fairfield Historic Site	Davis, William C.
3-1615(P)	-	-	1993	Silver Hill Historic Site	Davis, William C.
3-1619(N)	-	-	1994	17 Guzzlers Near Wonder Mountain	Mecham, P.
3-1621(N)	-	-	1994	Southwest Gas Pipeline Reroute	Clarke, Beth M.
3-1637(N)	-	-	1994	Gabbs Valley Water Haul Site #5 (546678)	Raffetto, Peter
3-1647(N)	-	-	1994	Big Game Guzzler, West Side of Monte Cristo Mountains	Brigham, William R.
3-1671(P)[3]	1-453	-	1995	An Optimal Foraging Model of Hunter-Gatherer Land Use in the Carson Desert	Zeanah, David W.
3-1695(N)	-	-	1995	Monte Cristo Mountains Guzzler Site Recon (Sites A, B, C, D, and E)	Brigham, William R.
3-1726(P)	18-356	-	1996	Slate Mountain Drift Fence	Mecham, P.
3-1751(P)	1-479	NDOT CH95-027P	1996	Four Material Pits along SR839 and US50	Stearns, S.M.
3-1804(N)	-	-	1995	W-W Ron and Lynn Biggs Guzzler/Slate Guzzler	Brigham, William R.
3-1830(N)	1-491	-	1997	King Water Tank #1	Bowyer, Gary
3-1856(N)	-	-	1998	Big Kasock Guzzler BLM Project 546781	Brigham, Rick
3-1860(N)	-	-	2001	La Beau Water Haul #5	Lasell, Rebecca R.
3-1861(N)	-	-	1998	La Beau Water Haul #7	Irons, Tracey
3-1862(N)	-	-	2001	La Beau Water Haul #9	Lasell, Rebecca R.
3-1867(N)	-	-	2001	Cultural Resource Survey for the UNR Seismic Trenching around Bell Canyon, Four Mile Flat, and La Plata Canyon, Churchill County	Bowyer, Gary
3-1930(N)	-	-	2001	Temporary Card Holding Field Project	Lasell, Rebecca R.
3-1937(P)	-	-	1999	West Gate Historic Site	Davis, William C.
3-1971(P)	1-602	-	1999	Fairview Fire Rehab Survey	Creger, C.C.

BLM Report No.[1]	NSM Report No.	Other Report No.	Year	Title	Author(s)
3-1977(N)	-	-	2000	Clan Alpine Grazing Allotment, Bell Flat Pasture Water Haul Sites	-
3-1980(N)	-	-	2000	La Beau Water Haul Sites, Fairview Valley, Mineral and Churchill Counties	Wolfe, Tracey Jean
3-1998(P)	-	-	2000	Hercules Historic Site	Davis, William C.
3-2005(P)	-	6-2191(P)	2001	A Transect Across the Great Basin: Reno, Nevada to Spanish Fork, Utah A Class III Cultural Resources Inventory	Ataman, Kathryn et al.
3-2005(P) Addendum II	-	6-2191(P)	2001	Addendum II: A Transect Across the Great Basin: Reno, Nevada to Spanish Fork, Utah	Clay, Vickie
3-2029(N)	-	-	2000	Jesse Corral	Wolfe, Tracey J.
3-2047(N)	-	-	2001	Right-of-Way (N-12144) to NDOT Material Site (CH-37-5)	Nelson, Kenneth
3-2049(P)	-	-	2002	NDOT Class III Archaeological Investigations of Three Material Sources in Churchill County, Nevada	Moore, Joseph
3-2134(N)	-	-	2002	30-Day Temporary Water Hauls	Lasell, Rebecca R.
3-2136(N)	-	-	2002	Broken Hills Guzzler (Job #546926) and Bell Mountain Guzzler (Job #546925)	Brigham, Rick, and Claudia Funari
3-2137(N)	-	-	2002	Bell Flat Big Game Guzzler	Brigham, Rick, and Claudia Funari
3-2139(P)	-	-	2002	LaBeau Water Hauls	Pope, Charles
3-2167(P)	-	-	2003	Runcer Leasing, LLC. Mineral Exploration Phase One	Miller, Chris
3-2177(P)[2]	-	-	2003	An Inventory of Cultural Resources Within the Kennecott Rawhide Mine Land Evaporation Project Area, Mineral County, Nevada	Memmott, Margo, and Charles Zeier
3-2263(N)	-	-	2005	Petro World Nevada Corporation (PetroWorld), Gabbs Valley Oil and Gas Geophysical Exploration Project	Matranga, Peter
3-2270(N)	-	NIR-164	2005	An Intensive Cultural Resource Survey for the Movement of a Communication Facility on Top of Fairview Peak, Naval Air Station Fallon, Churchill County, Nevada	Baskerville, Mike
3-2360(N)	-	-	2007	B-17 UAV Project	Baskerville, Mike
3-2361(N)	-	-	2006	Four Trap Site Locations for Wild Horse Gathers in the Clan Alpine Mountain Area	Gianola, James
3-2446(P)	-	-	2008	A Class III Inventory of 18 Proposed Geothermal Exploration Drill Sites, Gabbs Valley, Mineral County, Nevada	Lane, Elizabeth
3-2464(P)	-	KEC 650	2009	Cultural Resources Inventory for Ormat's Gabbs and Deadhorse Wells Geothermal Exploration, Nye and Mineral Counties, Nevada	Kautz, Robert R., and Barbara E. Malinky
3-2464-1(P)	-	WCRM 10RO54	2013	Class III CR Inventory for Appx 2.5 Miles of Road Repair and Monitoring Assc w/ the Ormat Technologies, Inc. Gabbs and Deadhorse Wells Geothermal Exploration Project, Mineral and Nye Counties, NV	Cannon, Tara, and Edward J. Stoner
3-2487(N)	-	NIR-224	2008	A Class III Cultural Resource Survey of the UAV Runway Extension at Bravo-17	Ataman, Kathryn

BLM Report No.[1]	NSM Report No.	Other Report No.	Year	Title	Author(s)
3-2510(N)	-	NIR-227	2009	A Class III Cultural Resource Inventory for Six New Cuing Targets (Military Vehicles) Located in the Dixie Valley's North Settlement Area Between Dempsey's Lane and Terrell's Hole	Kramer, Steve
3-2535(P)	-	-	2011	Archaeological Survey of Approximately 5,000 Acres in Training Range B-17, Naval Air Station Fallon, Churchill County, Nevada	Ramirez, Robert B. et al.
3-2563(P)	-	TR-78	1999	Dixie Valley Archaeological Survey and Evaluation	Bloomer, William W., et al.
3-2563-1	-	TR-57	2001	Addendum to Dixie Valley Archaeological Survey and Evaluation	Creger, Cliff C., and Gary C. Bowyer
3-2570(P)	-	-	2015	Class III Inventory for the Grazing Permit Renewal of the Clan Alpine, Cow Canyon, and Dixie Valley Allotments.	Bowen, Kristin
3-2575(N)	-	NIR-247	2010	An Intensive Pedestrian Inventory of Four Groundwater Monitoring Wells in Dixie Valley.	Bowers, Robin
3-2577(P)	-	-	2011	Class III Cultural Resources Inventory of Geothermal Leases in Dixie Meadows, Churchill County, Nevada	Cardno Entrix
3-2587(P)	-	-	2011	Cultural Resources Assessment of Abandoned Mine Hazard Locations Proposed for Permanent Closure in the King Mine , Mineral County, Nevada	Livingston, Stephanie
3-2593(P)	-	-	2012	Class III Cultural Resource Inventory for the Earthquake Fuels Treatment Project, Churchill County, Nevada	Young, C. D., and A.R. Garner
3-2624(N)	-	-	2012	Fairview Valley Off Range Ordnance Incident	Bowers, Robin
3-2661(P)	-	TR-120	2013	A Class III Survey for the Off-Range Incident Near Drumm Summit Stingaree Valley, Churchill County, Nevada	Michel, Robin
	1-451	-	1993	Class III Cultural Resources Inventory of Ground Training Areas at Training Ranges B-17 and B-19	
	1-480	-	1996	A Class III Cultural Resources Reconnaissance of the Shaft Remediation Area, Three Rehabilitation Well Sites, Five Proposed Well Sites and a Mud Pit, Project Shoal Area	Johnson, William Gray, and Barbara A. Holz
Bravo-20 Study Area					
2-0390(N)	18-208	-	1980	Occidental Geothermal NOI N2-44-80 15 Drill Sites	Dunn, Victor C.
2-0756(N)	18-214	IMR 425E	1982	The Archaeological Reconnaissance of Two Seismic Test Lines and Access in Northern Carson Sink and Southern Buena Vista Valley for Petty-Ray Geophysical	Stornetta, Susan, and Robert G. Elston
2-1064(P)	-	IMR 548	1985	An Archaeological Reconnaissance of a Proposed Defense Property Disposal Office Site in the Carson Sink for SETAC, Inc.	Elston, R., and M. Drews
2-2127(N)	-	-	1986	Additional Archaeological Survey at Pearl Hill for U.S. Gypsum, Pershing County, Nevada	Detweiler, Kenneth G.
2-2143(N)	-	-	1987	Lovelock Prison Site	Giffen, Bruce A.
2-2165(N)	-	-	1987	Unionville Trash Transfer Station Sale	Giffen, Bruce A.
2-2286(P)	14-203	-	1989	Beatty Geological Inc. Prospecting Plan for Prospecting Permit Potassium and related minerals N-43270 thru N-43273.	Detweiler, K.
2-2893(P)	18-468	-	2004	Kyle, Trego and Wild Horse Pass Geothermal Lease Applications Revised October 22, 2004	Vierra, Robert K.

BLM Report No.[1]	NSM Report No.	Other Report No.	Year	Title	Author(s)
3-0184(N)	1-64	-	1977	Geothermal Temp. Gradient Test Holes: Carson Sink NOI NV-030-29	Hatoff, Brian W.
3-0303(N)	1-191	-	1979	21 Geothermal Shallow Temperature Gradient Holes, Phillips Petroleum CO. Case N3-09-79	Jacquet, Dan
3-0567(P)[3]	1-83	-	1985	Carson-Stillwater Archaeological Project, Phase I Report of Activities: 1985, 1986, Dissertation, etc.	Kelly, Robert L.
3-0707(N)	1-139	-	1981	Copper Kettle Corral #1, Copper Kettle Corral #2	O'Brien, Susan
3-0796(N)	1-152	-	1982	The Archaeological Reconnaissance of Two Seismic Test Lines in Carson Sink, Churchill Co., NV	Pope, Chuck
3-1108(N)	1-292	-	1987	U.S. Navy R/W Reservation for Access Road and Run-In Placard located in the Carson Sink - B-20 Area	Pope, Charles
3-1200(P)	18-262	-	1988	Class III Cultural Resources Inventory Along the Proposed AT&T Optic Facility Corridor Across Northern Nevada	Hemphill, Martha L.
3-1215(P)	18-253	2-2239(P)	1988	An Archaeological Reconnaissance Between Wadsworth and Winnemucca, Nevada on Behalf of Nevada Bell's Rural Improvement Project	Elston, Robert G.
3-1220(P)	-	-	1988	A Cultural Resources Inventory of the Soda Lake, Stillwater and Carson Sink Geophysical Prospects, Churchill County, Nevada	Polk, Michael R.
3-1425(P)	18-316	2-2437(P)	1991	Nevada Bell Proposed Burial of a Fiber Optic Cable from an Existing Buried Fiber Optic Cable	Stornetta, Susan
3-1905(P)	-	TR-60	2001	An Intensive Cultural Resource Survey for the Gravel Test Pits, NAS Fallon, Churchill County, Nevada	Creger, Cliff C.
3-2215(P)	-	TR-75	2004	Range Holding Areas	Creger, C. Cliff
3-2434[2,3]	-	-	2007	A Cultural Resource Summary for the White Cloud Allotment Term Grazing Permit Renewal	Lane, Elizabeth
-	1-368	ARS 637	1990	Class III Cultural Resources Inventory of Proposed Range Debris Holding Areas on Ranges B-16, B-17, B-19 and B-20, Churchill County, Nevada	Hause, Larry
-	-	-	1990	Islands in the Sink. Archaeological Patterns at the Margin of the Carson Sink	Raven, Christopher
-	-	-	2007	Stillwater NWR Boundary Fencing Project FY2007	Parks, Virginia, and Anan Raymond
**	-	-	2011	Salvage Archaeology of the Charlie Gomes Site, 26CH473: More on Ancient Lake History and Ancient Peoples in the Carson Sink, Churchill County, Nevada	Dansie, Amy (editor)

[1](P), positive for cultural resources (includes sites and/or isolates); (N), negative for cultural resources.
[2]Not a Class III Inventory.
[3]Spans multiple Study Areas.

CULTURAL RESOURCES

Archaeological Resources

As part of this review, ASM identified a multitude of undefined site types spanning 70 years of archaeological site records. In an effort to provide a consistent dataset and allow cross-comparison of sites with similar constituents and components, ASM consolidated and retyped all previously recorded archaeological resources using a standard system based on surface attributes. These site types are not intended to encompass all potential sites. New types may need to be added as additional Class III research is conducted.

Prehistoric Site Types

Simple Flaked Stone sites only contain debitage only, no tools. Accordingly, most have limited artifact assemblages and probably represent single episodes of flaked stone reduction/discard.

Complex Flaked Stone sites generally constitute a mix of debitage and flaked stone tools, varying in size from a few artifacts to several thousand. Some have multiple activity loci and/or discrete artifact concentrations, but the presence of these was not a precondition for classification.

Basic Habitation sites contain flaked stone tools, debitage, and ground stone tools or ceramics. As with Complex Flaked Stone sites, Basic Habitations can range from small to large assemblages and may have one or more artifact concentrations/depositional loci.

Complex Habitation sites are similar to Basic Habitation sites but contain one or more domestic features (e.g., hearth, rock ring house foundation, pinyon cache) or a discrete midden. Most of these sites are of considerable size, but there are some that consist of a single feature, a few flaked stone tools, some debitage, and one to few pieces of ground stone.

Lithic Quarry sites are centered on or adjacent to a lithic source and contain artifacts representing lithic testing and quarrying (e.g., cores, assayed cobbles, crude bifaces, large debitage). These sites tend to be of limited size, often focused on a small outcrop of poor-to-high quality stone or a particular cobble deposit within alluvial sediments, but they can also include extensive ridges or outcrops where raw material was procured and processed.

Cave/Rockshelter sites are those situated primarily within a cave or rockshelter where subsurface deposits are likely. Any number and type of artifacts/features may be present, but they lack rock art.

Rock Art sites may contain petroglyphs (pecked or incised art), pictographs (painted art), or any other type of rock art. Rock art sites may or may not be associated with artifacts or features and can occur on cliff faces, boulders, or inside cave/rockshelters.

Rock Alignment sites may consist of geoglyphs (rock alignment art), intaglios (rock removal art), stacked rock walls, hunting blinds, or other prehistoric groupings of rock in some form or alignment. Often, but not necessarily, associated with artifacts.

Historic Site Types

Refuse Scatter sites are small and/or scattered deposits of historic artifacts lacking associated features. Debris at these sites tends to be of domestic nature, consisting of food containers, broken household goods, small hardware, and the like. Refuse scatters can originate from mining camps, work camps, ranches, residences, or military activities, but generally represent an informal deposit or successional deposit of one or two items over a dispersed area. They are considered Unassociated if they cannot be identified with a particular historic theme.

Refuse Deposit sites are concentrations of historic artifacts lacking associated features. Debris at these sites tends to be of a domestic nature, consisting of food containers, broken household goods, small hardware, and the like. Refuse deposits can originate from mining camps, work camps, ranches, residences, or military activities, but generally represent one or more events involving the intentional discard of debris generated elsewhere. They are considered Unassociated if they cannot be identified with a particular historic theme.

Road sites may include a variety of construction types such as wagon routes with deep ruts, simple and unimproved two-track paths, bladed cut and fill roads, graveled and oiled improved roads, and even paved highways. Unimproved sites tend to have few to no engineered or otherwise related features, facilities, or support constructions (e.g., berms, retaining walls, culverts), but may have associated refuse deposits generated by roadside camping events or a series of isolated artifacts representing many episodes of road-toss discard. Improved roads are more likely to contain engineered support features.

Historic Camp sites represent short-term camps made by travelers (domestic or early military), ranchers, ditch/road workers, or miners. Such sites normally contain food containers, broken household goods (e.g., dishware, utensils, cookware) and abandoned personal items, but should also show evidence of meal preparation (fire pits) and/or overnight stays (e.g., tent pads, stacked rock windbreaks, cleared sleeping areas).

Homestead sites are those that include intact buildings, ruins, or foundations. Associated features may include wells, fences, roads, privies, and may or may not include refuse scatters or deposits with food/beverage containers as well as other household items, such as personal items, grooming, adornment, or other artifacts indicative of habitation.

Mineral Claim sites are frequently identified by the presence of one or more claim markers denoted by the presence of rock cairns and/or wooden posts with attached (or buried) pocket tobacco tin (or other container) to hold claim papers. They may be found alone (generally recorded as isolated elements) or in conjunction with prospects and occasionally have associated refuse suggesting temporary on-site use.

Prospect or Prospecting Complex sites may be represented on the landscape by one or more hand-dug or mechanically excavated pits (or trenches) denoting testing/exploration for mineral deposits or shallow veins. They were used to locate all types of minerals in both lode and placer deposits. Prospects commonly occur in small groups of two to five in conjunction with a mineral claim and often with associated refuse suggesting temporary on-site camping by the prospectors. There are, however, many isolated single pits, trenches or scrapes without even a claim marker to confirm their identity. A large group of prospects is referred to as “prospecting complex.”

Mine or Mine Complex (inhabited or uninhabited) sites are defined by one or more adits, tunnels, or vertical shafts indicating development of a mineral deposit beyond the prospecting phase. Many mine sites also contain associated refuse, either industrial (remains of mining equipment) or domestic refuse suggestive of temporary on-site camping. Mine “complex” indicates the presence of five or more shafts and/or adits in a relatively concentrated location. Inhabited mines/mine complex contain one or more habitation features (such as standing or collapsed structures, ruins, foundations, cabins, tent flats, etc.) with associated domestic refuse, whereas uninhabited mines/mine complexes lack such features.

Mill sites are ore-milling facility locations where ore was processed and assayed and its waste disposed of (tailings). Mill remnants may consist of foundations, structure pads, and tailings piles as well as intact or remnant stamp or ball mill fragments. Domestic refuse may also be present.

Mining Camp sites are larger habitations (townsites) that supported a large mine complex or mine group. It may be denoted by multiple habitation features (such as standing or collapsed structures, ruins, foundations, cabins, tent flats, etc.) and the former presence (indicated by historic records) of one or more commercial or public establishments (e.g., blacksmith shop, saloon, hotel) or even a post office. Typically, these are located apart from, but nearby, such mine complexes.

Trapping sites occur in rocky alcoves, overhangs, and small shelters. Typically, all that remains is a wire-wrapped rock (deadfall or anchor) used to pin or prevent the prey from escaping. These sites likely also contained metal leg traps and bait, sometimes identified by string hanging from the shelters. Brush or rock piles are also common, potentially used to hide the trap.

Rock Alignment sites are historic age dry-laid alignments of rock for unknown purpose.

Ranching includes those sites associated with ranching activities, and may include ranch complexes, corrals, wells drilled for livestock watering, fences, and associated refuse.

Summary

A total of 197 archaeological sites and one archaeological District have previously been recorded in the proposed NAS Fallon Study Areas. Summaries of sites by age, site type, and Study Area are provided in Tables 3, 4, and 5.

Table 3. Summary of Known Prehistoric Archaeological Site Types in Proposed Study Areas

	SFS	CFS	BH	CH	LQ	RA	CV/RS	Art	Total
B-16	3	-	3	-	-	-	1	4	**11**
B-17	19	12	9	8	10	1	1	-	**60**
DVTA	10	8	2	2	2	1	2	2	**29**
B-20	3	5	3	14	2	-	-	-	**27**
Total	**35**	**25**	**17**	**24**	**14**	**2**	**4**	**5**	**127**

Note: SFS, simple flaked stone; CFS, complex flake stone; BH, basic habitation; CH, complex habitation; LQ, lithic quarry; RA, rock alignment; CV/RS, cave/rockshelter; Art, rock art.

Table 4. Summary of Known Historic Archaeological Site Types in Proposed Study Areas

	RS	RD	HS	HC	PR	MI/MU	ML	MC	RO	RA	Total
B-16	-	-	-	-	-	-	-	-	4	-	**4**
B-17	8	7	-	1	-	0/2	-	-	3	1	**22**
DVTA	3	2	10	1	1	2/2	1	4	-	-	**26**
B-20	1	-	-	-	-	0/1	-	-	-	-	**2**
Total	**11**	**9**	**10**	**2**	**1**	**2/5**	**1**	**4**	**7**	**1**	**53**

Note: RS, refuse scatter; RD, refuse deposit; HC, historic camp; PR, prospect; MI/MU, mine/complex (inhabited), mine/complex (uninhabited); ML, mill; MC, mining camp; RO, road; RA, rock alignment.

Table 5. Summary of Known Multicomponent Archaeological Site Types in Proposed Study Areas

	SFS/ RS	CFS/ RD	CFS/ RS	CFS/ PC	BH/ RS	BH/ HC	BH/ HS	CV/RS/ TR	CH/ RS	CH/ RD	CH/ RN	Total
B-16	-	-	-	-	-	-	-	1	-	-	-	**1**
B-17	1	1	2	1	1	1	1	-	1	-	1	**10**
DVTA	-	1	-	-	-	-	-	-	1	1	-	**3**
B-20	-	-	-	-	-	-	-	-	-	-	-	**0**
Total	**1**	**2**	**2**	**1**	**1**	**1**	**1**	**1**	**2**	**1**	**1**	**14**

Note: Prehistoric/Historic. SFS, simple flaked stone; CFS, complex flaked stone; BH, basic habitation; CH, complex habitation; CV/RS, cave/rockshelter; RS, refuse scatter; RD, refuse deposit; PC, prospect complex; HC, historic camp; HS, homestead; TR, trapping; RN, ranching.

Within the B-16 proposed Study Area, which covers approximately 32,201 acres, there are a total of 16 known sites, of which 11 are prehistoric, four are historic, and one is multicomponent (contains both prehistoric and historic components). Four of these are rock art sites consisting of numerous red pictographs on tufa covered walls within small to large rockshelters and caves (Figure 6). One of these rock art sites has a missing IMACS site record, but based on location and a vague reference to rock art in the area (Woody 2000:206), as well as recent site visits by ASM, we feel this site can be assuredly typed as prehistoric rock art despite the lack of a site record. Other prehistoric sites include three simple flaked stone assemblages, three basic habitations, and a rockshelter with a millingstone. Four sites are historic roads, and the multicomponent site contains numerous alcoves with ground stone, rock alignments, and apparent trapping features, possibly for coyotes.

A total of 93 previous sites are known within the B-17 proposed Study Area (approximately 178,014 acres). Of these, 60 are prehistoric (19 simple flaked stone scatters, 12 complex flaked stone scatters, 9 basic habitations, 8 complex habitations, 10 quarries, 1 rock alignment, and 1 cave/rock shelter), 22 are historic (8 refuse scatters, 7 refuse deposits, 3 roads, 2 uninhabited mines, 1 historic camp, and 1 rock alignment), and 10 are multicomponent (1 simple flaked stone/refuse scatter, 2 complex flake stone/refuse scatter, 1 complex flaked stone/refuse deposit, 1 complex flaked stone/prospecting complex, 1 basic habitation/refuse scatter, 1 basic habitation/historic camp, 1 basic habitation/homestead, 1 complex habitation/refuse scatter, and 1 complex habitation/ranching). The remaining site is of an unknown age and type as its IMACS site record is missing from the various repositories.

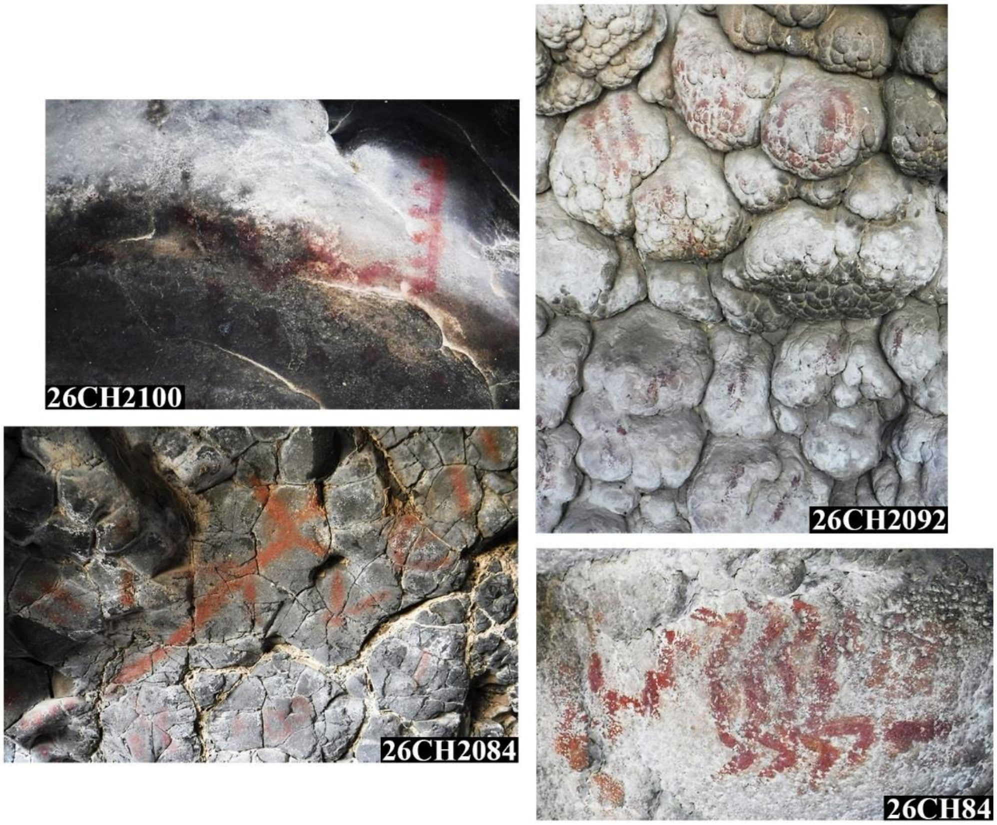

Figure 6. Pictographs from the Salt Cave Area within the proposed B-16 Study Area.

The DVTA proposed Study Area covers approximately 288,121 acres and contains a total of 59 previous sites, of which 29 are prehistoric, 26 are historic, 3 are multicomponent, and 2 are unknown as their site records are missing. Figures 13 through 21 depict the B-17 and DVTA resources. The prehistoric sites include 10 simple flaked stone scatters, 8 complex flaked stone scatters, 2 basic habitations, 2 complex habitations, 2 lithic quarries, 2 cave/rockshelters, 1 rock alignment, and 2 rock art sites. The historic sites include 10 homesteads, 3 refuse scatters, 2 refuse deposits, 1 historic camp, 1 prospect, 2 inhabited mines/complexes, 2 uninhabited mines, 1 mill, and 4 mining camps. The multicomponent sites include one each: complex flaked stone/refuse deposit, complex habitation/refuse scatter, and complex habitation/refuse deposit. The remaining site is of unknown age and type as its IMACS site record is missing from the various repositories and could not be located. Similarly, one presumed prehistoric site also lacks a located IMACS site record, but is present on a spreadsheet provided by CCDO that identifies the site as a rock art site (Freeman Creek).

Finally, the B-20 proposed Study Area covers approximately 180,329 acres and contains 29 previous sites and 1 archaeological district. The majority of sites in this area are prehistoric (n = 27). They include 3 simple flaked stone scatters, 5 complex flaked stone scatters, 3 basic habitations, 14 complex habitations (several include human remains), and 2 lithic quarries. The Stillwater Marsh Archaeological District is a massive area that encompasses over 109,420 acres (170 mi.^{2}, 443 km^2). It was nominated to the NRHP in 1974 and accepted and listed in 1975 with significance periods spanning all of prehistory through the nineteenth century for its aboriginal use by Northern Paiute Indians, specifically the *Toidɨkadɨ*, or cattail-eaters. At the time of the listing, flaked and ground stone artifacts were known in the area (though no site count was attributed to this district) and no burials were known. Major flooding in the 1980s led to the exposure of numerous sites with pithouses, postholes, storage pits, a variety of flaked and ground stone tools, as well as human remains in all states of preservation. Radiocarbon dates from charcoal, human bone, and other perishables revealed over 3,000 years of occupation in the Stillwater Marsh area. Only two historic sites are known in the area, consisting of a refuse scatter and an uninhabited mine with an adit sunk into the east side of the West Humboldt Range. No multicomponent sites are known in the B-20 proposed Study Area.

A review of the NRHP recommendations found on site records for the 198 known sites in the NAS Fallon proposed Study Area shows that the large majority (*n* = 124) were recommended ineligible for listing under any criteria by their recorders. Only 26 sites (14 prehistoric, 4 historic, 8 multicomponent) were recommended eligible and only the Stillwater Marsh Archaeological District is actually listed in the NRHP. Twenty-seven sites have no recommendation listed or were recorded under Section 110 regulations and never formally evaluated. As such, these sites are considered unevaluated for their NRHP potential. Another eight sites were partially or entirely subject to surface collections when they were originally recorded. Until verified on the ground, we assume that these sites have been entirely removed and no longer have any artifactual presence on the surface where they were recorded. Finally, site records for the remaining 12 sites could not be located and are here categorized as no info; until their records are found or updated, they should be considered unevaluated for the NRHP. Table 6 summarizes these findings by Study Area.

Table 6. NRHP Evaluations for Archaeological Resources in Study Areas

	Listed	Eligible	Not Eligible	Unevaluated	Collected	Unknown	TOTAL
B-16 Study Area							
Prehist.	-	-	2	4	-	5	**11**
Hist.	-	-	-	-	-	4	**4**
Multi.	-	1	-	-	-	-	**1**
B-17 Study Area							
Prehist.	-	8	46	5	1	-	**60**
Hist.	-	-	22*	-	-	-	**22**
Multi.	-	6	4	-	-	-	**10**
Unk.	-	-	-	-	-	1	**1**
DVTA Study Area							
Prehist.	-	1	16	7	4	1	**29**
Hist.	-	4	17	5	-	-	**26**
Multi.	-	1	1	1	-	-	**3**
Unk.	-	-	-	-	-	1	**1**
B-20 Study Area							
Prehist.	1	5	14	5	3	-	**28**
Hist.	-	-	2	-	-	-	**2**
Multi.	-	-	-	-	-	-	**0**
Total	**1**	**26**	**124**	**27**	**8**	**12**	**198**

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*One site is a non-contributing segment of an overall Eligible Site.

Prehistoric Chronological Data

Chronological data exists for at least 42 of the sites listed above. Two of these sites have yielded radiocarbon age estimates. A far Western tested site which yielded a Late Prehistoric hearth dated to 320 ±30 B.P. The Charlie Gomes site yielded two Late Archaic dates from a human tooth from burial 1-B (1250 ±40 B.P.) and charcoal from animal bone Feature 3 (1160 ±50 B.P.). Projectile point tallies from these 42 sites in the proposed Study Areas totals 254 specimens within eight specific types and two generic size groups (see Table 7). As can be seen, at least one specimen is known from each Study Area, and the highest count is from B-20. However, it should be noted that 164 of the 174 points from B-20 come from salvage recovery and excavation of the Charlie Gomes site (Dansie 2011). Six other sites in the B-20 area contain an additional 36 points, but the site forms do not provide detail on types so they were not included in this list.

Table 7. Projectile Point Summary in the Study Areas

	Projectile Point Type										
Study Area	**Dsrt**	**Rsgt**	**Elko**	**Gtcl**	**Hmbt**	**LSN**	**Pnto**	**GBSS**	**Arrow**	**Dart**	**Total**
B-16	1	-	-	-	-	-	-	-	-	-	**1**
B-17	17	14	10	2	8	1	-	3	3	-	**58**
DVTA	1	4	7	4	2	-	-	-	1	2	**21**
B-20	12	108(4)	25(1)	7(1)	13(2)	-	1(1)	7	1(1)	-	**174**
Total	**31**	**126**	**42**	**13**	**23**	**1**	**1**	**10**	**5**	**2**	**254**

*Dsrt, Desert series; Rsgt, Rosegate series; Elko, Elko series; Gtcl, Gatecliff series; Hbmt, Humboldt; LSN, Large Side-notched; Pnto, Pinto; GBSS, Great Basin Stemmed series; Arrow, arrow-sized; Dart, dart-sized. Numbers in parentheses represent the number of points from sites other than 26CH473.

Raw counts of projectile points can help to highlight general patterns and presence/absence within the region, but are poor indicators of occupation intensity alone. When the totals of each type are divided by the amount of time (in years) each persisted and multiplied by 100, the resulting value represents the number of projectile points per century. Assuming these points were created to hunt and capture large game, that value may more accurately represent increased or decreased hunting intensity of artiodactyls, but not necessarily the relative importance of large game in the diet (Hockett 2009:173). Figure 7 depicts the results once collapsed into temporal period (with and without the large Charlie Gomes collection). Interestingly, when the large Charlie Gomes collection is not included, Desert series points are the most common, followed by Rosegate. When that collection is included, Rosegate series points become over twice as common as Desert series. This highlights the importance of the Charlie Gomes site during the Late Prehistoric period, which included a large cache of projectile points. The general pattern (including the Charlie Gomes collection) very closely parallels that observed at open-air sites across the Great Basin by Hockett (2009:Fig 3) in which point types generally increase through time, then spike with the Rosegate series, then drops in the Late Prehistoric period. These results, then, may suggest that the Late Prehistoric period witnessed the highest intensity of artiodactyl hunting. On the other hand, taphonomic processes may explain the lower number of early projectile point types; i.e., early points have existed far longer and would have been susceptible to a much greater degree to various taphonomic processes such as burial, destruction, etc. since their initial manufacture and discard resulting in far fewer being located on the surface of recorded sites.

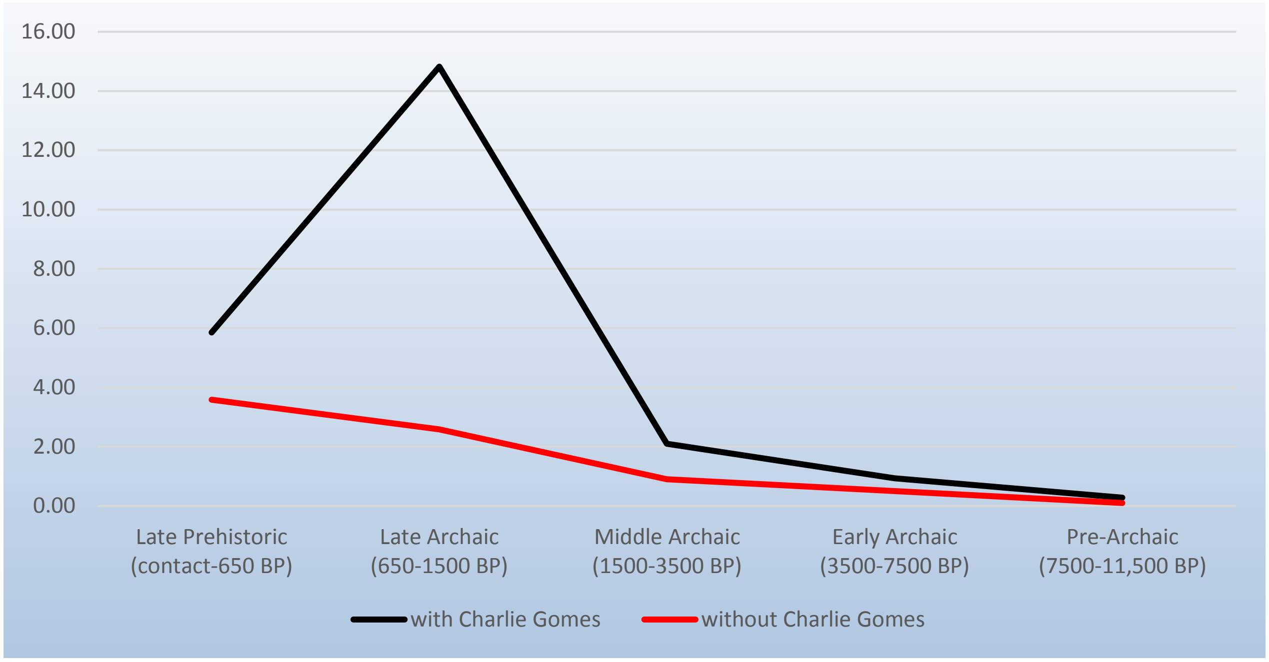

Figure 7. Projectile Point type density value per century by chronological period.

Known but Not Recorded Resources

A review of the previously recorded sites on file at the various BLM offices and SHPO identified a number of Carson City District Agency Site numbers that were assigned to historic mines, townsites, mining camps, ranches, station houses, and ruins that were never fully recorded on IMACS recording forms. These sites originally appear in Pendleton et al. (1982:Table 4). Those within the proposed Study Areas (n = 9) were all detailed by Alvin McLane, but the descriptions come from various reference materials, such as Harris (1973), Mining and Engineering World (1915), Paher (1970), Ross (1961), Shamberger (1973), Willden and Speed (1974), as well as various USGS topographic quadrangles and General Land Office (GLO) plat maps. It is unclear if these locations were physically located and minimally recorded or simply described based on historic records. No IMACS records exist for these sites and neither have they been evaluated for their NRHP eligibility. As such, these resources are referred to as “known but not recorded” (KBNR) sites.

One KBNR site, the King Mine (03-1998), did have additional work completed to deal with existing safety hazards (open shafts). As part of that project (Livingston 2011), nine mine closure forms were created and are considered associated with the King Mine site (03-1998), despite lacking a full recordation of the King Mine site on IMACS recording forms. These closure forms were completed as part of a cultural resources assessment of abandoned mine hazards proposed for permanent closure of each hazardous shaft/adit. Each was either barricaded with fences, bat grates, or culverts (Livingston 2011).

The other eight KBNR sites may include standing or collapsed structures/architectural resources based solely on their descriptions. One KNBR site (Eagleville Mine) retains a standing ore chute according to recent aerial photos. It is unknown if standing architectural resources are present at any of the other known sites as this information was not reported on the original site forms.

Architectural Resources

Few architectural resources have been recorded in the Study Areas. Two resources occur within the Dead Camel Mountains and adjacent Lahontan Valley of the B-16 Study Area. These resources include a standing building known as the Control Tracker Building, Target Scoring Building, or the Helicopter Visit, Board, Search and Seizure (HVBSS) Building and its associated structures inside a fence, and a transmission line associated with the above building that connects the HVBSS building with other towers in the current B-16 Study Areas (JRP Historical Consulting 2012). Both of these structures were considered not eligible for NRHP listing.

Several archaeological sites in Dixie Valley contain architectural resources that occur adjacent to or overlapping with the current NAS Fallon Study Area and proposed DVTA expansion Study Area. The Dixie Valley Settlement Area was first established in the 1910s and occupied continuously through the 1990s when the Navy took possession (Creger and Bowyer 2001:25). Many of the homesteads in the Dixie Valley Settlement Area consist of houselots enclosed by cottonwoods and tamarisk, fencing, building remains, domestic refuse, and occasional wells. Standing structures are few, but several “melted” adobe walls are present along with an adobe bee structure. Post World War II and more recent refuse, machinery/vehicles, and structures are also present on some homesteads. These resources were originally recorded and evaluated as historic archaeological sites (Bloomer et al. 1999). Two years later, Creger and Bowyer (2001) addressed SHPO evaluation comments by rerecording them on architectural Historic Resources Inventory Forms and re-evaluating them under all four NRHP criteria. Site boundaries were expanded to include the entire patented land parcel on which each homestead resides. They determined four of 10 sites with structural remains eligible for NRHP listing.

Additional archaeological sites in the Study Areas may contain standing or collapsed architectural resources, ruins, or foundations. It is unknown, but possible that standing architectural resources are present at the above KBNR sites, and a standing shack was recorded along the west side of Chalk Mountain in the DVTA Study Area. In 1980, the Hercules Camp included a standing structure and possible ore chute (McLane 1980:photos in CCDO files). Two decades later, Davis (2000, CR3-1998) provided a full recording of the site but reported no standing structures. As all of these sites, except the KBNR and two B-16 architectural resources, were recorded as archaeological sites, they also appear in the archaeological section below.

Traditional Cultural Properties

The CCDO BLM provided a list of important Ethnohistoric/Tribal resources (referred to here as Traditional Cultural Properties) they documented through direct interviews with tribal member or through interviews conducted for ethnographic overviews by academic or professional applied cultural anthropologists. While the list does not represent all places that are culturally important to tribes, it provides meaningful information about certain areas and the functions they played in tribal lifeways. Several of them are noted as important due to their potential for archaeological sites, whereas others were used as food or other resource gathering locations, places of healing, or places that play a significant role in creation stories. Additional information on Tribal resources, history, and the like can be found in Applied Cultural Ecology, LLC (2017) and Tiley and McBride (2013).

Historic Survey Plat Maps

A search of GLO and BLM survey plats was conducted online using the BLM’s Public Land Records website. A total of 86 historic survey plats was identified for the proposed Study Areas. Coverage within each of the Study Areas varied greatly, and the available plats were predominantly centered on existing transportation corridors, mining districts, and areas that had been settled by ranchers or farmers. Barren and mountainous regions were often never fully "surveyed" and mapped by GLO. As such, these historic maps can depict features that would now be recorded as cultural resources and provide their approximate locations and ages. Commonly depicted cultural features on historic plats can include named and unnamed roads, wagon routes, trails, railroad lines, utility lines, structures/buildings, ranches and associated outbuildings and fences, mining features, townsites/mining camps, and even Native American resources, such as corrals and villages. Similarly, they can be of use in determining water levels in lakes, previous river alignments, and other natural features since modified by modern construction.

The earliest plats available for the Study Areas date to 1868 and 1869 and depict features associated with and important to the early settlement of the region, including the Carson River, Sand Springs Station, Reese River Road, and other roads that became the blueprint for later travel in the region. There is a gap in dated surveys until 1881-1884, for which there are 15 plats available. Only three plats were available for the 1890s and coverage is sporadic after that, with only a few plats available for each decade onward. The most recent plats date to 1970 and 1971, but they were surveyed in the late 1960s. Historic features were depicted by the GLO and BLM on survey plats that were identified for each of the Study Areas. The historic features may or may not continue to exist today, and may or may not have already been recorded as archaeological or architectural resources. However, they represent potential resources in the Study Areas of which to be aware.

Bravo-16 Study Area

Seven survey plats spanning 1869 to 1971 were identified for the B-16 Study Area. . Though plats were available for most of the B-16 Study Area, very few historic features were depicted within this area. Those present include various unnamed roads and a gate. The "Old Pony Express Road" does not cross into the Study Area. Hooten Wells is also too is outside the Study Area.

Bravo-17 Study Area

Only eight historic survey plats (spanning 1869 to 1970) were identified for the B-17 Study Area, which spans portions of 16 townships. Most of the depicted features are roads, including roads to Schurz, Downeyville, Rawhide, Eagleville, and Hot Springs. The Rawhide Mining District encompasses most of Sections 5, 8, and 9 and southwestern quarter of Section 4, though none of the patented mine claims are located within the proposed Study Area. Other mine features include the "U.S.C. & G.S. Mine" in the eastern portion of Section 32 on the 1968 GLO plat. At the north end of the Study Area associated with B-17, US 50 is shown crossing the north edge of the 1970 plat. In the earlier 1917 plat and 1936 plat, US 50 is shown as the Lincoln Highway.

Dixie Valley Training Area Study Area

Twenty-four historic survey plats spanning 1868 to 1969 out of 33 townships were identified for the DVTA Study Area. As with the B-17 Study Area to the south, plats were not available for several areas. This includes much of the Study Area in the Stillwater Range and portions of Dixie Valley itself. As with the Study Area directly south, roads were the most commonly depicted historic feature and included various networks of intersecting roads throughout Dixie Valley. Named roads include the "Lincoln Highway" (US 50), "Dixie Valley Road", "Jobs Toll Road", "Road to Salt Marsh", "Road from Salt Marsh to Winnemucca" , road "To Wonder" and "To Bench Creek", road "To Pleasant Valley and Winnemucca" and "To Lincoln Highway." The DVTA Study Area also includes various named residences – often with fields, wells, or other ranching features – that were well connected by these road systems.

Mining activity is strongly depicted, particularly around the Wonder and the Chalk Mountain mining districts. Few features are represented near the Jobs Peak and I.X.L. mining districts, but this is due to plats either pre-dating mining efforts or plats are missing for those areas. Within the Wonder Mining District, there are over 70 patent mining claims (43 of which are named) that are within or cross into the proposed DVTA Study Area. More are likely present as the one plat was not available. Three named patent mining claims also appear in the Chalk Mountain Mining District in Sections 14 and 23 of the 1969 plat for T14N, R34E.

Bravo-20 Study Area

Sixteen GLO plats spanning 1882 to 1914 were identified for the proposed B-20 Study Area which is the only portion of the project area for which there is complete historic GLO coverage. Because of its location in the Carson Sink, most of the plats made mention of the "dry bed containing rich salt deposits." Most of the cultural features were mapped at the edges of the Carson Sink, and included "Springer's House" in Section 26 of the 1882 plat, "Stinsons House" in Section 18 of the 1882 plat, and "J. Fondway's House" in Section 6 of the 1882 plat. Various named and unnamed roads were depicted, including roads to Unionville, Oreana, and Brown's Station.

Most of the named roads on these plats were outside the Study Area and included: the "Road from Stillwater to White Plains" and "Road from Stillwater to Browns Station" in the southwestern portion of the 1882 plat; the "Road to Star City" in the eastern half of the 1882 plats; and the "Road from Lovelocks to White Cloud" in the eastern half of the 1907 and 1908 plats. Roads and various named residences along the Humboldt River are depicted north of the Study Area in the north half of the 1894 and 1908 plats.

5. PREHISTORIC CONTEXT AND RESEARCH THEMES

This chapter provides an overview of prehistoric culture history that covers much of western Nevada, and highlights specific areas within the Study Area, including the Carson Desert, Dixie, Fairview, and Gabbs valleys, as well as intervening mountain ranges like the Stillwater Range, Fairview and Slate Mountains, the Dead Camel Mountains, and others. Following this overview are highlighted research themes and data needs to evaluate prehistoric cultural resources for NRHP inclusion. Additional themes may be found in the NAS Fallon ICRIMP (Smith and Michel 2013) as well as Nevada State Historic Preservation Plan element entitled “Prehistoric Wetlands Adaptations in the Carson Desert and the Humboldt Sink” (Elston et al. 1992).

PREHISTORIC BACKGROUND

This discussion draws from a myriad of sources but is based largely on works by Elston (1982, 1986), Kelly (1985, 2001), Janetski and Madsen (1990), Raven and Elston (1988), Thomas (1985), Zeanah et al. (1995), and several articles within Hemphill and Larsen (1999), all of which have some degree of focus within the Lahontan Basin. Figure 8 highlights various regional chronologies developed for the local area or surrounding regions as well as over 100 calibrated radiocarbon age ranges from cultural remains or sites in the Carson Desert area. It should be noted that while many local chronologies with various named culture phases are present in the early literature, many were created based on minimal data, survey data alone, presumed correlations with gross scale environmental shifts, and/or what would be considered today poor chronological hygiene. In discussing the prehistory of the Carson Desert and Stillwater Mountains, Kelly (2001:14) employed the cultural chronology originally developed for the central Great Basin (Thomas 1981), which he acknowledged was utilized strictly for the ease and precise chronological control associated with diagnostic projectile points and was not meant to presume similarity in culture contents or adaptive strategies between the two areas. In a similar vein, Elston et al. (1988) found too many similarities in feature types, as well as artifact, faunal, and floral assemblages of tested sites of various ages to clearly define distinct cultural phases in the Stillwater Marsh area and thus circumvented this problem by dividing time based solely on the diagnostic projectile point ranges from the central Great Basin (Thomas 1981) and removing the associated culture phase names. Following their lead, we correlate projectile points with associated adaptive strategies as a means for distinguishing prehistoric components rather than attempting to fit them within inaccurate or non-local cultural phases (Figure 9). The discussion below provides gross environmental eras as the basis for the following discussion, and, within each, the adaptive strategies and diagnostic tools employed. Dates are provided in radiocarbon years before present (B.P.) unless otherwise stated.

Terminal Pleistocene-Early Holocene/Pre-Archaic (11,500-7500 B.P.)

The last glacial epoch (Pleistocene) was a time of lower average temperatures, increased effective moisture, and reduced evaporation (compared to present conditions), resulting in the establishment and persistence of large pluvial lakes that covered many now-dry valleys across much of Nevada and the Great Basin (Grayson 2011; Mifflin and Wheat 1979). Towards the end of the Pleistocene, as temperatures were warming and becoming increasingly dry, the pluvial lakes were retreating from their terminal Pleistocene highstands. By the time of human arrival (perhaps between 14,500-13,000 years ago or more), sizeable (but much reduced) lakes would have been present across much of the proposed Study Areas, the largest of which being Lake Lahontan that covered Lahontan Valley and connected numerous other basins across western and northern Nevada with a highstand at roughly 15,500 years ago (Adams et al. 2008). Other valleys in the Study Area contained water as well during the terminal Pleistocene, such as Lake Dixie at an elevation of 1097 m above sea level (masl) in Dixie Valley and Lake Labou at roughly 1274 masl in Fairview Valley (Mifflin and Wheat 1979; Reheis 1999). Around 11,000 B.P., a sudden reversal of conditions (possibly triggered by a shutdown of the Atlantic thermohaline circulation system) plunged the northern hemisphere back into a cold/wet cycle that lasted over a millennium; an event known as the Younger Dryas (Grayson 2011:104-105). Shortly thereafter, conditions returned to a warming/drying trend, marking the beginning of the Holocene.

Prehistoric adaptive strategies in the Great Basin remain largely undefined prior to 10,000 B.P., though there is ample evidence that the archaeological record extends to 11,500 years ago or even earlier. Typically, sites of terminal Pleistocene age have been identified based on the presence of fluted-base projectile points similar to the well-known Clovis forms typically associated with ancient cultures of the Great Plains. Termed "Western Clovis" (Tuohy 1974; Willig and Aikens 1988), "Black Rock Concave Base" (Clewlow 1968), "Great Basin Concave Base" (Pendleton 1979), or "Great Basin Fluted" (Beck and Jones 2010; Grayson 2011), many fluted and concave base points have been found in various locations throughout the Great Basin. Many of the earliest discoveries were made in the southern deserts (e.g., China Lake and Mojave Desert), but others came from western and central Nevada at Lake Tonopah and Mud Lake (Campbell and Campbell 1940; Kelly 1978; Pendleton 1979; Tuohy 1968, 1969), in the Black Rock Desert (Clewlow 1968), and at the Lake Hubbs/Sunshine Well in Long Valley (Hutchinson 1988; Tadlock 1966). Later discoveries are also credited to Jakes Valley, Steptoe Valley, Railroad Valley, the Park Range, and many other locations (Amme 1985; Hutchinson 1988; Johnston 1987; Polk 1982; Price 1986; Zancanella 1988). Recent discoveries and analyses of fluted and concave base points at the Parman Locality (Smith 2006, 2007), Jakes Valley (Estes 2009), and at Carson Lake (Clay et al. 2012; Clay and Neidig 2013; Estes 2016a) continue to expand the geographic reach of these artifacts across Nevada and provide more opportunities for dating and evaluation.

Where they occur, cultural assemblages associated with fluted or concave base points consist largely of flaked stone artifacts such as bifaces and formally-shaped unifacial flake tools, such as steep end scrapers, notches, and gravers. The prevalence of bifaces in Clovis and fluted point assemblages has been interpreted as signifying a need for a generalist, portable technology among extremely mobile groups (Dincauze and Curran 1983; Kelly and Todd 1988; Meltzer 1993; Simms 1988). The notion of high residential mobility during terminal Pleistocene times has drawn support from innumerable examples of long-distance lithic transport and from models that predict high raw material source variation in the lithic assemblages of mobile groups (Basgall 1989; Goodyear 1979; Torrence 1989) and strategies of extended tool curation and reuse (Nelson 1991; Shott 1989). Of late, it has also been argued that rare Great Basin discoveries of "Clovis blades," typically defined as being large with distinctive curvature, are indicative of Clovis technology and therefore occupation (Beck and Jones 2007, 2009, 2010). These blades are common in the Southern Plains, but become rarer to the north and west (Beck and Jones 2010).

Unfortunately, we have relatively little firm evidence for the age of fluted and concave base projectile points in the western Great Basin. In fact, only two archaeological sites in Nevada and California have yielded fluted points from radiocarbon-dated contexts. At the Henwood site in the central Mojave Desert, a date of 8470 ±370 B.P. was obtained from a buried component that held a single fluted point and various Lake Mohave-type artifacts (Douglas et al. 1988). This date may be too young for a fluted point, and it is possible the artifact was picked up and reused later in time (perhaps during the Lake Mohave period), or that the date itself is somehow in error. A better situation occurs at the Sunshine Locality, where a single fluted point was found beneath charcoal dated to 10,340 ±60 B.P.—providing a limiting terminal date for that specimen (Beck and Jones 2009; Huckleberry et al. 2001). Elsewhere in the Great Basin, fluted and concave base points from a few surface localities have been roughly dated by relative methods. At the Dietz site in south-central Oregon, a horizontal separation between fluted and stemmed complexes implies a greater antiquity for fluted points (Willig 1984, 1988, 1990). At the same location, Fagan (1988) has argued for technological distinctions between fluted and stemmed point assemblages.

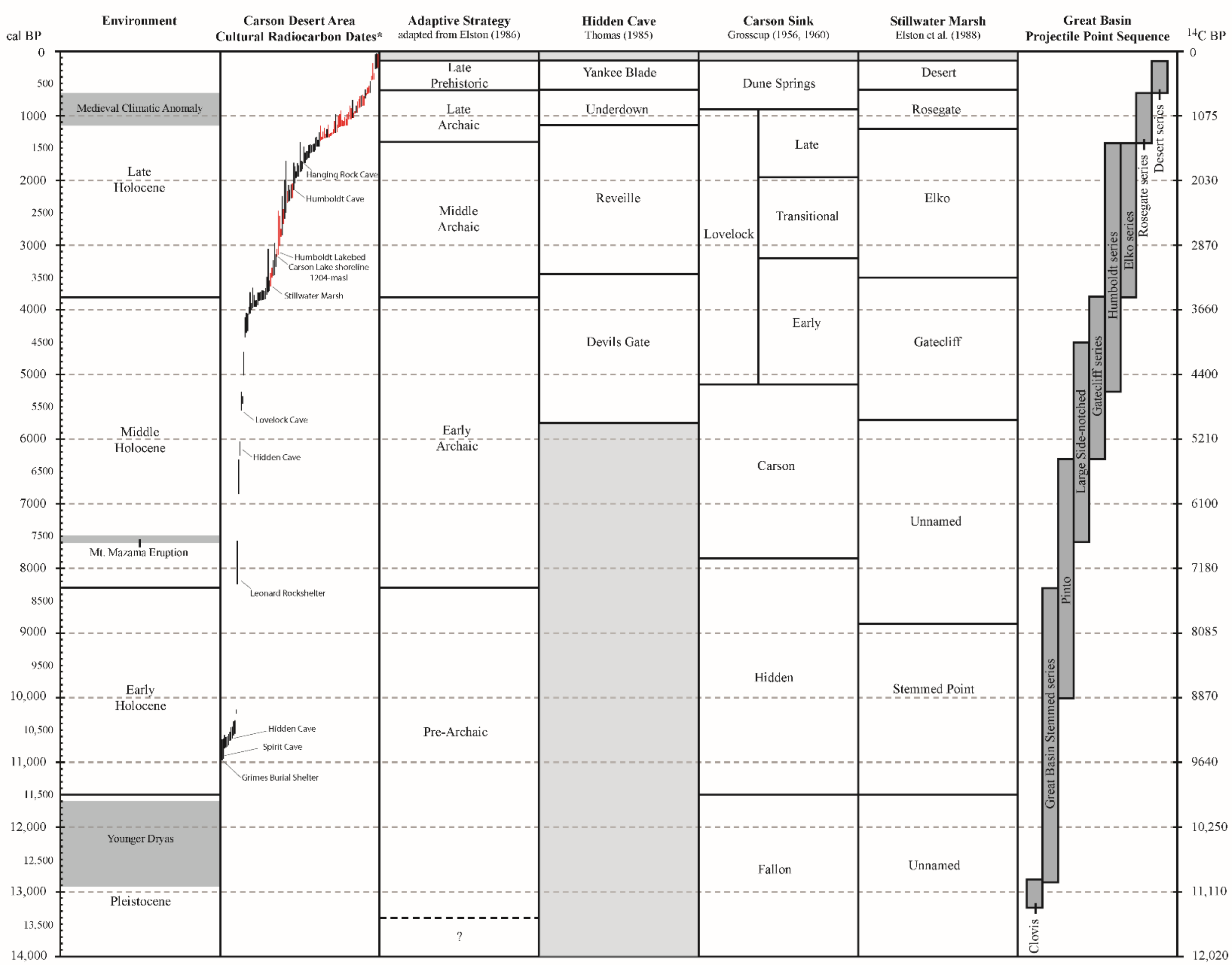

Figure 8. Prehistoric regional chronology.

Note:*123 radiocarbon/AMS age estimates aligned from earliest to latest along x-axis with calibrated 2-sigma age range on y-axis. Earliest dated cultural remains are highlighted from key regional sites. Ages in black indicate cave/rockshelter sites; ages in red indicate open-air sites.

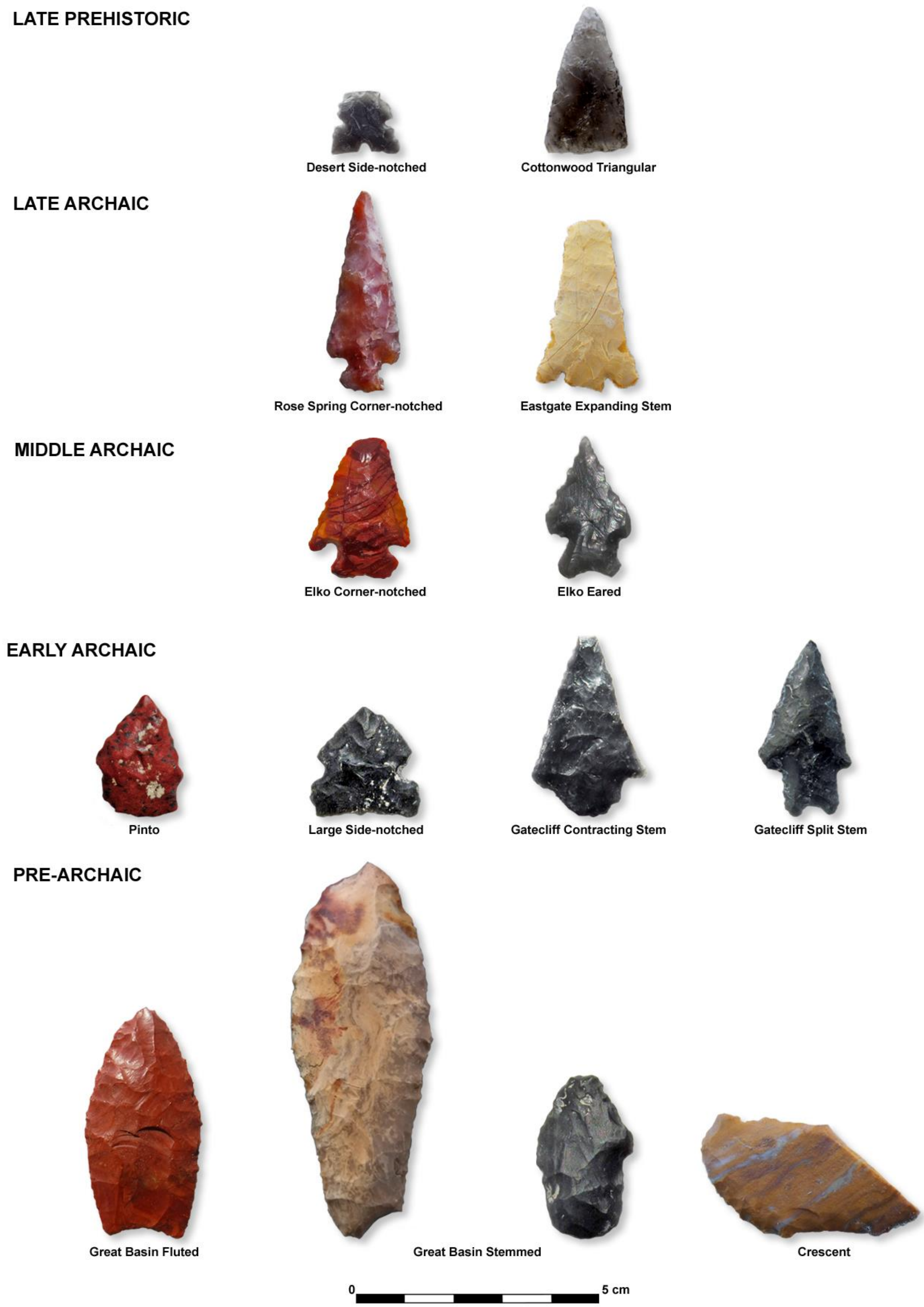

Figure 9. Common Projectile Point types in the Western Great Basin.

In general, stemmed point complexes in the Great Basin are better dated than their fluted counterparts. For example, Grayson (2011) and Beck and Jones (2010) discuss several localities in Nevada where stemmed points and their inclusive artifact assemblages occur in radiocarbon-dated contexts. An important though controversial site, Smith Creek Cave, yielded seven dates on Mount Moriah components that range from 10,570 ±160 B.P. to 11,140 ±120 B.P. (Bryan 1979; but see Goebel et al. 2007). Five other Nevada sites have also yielded radiometric dates in association with Great Basin Stemmed projectile points, including Bonneville Estates Rockshelter (10,560 ±50 [Graf 2007]), the Sunshine Locality (10,700 ±180 [Beck and Jones 2009; Huckleberry et al. 2001]), Handprint Cave (10,740 ±70 [Bryan 1988]), Falcon Hill (8380 ±120 B.P. to 9540 ±120 B.P. [Hattori 1982]), and Last Supper Cave (10,280 ±40 B.P. [Smith 2008; Smith et al. 2015], 8910 ±50 and 8160 ±50 [Grant 2008; Smith et al. 2015], and 8260 ±90 B.P. to 8960 ±190 B.P. [Layton 1970, 1979; Layton and Davis 1978]).

Recent investigations by Charlotte Beck and George Jones at the Sunshine Locality in southern Long Valley and in adjacent Butte Valley and Jakes Valley (Beck and Jones 1990, 2007, 2009) have bettered our understanding of terminal Pleistocene-early Holocene adaptive relationships in eastern Nevada. Of greatest significance to the present discussion is the recovery of 17 fluted points, 73 unfluted concave base points, and 708 Great Basin Stemmed points from the Sunshine Locality alone. Nearly all of these artifacts were surface finds, but one fluted point, a crescent, and a single stemmed point were recovered in good association with dated strata. The fluted point and crescent were unearthed below charcoal that was dated to 10,340 ±60 B.P. (Huckleberry et al. 2001), while the stemmed point was found atop a charcoal lens that yielded a date of 9820 ±60 B.P. (Huckleberry et al. 2001; Jones et al. 1996); these dates reflect traditional wisdom concerning the temporal relationship between fluted and stemmed points, the former being slightly older than the other. Along other lines, metric analyses indicate that unfluted concave base points and fluted points are not both parts of a fluted blank-to-point manufacturing trajectory. Instead, Beck and Jones (2009) suggest that Sunshine fluted points are a derivative of Clovis and are thus slightly younger in age, while unfluted concave base points represent an altogether separate tool form that might be of even more recent antiquity.

In this light, Beck and Jones (2010) have reviewed evidence for the earliest manifestations of fluted and stemmed projectile points in the Intermountain West, including many of the dates and localities mentioned earlier in this discussion. One of their main points centers on the fact that most radiocarbon dates associated with fluted points in the region are younger than those for stemmed points, and that this may reflect the presence of humans in the West prior to the arrival of Clovis anywhere in North America. If Clovis and Great Basin Fluted points are not parts of the same technological tradition, it seems reasonable to conclude they are not of the same age. And, as posited by Alan Bryan many years ago (Bryan 1979, 1980, 1988), Beck and Jones (2009, 2010) raise the possibility that Great Basin Fluted and Great Basin Stemmed projectile points may represent the presence of two distinct human populations in the Intermountain West during terminal Pleistocene-early Holocene times, with Stemmed point makers predating Fluted point makers. Paisley 5-Mile Point Caves in Oregon have yielded Accelerator Mass Spectrometry (AMS) ages that seem to bracket Stemmed projectile points to the Clovis Era or perhaps just prior (Jenkins et al. 2012), adding to the debate that Stemmed points in the Great Basin are as old, or older, than Clovis. Other researchers stress caution about acceptance of many of the earliest dates from stemmed point assemblages, as they often are spurious, inconsistent, or derived from non-cultural materials (Goebel and Keene 2014; Goebel et al. 2007). To these researchers, the onset of the stemmed point tradition dates closer to the time of the Younger Dryas, and thus post-dates true Clovis technology.

In the Carson Desert and the immediate surrounding areas, Pre-Archaic sites are found in similar contexts as other Great Basin localities, primarily as surface assemblages along ancient shorelines. As seen in Figure 25 above, the earliest dated cultural material from the Carson Desert occurs well after the Younger Dryas. Spirit Cave, a well-known early site located in the Lahontan Mountains southeast of Fallon, yielded textiles and mummified and cremated remains of three individuals dating from roughly 9500-9000 B.P. (Tuohy and Dansie 1997). Paleofecal materials recovered from the Spirit Cave mummy included tui-chub, Lahontan redside/speckled dace, and suckers, indicating moderately swift and bottom water habitats, although suggestive of shallow waters based on the small size of the specimens (Eiselt 1997). Thus, we know that some of the earliest inhabitants in the area subsisted on fish from the nearby marsh/stream environments. Nearby sites in the Grimes Point Area also yielded Pre-Archaic archaeological materials. Warp-faced plain weave mats at Grimes Burial Shelter and Hidden Cave were dated to 9470 ±60 B.P. (Tuohy and Dansie 1997) and 9329 ±50 B.P. (Fowler et al. 2000), respectively. A single Great Basin stemmed point was also recovered from below Mazama ash deposits in Hidden Cave, though was presumed to have either washed into the cave or brought into the shelter by later activity (Pendleton 1985:206).

To date, no open-air Pre-Archaic sites in the Carson Desert have produced cultural radiocarbon dates. The Sadmat site (26CH163) is a large open-air surface scatter located north of Hazen on or near beach terraces presumably associated with a Younger Dryas-age lake in the Carson Sink (Graf 2001:28). Private collectors collected many of the artifacts during several trips to the site but both collections were donated to the Nevada State Museum in the early 1970s (Graf 2001). The assemblage includes 180 stemmed points, as well as a large biface and uniface collection with crescents. Graf (2001:120-121) interprets this site as a retooling station dominated by formal and heavily curated tools. Obsidian stemmed points from the assemblage overwhelmingly were from southern sources, including Mt. Hicks, Bodie Hills, Casa Diablo (Sawmill Ridge), and Sutro Springs to the southwest, with only a few sources in northern Nevada (Graf 2001:Table 5.1). A number of other open-air early sites containing fluted and stemmed point assemblages are present around the margins of Carson Lake in Range B-16, as well as more intermediate upland settings along the dissected and deflated fans of the Barnett Hills and Cocoon Mountains surrounding Diamond Field Jack Wash on Range B-19 (Clay and Neidig 2013; Estes 2016a). In the foothills of the Dead Camel Mountains on Range B-16 lands, Rice (2015) tested the Overlook Site , a discrete residential base camp used by stemmed point makers who focused on local raw material to replenish used and broken tools, primarily mid-to-late stage bifaces. The only date recovered from this site (10,930 ±30 B.P.) was on tufa laid down prior to occupation when the area was submerged by Lake Lahontan.

Middle Holocene/Early Archaic (7500-3500 B.P.)

This temporal interval includes both the middle Holocene (approximately 7500-5000 B.P.) and the Post-middle Holocene Transition (5000-3500 B.P.) (Tausch et al. 2004). The middle Holocene was a time of extreme aridity throughout much of the Great Basin and some areas may have been largely abandoned, particularly where wetlands disappeared, while others clearly saw continued occupation in different ways, either in the use of higher elevation landscapes, a focus on sources of water, or in the more extensive use of certain resources.

Changes in the archaeological record of the Great Basin prior to 5000 B.P. signal the beginning of the transition from Pre-Archaic to Early Archaic adaptive strategies. The timing of this shift, however, is not well defined. Leonard Rockshelter, near Lovelock, produced an atlatl foreshaft dated to 7038 B.P. and a burial dated around 5700 B.P. (Heizer 1951). Radiocarbon dates from Early Archaic sites at Winnemucca Lake range from about 7300 to 5200 B.P. (Elston 1986). At Shinners Site I in Falcon Hill, a grass layer found over a cache pit dates to ca. 6780 B.P.; organic debris from Guano Cave dates to ca. 6550 B.P); and a cedar bark cloth from a burial in Cowbone Cave dates to roughly 5720 B.P. (Elston 1986; Heizer and Hester 1978; Hattori 1982). In general, archaeologists recognize the onset of the Early Archaic by about 7000 to 6000 B.P. in the northern and central Great Basin (Elston 1986), although some researchers place it well after the Mount Mazama eruption, closer to 5000 B.P. (Hildebrandt et al. 2016; McGuire 2002).

Archaeological assemblages from this interval are typified by large side-notched projectile points (Northern Side-notched, Large Side-notched, etc.), and those bearing weak shoulders and indented or split-stem bases that diverge in both space and time with southern Great Basin forms (Pinto) and northern Great Basin forms

(Gatecliff series). The Pinto type (Amsden 1937; Campbell and Campbell 1935; Rogers 1939) is a more robust form with a concave or notched base more commonly associated with the Inyo-Mono region of eastern California and Mojave Desert (Basgall and Hall 1993; Delacorte et al. 1995) dated from 8500 to 5500 B.P. (Basgall 1993; Basgall and Hall 2000). Recent research in the eastern Great Basin, however, indicates the Pinto influence extends and may be just as old as Great Basin Stemmed Series assemblages. Duke (2011) and Hamilton (2012) discuss Pre-Archaic assemblages of Great Basin Stemmed Series projectile points occasionally mixed with Pinto points, suggesting the possibility of contemporaneity. Obsidian hydration results from these assemblages indicate a significant overlap in hydration rims, bolstering the argument that they co-existed during the Pre-Archaic period, but that only the Pinto forms continued on into the Early Archaic. In addition, Hockett (1995) identified an early and late style of split-stemmed projectile point in northeastern Nevada using obsidian hydration. These studies indicate that the Pinto type may not be geographically constrained to southwestern regions, and may also be older than originally thought. Large Side-notched or Northern Side-notched points are typically found in the northern Great Basin, but they are also distributed across western and central Nevada and tend to date between 7000-5000 or 4000 B.P. (Delacorte 1997; Gruhn 1961; Hildebrandt et al. (2016); Layton 1985; O'Connell 1975; O'Connell and Inoway 1994; Orvald and Giambastiani 2012).

The more gracile split-stem points have been described under a variety of local terms including Little Lake (Harrington 1957; Bettinger and Taylor 1974), Silent Snake (Layton 1970), and Bare-Creek Eared (O'Connell 1971) that were all later combined into the inclusive Gatecliff series by Thomas (1981) and are dated mainly between 5500 and 3500 B.P. (Basgall 1993; Basgall and Hall 2000; Thomas 1981), although Hildebrandt and others suggest Gatecliff may extend through the Middle Archaic (Hildebrandt and King 2002; Hildebrandt et al. 2016). This period roughly coincides with the post middle Holocene transition, which was still warm and dry, but punctuated with short, irregular cool and wet spells (Tausch et al. 2004; Wriston 2009). Humboldt series projectile points also first appear during this period, but are generally considered poor temporal markers due to their long persistence (approximately 4600-1500 B.P. in Gatecliff Shelter [Kennett et al. 2014; Thomas 1981]). Other researchers, such as Hildebrandt et al. (2016) and Delacorte (1997), identified them primarily within Early Archaic components (7000-3500 B.P.). Flaked stone artifact assemblages of this period are also characterized by leaf-shaped bifaces, formal unifaces, flake tools, and various core-cobble implements (Basgall 1993; Campbell and Campbell 1935; Delacorte et al. 1995; Hunt 1960; Rogers 1939). Raw material variability is greater than in more recent assemblages, presumably indicating a high degree of residential mobility in settlement strategies. The use of milling equipment increased substantially during the middle Holocene, although its morphology reflected the importance of portability and less concern for intensive shaping (Basgall 1993, 2000; Basgall and Hall 1994). Grayson (2011) attributes the increased use of small seeds during the middle Holocene to the drying of regional climates and a resulting decline in the production of other important resources, particularly those in wetland settings. While Catlow twining may have been introduced in the Pre-Archaic period, it became more common in the Early Archaic (Hattori et al. 2001) in association with multiple-warp and spiral-weft woven sandals. Later in this period, coiled basketry and Lovelock Wickerware appear as twining declines (Hattori et al. 2001).

Human groups began to regularly occupy and utilize rockshelters and caves in lowland areas, using them primarily for short-term shelter and long-term storage. Sporadic use of these shelters occurred until about 5000 B.P., when Early Archaic occupations in the Lahontan Basin became more abundant, judging by the numerous sites known in the Winnemucca Basin, Humboldt Sink, and Carson Sink. Some of these sites demonstrate the regular use of cache caves (see below), a pattern most evident during periods when shoreline lacustrine resources were abundant. Hidden Cave is one such cache cave that supports evidence of Early Archaic use of Lahontan Valley and the Grimes Point area. Its record of diagnostic projectile points (n = 201) is dominated (76 percent) by specimens of the Gatecliff series and it yielded six radiocarbon dates on cultural materials ranging from 5365 to 3520 B.P. (Thomas 1985), as well as 12 dates on human coprolites spanning 3700-3450 B.P. (Rhode 2003). Bat guano associated with archaeological remains may date the earliest use of Lovelock Cave to 4700-4300 B.P. (Heizer and Napton 1970). Open air sites in lowland areas within Stillwater Marsh contain Early Archaic point types (Gatecliff series), suggesting initial occupation occurred during this time, but the earliest radiocarbon dates are of Middle Archaic origin, around 3300-3200 B.P. (Raven and Elston 1988).

Early Late Holocene/Middle Archaic (3500-1500 B.P.)

Climatic conditions improved during the late Holocene around 3500 B.P., becoming cooler and wetter than the previous interval (Grayson 2011; Tausch et al. 2004). Dramatic changes in Great Basin subsistence adaptations beginning in the Middle Archaic produced a wide variety of temporal and spatial differences in archaeological patterning. Not only does the number of archaeological sites dating to this period increase markedly over the previous interval, but attendant material remains diversify considerably in terms of functional specialization and stylistic/cultural affinity. These changes, along with an “explosive” increase in rock art (Delacorte 1997:15), imply a drastic rise in cultural complexity and increased settlement centralization throughout the Great Basin.

As discussed by Delacorte (1997), Middle Archaic sites in the Great Basin are widespread and highly variable in size, function, and complexity. Along the eastern front of the Sierra Nevada there are large Middle Archaic settlements at Bordertown (Elston 1979), Hobo Hot Springs (Elsasser 1960), and the Steamboat Hot Springs locality (Elston and Davis 1972; Elston and Turner 1968). Many other Middle Archaic sites have been investigated elsewhere in Nevada, at places like Trego Hot Springs (Seck 1980), and along the Truckee and Humboldt rivers (Elston et al. 1981; Rusco et al. 1979; Tuohy and Clark 1979), not to mention the more famous cave sites in the Humboldt/Carson Sink area such as Hidden Cave (Roust and Grosscup n.d.; Thomas 1985; Wheeler and Wheeler 1944), Lovelock Cave (Grosscup 1960; Heizer and Napton 1970; Loud and Harrington 1929; Napton 1969), Leonard Rockshelter (Heizer 1951, 1956), Humboldt Cave (Heizer and Krieger 1956), Hanging Rock Cave (Tuohy 1969), and the Winnemucca Caves (Orr 1974) that either witnessed initial use or increased utilization during this time. While open-air sites served a variety of purposes, as residential bases, short-term camps, task-specific procurement or processing sites, lithic quarries and workshops, and hunting/butchering camps, most cave sites were primarily “cache caves” used to store perishable subsistence gear (e.g., fishing nets and tackle, baskets, duck decoys, textiles) and were not used for residential occupation (Kelly 2001; Thomas 1985). This diversity of site types, along with the appearance of formal house pit features at places like the Humboldt Lakebed site, Marble Bluff, and Karlo (Elston 1986; Grosscup 1956, 1960; Livingston 1986; Riddell 1958; Tuohy and Clark 1979), indicates that Middle Archaic settlement patterns in the Great Basin were highly regularized, involving a network of interrelated residential and procurement sites rather than a broad distribution of residential sites.

This is indeed evident across western and central Nevada. In particular, Elko-series projectile points are extremely common and widespread in many different environments and landscapes, much more so than earlier dart-point forms. This fluorescence is often attributed to the more frequent establishment of task-specific sites by Middle Archaic groups, but it must also relate to increasing population sizes in Nevada and all across the Great Basin. As discussed by Grayson (2011), an increase in human populations may also have been influenced in part by the maturation of pinyon woodlands and by the amelioration of climates at the end of the arid middle Holocene. Whatever these factors were, it is rare to find a major archaeological survey in the region that has not identified an abundance of Elko-age sites, typically considered 3500-1500 B.P. in central and western Nevada (Thomas 1981). Recent research, however, has shown that Elko projectile points can date as early as 6900 B.P. from Elephant Mountain Cave in northern Nevada (Smith et al. 2013). While Elko points have previously been shown to have an early initiation date in northern and eastern Great Basin (Holmer 1986), the vast majority of Elko points in western and central Nevada fit within the more limited range between approximately 3500-1500 B.P. (Beck 1995, 1998; Holmer 1986; Thomas 1981).

The early part of the Middle Archaic also saw the rise and expansion of a major biface manufacturing industry, as evidenced by substantially heightened production at eastern California obsidian quarries (Gilreath and Hildebrandt 1997; Hall 1983; Ramos 2000; Singer and Ericson 1977), at the Tosawihi chert quarries in north-central Nevada (Elston 2006; Elston and Raven 1992), and at Sierran basalt quarries around Lake Tahoe (Bloomer 1997; Bloomer et al. 1997; Markley and Day 1992; McGuire 1997). Toward the end of the Middle Archaic, these production systems appear to have waned considerably, presumably in association with the introduction of bow-and-arrow technology that was less reliant on biface manufacture than were previous dart-point technologies (e.g., Gatecliff and Elko points). As the demand for toolstone during the Middle Archaic was probably greater in the western Great Basin than during earlier times, it is likely that local lithic sources in the Carson Sink and Stillwater Mountains witnessed peaks in exploitation prior to the onset of arrow point technology.

Ultimately, it seems that adaptive patterns in the Middle Archaic generally followed those that were initiated during the Early Archaic. In particular, a gradual shift toward greater organization and centralization in settlement patterns, a continued pursuit of high-ranked or easily captured animal species, and a growing importance of vegetal foods (and use of milling tools) are all trends that become strong during this period. In the Lahontan Basin between 3500 and 1500 B.P., human groups practiced a slightly more regular settlement pattern, shifting from upland to lowland camps during certain seasons. Lowland residential camps were fairly large, village-like sites established at the mouths of large rivers such as the Humboldt and Truckee (Jennings 1986) and in the Stillwater Marsh (Kelly 2001; Raven and Elston 1988). Presumably, the preference of such locations implies that Middle Archaic groups in the Lahontan Basin relied on riverine and lacustrine subsistence resources for much of the year. Zeanah et al. (1995) have argued that women's foraging strategies were focused on wetland habitats, especially from 4500 B.P. to 2000 B.P., when intervals of mesic climate, shifts in seasonal temperatures and precipitation, and fluctuations in stream flow were common. Since foraging locations often reflect where residential camps were based, these habitations would have occurred in marsh communities as well (Kelly 2001). Osteopathologies identified on skeletal remains of nearly 400 individuals recovered from Stillwater Marsh during salvage recovery after flood events indicates that males suffered increased osteoarthritis within the shoulder, hip, and ankle, suggesting they were more mobile and utilized more difficult terrain, likely for hunting purposes, than women, who had fewer such maladies suggesting a relatively more sedentary lifestyle (Larsen and Hutchinson 1999).

Late Holocene/Late Archaic (1500-650 B.P.)

A major theme to be drawn from the last two cultural periods relates to the intensification of subsistence strategies that culminated as a result of environmental amelioration, technological innovation, and long-term population growth. In many parts of Nevada and the Great Basin there are clear archaeological examples of shifts in subsistence organization that relate to the increased use of plant resources after about 1500 B.P. (Basgall and Giambastiani 1995; Basgall and McGuire 1988; Bettinger 1989, 1991, 1999; Delacorte 1990, 1995; Giambastiani 2004; Hagerty 1970; Pippin 1980; Thomas 1971; Wells 1983). These shifts were characterized by a diversification of diet breadth to include more low-return or labor-intensive foodstuffs (both faunal and floral), and were accomplished through the development or incorporation of new technology (the seed-beater, specialized baskets, and extensive milling features for bulk seed procurement; advent of the bow-and-arrow; pottery for cooking and storage) and/or by the adjustment of plant collection and processing techniques in an effort to extend plant harvests (green-cone pinyon collection and roasting; green-seed collection and flash-burning; dry storage). Population pressure, in combination with small-scale environmental changes, has been given much of the credit for increasing resource competition among Great Basin hunter-gatherers, thus necessitating some alteration of subsistence strategies. In addition to the above changes in material technology and extractive methods, extensive trade during the Late Archaic allowed human groups access to resources that may have been previously unavailable or hard to get because of geographic and/or political limitations.

A hallmark of the Late Archaic period is the introduction of bow-and-arrow technology, which likely occurred at different times within the various subareas of the Great Basin (Grayson 2011). Along the peripheries, this technology may have been introduced as early as 1800-1600 B.P., whereas in central Nevada, it appears slightly later in time, around 1500-1400 B.P. Coincident with this is a shift from the biface-heavy technologies of the past to flake-based technologies, largely because arrow points (Rose Spring and Eastgate types) needed to be smaller and lighter to affix to the reduced size of arrow shafts. The timing of this technological introduction roughly corresponds with the onset of the Medieval Climatic Anomaly (MCA), which occurs at different times across the Great Basin but generally falls within a wide period from approximately 1700 to 700 B.P. (Tausch et al. 2004:35-36), although others recognize a more narrow MCA window from roughly 1200 to 700 B.P. (Stine 1994; Nieto-Moreno et al. 2013). Throughout this anomaly, temperatures across the Great Basin inconsistently increased moderately to dramatically, causing epic droughts in some areas after 1400 B.P.; precipitation shifted to a late spring/early summer, causing tree lines to advance uphill; and winters were milder. Despite this warming trend, or because of it, pinyon appears to have expanded in the southern Great Basin and elsewhere (Tausch et al. 2004:36).

Other technological changes occurred during this period. For instance, living structures decreased in size and became somewhat less substantial than during the Middle Archaic (Estes 2014; McGuire 2002). While bow-and-arrow technology allowed for increased individual-style hunting of large mammals, many sites seem to reflect a shifting focus from large mammals to medium and small mammals, such as hares/rabbits (Estes 2014). This could be due to an increase in cooperative hunting with nets. Of course, the environment in which sites are located plays a key role in the types and variety of flora and fauna resources captured. Kelly (1985, 1999, 2001) conducted survey and excavations within the Stillwater Marsh during drought years that had exposed a number of Late Archaic house floor features, storage pits, and postholes, as well as numerous burials. Subsistence remains at these sites indicate a focus on wetland resources such as tui chub, waterfowl, bulrush, and cattail, with only minor use of bighorn sheep, mussel shell, and lagomorphs, while pinyon and ricegrass were completely absent (Kelly 1999:143). Similarly, recent excavations along the southern margin of the playa in Range B-16 indicate marsh resources, such as goose, duck, fish (minnows, suckers, and trout), eggshell, mussel shell, rabbit, bulrush, seepweed, and cattail were procured and processed during this period (Clay et al. 2014; Estes 2016a). Tested sites in the Stillwater Marsh (Dansie 2011; Raven and Elston 1988; Kelly 2001) produced abundant Late Archaic point types (Rosegate series) and radiocarbon dates, indicating that while occupation likely began during the Early Archaic and continued sporadically through the Middle Archaic, the Late Archaic occupations were the most intensive.

Terminal Late Holocene/Late Prehistoric (650 B.P.-Contact)

In western and central Nevada, the most obvious shift toward intensive subsistence practices involved strategic changes in the use of singleleaf pinyon (*Pinus monophylla*). While there is good evidence that pinyon nuts were a regular part of human diets in central Nevada at least since 3000 or 4000 B.P., there is even more convincing data that the focused use of and reliance on pinyon did not occur until much later, perhaps not even until the Late Prehistoric period, around 650-170 B.P. (e.g., Bettinger 1994, 1999; Delacorte 1990; Hildebrandt and Ruby 2003; Lechner et al. 2009; Madsen 1986). This may be due in part to the late (post-2000 B.P.) arrival of pinyon in many parts of the western Great Basin. Whatever its timing, the emergence of green-cone procurement, processing, and storage is demonstrated by the establishment of small, residential "pinyon camps" within contemporary pinyon ecotones. These sites often manifest rock ring house structures, circular stacked rock caches, and various ground stone tools (millingstones and handstones), and less frequently contain pinyon-collecting implements (pinyon poles, hooks, basketry) and other processing tools (e.g., pottery). There is no doubt that this type of procurement system existed at the time of Euro-American contact and continued through historic times; pinyon camps of ethnohistoric age reflect the incorporation of new technology (e.g., wire-fastened pinyon poles; pots and Dutch ovens replacing pottery) but testifying to the persistence of the green-cone collection strategy.

In an effort to explain this dramatic reorganization involving pinyon and other subsistence resources, archaeologists have argued that a Numic-speaking population rapidly spread throughout the western Great Basin around 1,000 years ago (Aikens and Witherspoon 1986; Bettinger 1994, 1999; Bettinger and Baumhoff 1982, 1983; Lamb 1958; Layton 1985; Sutton 1986). The model given most support would have Numic populations spreading north and east through the Great Basin, perhaps originating in southern Owens Valley or entering the basin from that area. Armed with the more intensive adaptive strategies outlined above, Numic groups either replaced or assimilated any pre-Numic populations already present through resource competition (Bettinger and Baumhoff 1982, 1983). Kaestle and Smith (2001) provide mitochondrial DNA (mtDNA) data that supports replacement of pre-Numic populations by Numic groups. However, Grayson (2011:331-332) argues that mtDNA fails to provide a full picture, as it is inherited only through females, but more importantly that the small sample size of prehistoric individuals, creates an artificial population spanning nearly 6,000 years rather than at any one moment in time. Delacorte (1995, 2008) has argued that the distribution of Desert-series points (Late Prehistoric period) across the Great Basin is reflective of the Numic Spread. Assuming that these point types (Desert Side-notched and Cottonwood) are distinctive Numic markers, their distribution and variability in age supports the notion that Numic speakers did indeed move northward from an eastern California homeland less than 1,000 years ago, perhaps only reaching parts of northern Nevada around 600 B.P. or later. Various forms of brownware pottery may also constitute a Numic signature, given consistency between their inferred ages (all probably younger than 1000 B.P.) and their inferred use in preparing bulk-processed plant foods (Eerkens 2003, 2004).

Grayson (2011) has recently reviewed the suite of evidence for the Numic Spread, including some new linguistic studies that posit alternative views regarding the prehistoric homeland of Proto-Uto-Aztecan (PUA) speakers (among which were the Numic). The traditional Numic Spread argument suggests that the ancestral Numic were maize farmers that came from Mesoamerica via the Southwest; upon reaching the Great Basin, they abandoned agriculture and returned to a foraging lifeway in order to best take advantage of the environmental conditions they encountered. In contrast, Merrill et al. (2009) have argued that maize agriculture was present in the Southwest by at least 4000 B.P. and, based mainly on linguistic data, that central Nevada was the original homeland of the PUA. In their scenario, arid conditions in the middle Holocene forced PUA foragers to the southwest edge of the Great Basin; from there, some groups moved east and became farmers (Southern Uto-Aztecan), while others remained and eventually spread back across the Great Basin (Northern Uto-Aztecan)—perhaps in accordance with the traditionally held timing of the Numic Spread (~1000 B.P.). From another perspective, Hill (2001, 2006) has also used linguistic data to argue that Numic speakers entered the southern Great Basin roughly 3,000 years ago and moved across the region between 2,000 and 1,000 years ago. This temporal scheme is not totally inconsistent with the standard model of Numic migration (in which the Great Basin was populated by Numic speakers 1,000 years ago), but both Merrill's and Hill's hypotheses appear contrary to the archaeological record of central Nevada. In the case of Merrill's argument, it seems unlikely that populations in central Nevada were large enough during the early-middle Holocene transition to necessitate a broad-scale migration in coping with drying climate; concerning Hill's argument, we might expect to see a much earlier dispersal of Numic traits in the archaeological record if they arrived in central Nevada more than 1,000 years earlier than generally accepted.

Ultimately, patterns of land-use intensification that began in the previous interval grew even more pronounced during Late Prehistoric times, and associated settlement patterns became increasingly centralized. The exploitation of high-cost, low-return resources was successfully conducted through the use of bulk-processing methods (e.g., involving pine nuts and grass seeds), foodstuff storage, and the communal hunting of smaller game (e.g., rabbits). Such practices may have been accomplished without the aid of major technological innovations (Delacorte 1997), but the basketry seed-beater (Bettinger and Baumhoff 1982), two-handed stone muller (Basgall and Giambastiani 1995), woven rabbit net, and other material items probably grew in importance as pieces of bulk/communal procurement technology in parts of the western Great Basin. Moreover, Delacorte (1997) has suggested a major shift in social organization was a contributing factor to intensified land-use, family-sized household groups having replaced larger extended-family groups as the main force in resource exploitation. This change allowed for more flexibility in residential mobility and raised incentives for individual production, giving family-sized units advantages over larger, band-sized units in terms of resource redistribution and cooperation. Bettinger (1999) has argued that this represents a change from an importance of "public" goods to that of "private" goods, in part influenced by the adoption of the bow-and-arrow and the advantages it gave an individual hunter.

While Late Prehistoric sites and projectile points are present in the area (generally restricted to open air sites), they are generally less common than Late Archaic sites and few Late Prehistoric sites have been investigated as thoroughly. No Desert series points were recovered from Hidden Cave, nor did it produce any radiocarbon ages indicating use during the Late Prehistoric period (Thomas 1985). Lovelock Cave yielded a few Desert series points and three Late Prehistoric radiocarbon dates on bulrush seeds and a human coprolite (Heizer and Napton 1970; Napton and Heizer 1970; Tuohy and Dansie 1997). Just outside Lovelock Cave, the Humboldt Lakebed site yielded over 400 Desert series points and possibly 47 undated shallow house floors (Heizer and Clewlow 1968; Livingston 1986) as well as a storage pit dated to 550 B.P. (Heizer and Napton 1970). Tested sites in the Stillwater Marsh appear to have only minimal Late Prehistoric archaeological evidence, suggesting only occasional use of the area (Elston et al. 1988; Kelly 2001). In addition to the few projectile points found there, two Stillwater Marsh sites yielded Late Prehistoric human remains dated to 660-290 B.P. (Kelly 2001). One explanation for the scant Late Prehistoric occupation of Stillwater Marsh provided by Elston et al. (1988:384) is potential shifting of the Carson River back towards Carson Lake in the southern portion of Lahontan Valley. Indeed, open air sites containing Desert series points and radiocarbon dates indicate use along the southern shorelines of Carson Lake within Range B-16 (Clay and Neidig 2013; Clay et al. 2014; Estes 2016b, 2016c) and in Rawhide Flat of Range B-19 (Clay and Neidig 2013).

Modern Conditions/Ethnohistoric (Post-Contact)

At the time of Euro-American contact, the western Great Basin was inhabited primarily by the Northern Paiute, such as the Sawawaktödö, Makuhadökadö, and Küpadökadö along the Humboldt River, the Wadadökadö near Honey Lake, the Huyuidokado at Pyramid Lake, the Aga'idökadö and Pakwidökadö around Walker Lake, and, in Carson Desert, the Toedökadö (Fowler 1989, 2002; Gilmore 1953; Heizer 1960, 1970a, 1970b; Kelly 2001; Loud 1929; Park 1938; Steward 1937, 1938, 1939; Stewart 1937, 1938, 1941; Wheat 1967).

The territory of the Toedökadö (also Toidɨkadɨ, or "Cattail-eaters") (Fowler 2002) has been redrawn by various researchers. The commonly used territory encompasses "all of the Carson Sink, some distance up the Carson River, Fairview Valley to the southeast of Carson Lake, Dixie Valley, and into the Clan Alpine Range" (Shimkin and Reid 1970) (Figure 10). But Stewart (1939, 1941) extended the territorial boundary farther east, across the Desatoya Mountains and near the Reese River Valley. Ethnographic and archaeological data suggest that these groups mostly relied on wetland communities as residential bases but adopted a mobile lifeway to utilize more distant upland and lowland resources outside of the Carson Desert, given that fish, large game, seeds, and pinyon appear to have all been important in their diet (Kelly 2001).

The Toedökadö practiced a seasonally semi-nomadic lifeway, hunting, gathering, and fishing in the wetlands, the surrounding desert, and uplands. Fowler (2002) describes the plant geography of the Toedökadö, where resources were seasonally acquired (or stored) for their seeds, berries, pollen, roots, and stems or leaves. Little greasewood-shadscale shrubs are dominant in lowlands, where numerous edible perennial grasses and other annual and perennial plants were sought. A larger array of plants in wetland habitats present in Stillwater Marsh, Stillwater Slough, along the Carson River, in the Carson Sink, and on the margins of the Carson Lakes include Indian ricegrass, needlegrass, bluegrass, saltgrass, meadow barley, and squirreltail; these were available during early to midsummer. Wildrye, bulrush, wheatgrass, sand dropseed, and alkali sacaton were available during mid- to late summer, while cattail was available in the fall (Kelly 2001). Tubers of chufa flatsedge and sego lily were also available (Kelly 2001). Tule, willow, sagebrush, and cattail were heavily utilized to make clothing, personal adornment, basketry, tools, and a variety of other woven materials, including matted covers for domed houses or boats (Bengston 2003; Fowler 2002). Resources from upland zones, such as summer seeds, fall berries, and pine nuts, were also sought.

Other animal and insect resources found in the wetland ecosystem were also important in the diet. These included "waterfowl (including their eggs and hatchlings), shore and wading birds, raptors, freshwater clams, fish (like tui chub [*Gila bicolor obesus*]), aquatic insects (and their larvae), emergent and submergent plants, small mammals, and much more" (Fowler 2002). Fishing was a very important task in the lacustrine environment and involved the use of fishing platforms, nets, weirs, harpoons, and basket traps, which were used for river fishing, and gill nets, dip netting, hooks and lines, spears, duck decoys, and harpoons used for lake fishing (Bengston 2003; Fowler and Liljeblad 1986). The Toedökadö used a number of different kinds of game enclosures, including traps and corrals, in communal hunting for upland mammals such as deer, antelope, desert bighorn sheep, and rabbits (Fowler and Liljeblad 1986:439). Food storage was an important strategy in preparation for the winter. The Northern Paiute gathered and stored small sun-dried fish, dried fly larvae, grass seeds, and dried rabbit meat (Fowler and Fowler 1971; Heizer 1970b; Hopkins 1994; Lowie 1924; Steward 1939).

The first Euro-American explorers to visit the Lahontan Basin, around A.D. 1830, noted the relatively large Native American (Toedökadö) population in the area (Bidwell 1890; Dodge 1860; Leonard 1904; Simpson 1876). Relations between the Toedökadö and the earliest explorers in the area were peaceful. Once the gold rush in California commenced in 1848, however, tens of thousands of Euro-Americans passed through the Carson Desert each year on their way to try to strike it rich; other waves of emigrations followed. The emigrants brought with them disease and left behind abandoned wagons and dead livestock, which likely provided the Toedökadö with new sources of food and material goods as their natural habitat was altered (Fowler 2002:18).

The first permanent Euro-American settlers in the area appeared in the mid-1850s, and Mormon settlement in the Carson Valley required a new route connecting Salt Lake City to the region, which passed through Toedökadö territory. The settlers soon began to displace local people from the wetter meadow areas and into less desirable areas; some native peoples soon began to work for the settlers as ranch hands and laborers, while others retreated to upland areas. Hostile encounters between the settlers and the Toedökadö appear to have been minimal until around 1860, and, shortly thereafter, Fort Churchill was established approximately 25 mi. west of present-day Fallon (Fowler 2002:18-19). In 1861, a Virginia City journalist by the name of William Wright (a.k.a. Dan DeQuille) visited the area and wrote a very detailed ethnographic account of the Toedökadö. DeQuille reported that though they were adapting some cultural elements from the white settlers, the native people were still living at traditional sites and were following traditional subsistence patterns (DeQuille 1963). As settlement and cultivation of the land increased, the Toedökadö people more intensively adopted Euro-American culture. In 1893, the Bureau of Indian Affairs distributed 30,000 acres of land to the Churchill County Indians; however, this allotment excluded the prime lands already owned by white settlers. As much of their land lacked water and proved too alkaline to cultivate, native peoples continued to work as ranchers and in other capacities for Euro-American settlers (Fowler 2002:21-23).

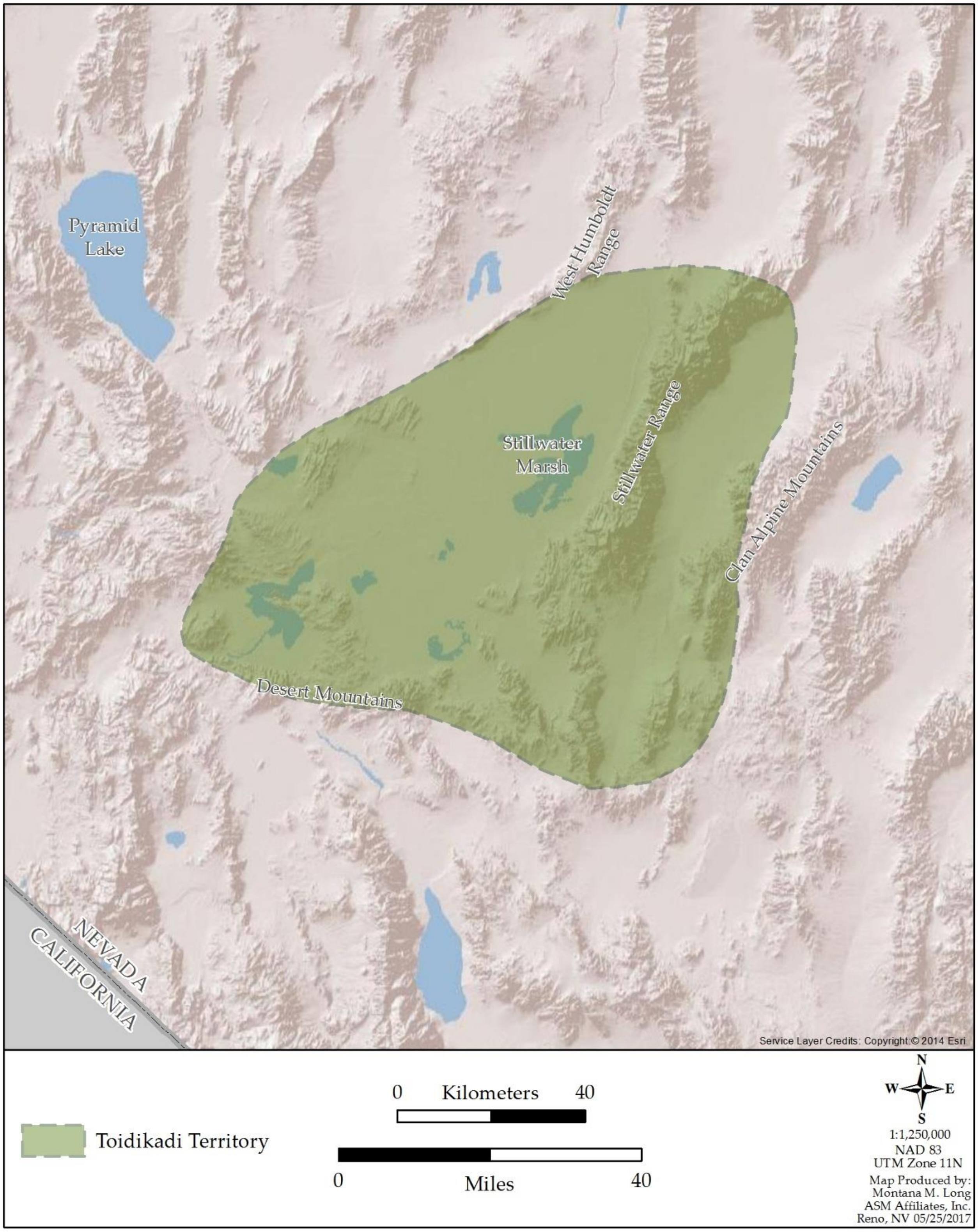

Figure 10. Ethnohistoric territory of the Toidikadi (after Shimkin and Reid 1970).

Archaeological evidence for ethnohistoric occupations in the area around Stillwater/Carson Slough on NAS Fallon managed lands have been previously identified (Branch 2016; Estes 2016d). A cluster of eight sites occurs in near vicinity of Redman Station, which was a major toll bridge crossing the Stillwater/Carson Slough from 1862-1912. DeQuille (1963) penned a detailed account of his journeys through the Carson Desert and reported a number of Indian villages with cattail huts and sunscreens between Carson Lake and Redman Station, including a large camp opposite the slough, where he traded for fish. These sites contain artifacts suggestive of ethnohistoric use of traditional tools (such as flaked and ground stone implements, including Desert series projectile points) as well as historic goods (such as glass trade beads in a variety of colors, shapes, and styles, prosser buttons as well as shell and metal varieties, bottles dating from the 1850s-1880s, flaked glass, and other items), and their placement in close proximity to Redman Station suggests trade or exchange of goods during the Ethnohistoric period. Furthermore, four sites were recently recorded about 2 mi. to the south, on the edge of what would have been a marsh surrounding Upper Carson Lake, according to GLO maps for T18N R29E (GLO 1869) and T18N R30E (GLO 1868). These sites contained a mixture of traditional stone artifacts as well as beads, Euro-American style buttons, and bottle glass (Branch 2016). These sites indicate presence of Northern Paiute (Toedökadö) groups in and around the Carson Lake and Stillwater Slough area during the late nineteenth century.

PREHISTORIC RESEARCH THEMES

The following research themes are proposed based on the existing research conducted in and surrounding the proposed Study Area in western, northern, and central Nevada. These themes include: Chronology, Subsistence and Settlement, Toolstone Procurement and Use, and Rock Art Studies. Typically, prehistoric cultural resources are evaluated for their NRHP eligibility solely under Criterion D and their ability to contribute meaningful information about the past. This is partly due to the absence of historic records that can be used to identify specific events (Criterion A) or individuals (Criterion B) in the prehistoric past, with some exceptions related to mythology. Similarly, prehistoric cultural resources in northern Nevada are seldom evaluated under Criterion C, that is, if they can "embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or that possess high artistic value, or that represent a significant and distinguishable entity whose components may lack individual distinction" (36 CFR 60.4). However, petroglyph and pictograph resources may possess "high artistic value" and may be eligible "if it so fully articulates a particular concept of design that it expresses an aesthetic ideal" (USDI 1995). Therefore, rock art sites may also be evaluated under Criterion C.

Chronology

After nearly a century of archaeological research in the Great Basin, there is still much debate regarding the timing of introduction and persistence of projectile point styles often regarded as "diagnostic" of a particular adaptive strategy or period of time. Of course, the Great Basin is expansive, and technology was likely introduced to different regions at different times or may have skipped large areas altogether due to environmental, cultural, sociopolitical, or other factors. Thus, a single chronology for all point styles across the Great Basin may be unwarranted and should not be expected. Holmer (1986:101) discussed part of this issue as it pertains to Elko series points in what he termed "long vs. short" chronology, noting that Elko points in the eastern Great Basin experienced three "floruits" of use within the past 7,000 years, whereas in the west (most of Nevada) the Elko series corresponds to a short period of use (roughly 3300-1300 B.P.). However, Smith et al. (2013) identified an early date (6879 ±58 B.P.) for an Elko point in northern Nevada, suggesting they may date earlier elsewhere as well. In addition, they identified Humboldt points as old as 5900 B.P. and Rosegate points as early as 2000 B.P. and as late as 580 B.P. When compared to the generally applied Great Basin short chronology (see Thomas 1981), these dates extend ages in both directions. Other research projects along the California-Nevada border and along northern Nevada have identified similar patterns (Hildebrandt and King 2002; Hildebrandt et al. 2016). Therefore, we must stress caution when using projectile points to establish chronology, as it appears that multiple point styles overlap in age, often by thousands more years than traditionally expected. However, introduction date and period of most intensive use are likely to show a traditional battleship curve more in line with traditional chronologies.

In addition to expanded temporal chronologies in the Great Basin, there are other, less well-documented and dated projectile point styles found locally. For instance, Carson points were identified by Kelly (2001:96-97) in the Carson Sink, representing a new type not identified in the Monitor Valley key (Thomas 1981). These types are small, averaging 13 mm in length, typically bifacial, and exhibit varying basal morphologies (similar to Gatecliff Split Stem and Gatecliff Contracting Stem types, but miniature) and, based on a very small sample of two specimens submitted for obsidian hydration measurement, may pre-date both Rosegate and Elko points. Kelly (2001) further notes that they are often found in abundance when present, and are rare outside the Carson Desert and absent from the Stillwater Range. Ascertaining the range of dates associated with this unique point type is imperative to local chronologies.

Lacking cultural features with radiometric-assayable residues, obsidian hydration rim measurement has long been an alternative to refining relative and absolute chronologies of projectile point types. Comparisons between point types of the same source can help define periods of use and identify potential overlaps. When used in conjunction with radiocarbon or AMS ages on associated cultural features, obsidian hydration can be a powerful tool to develop hydration curves useful in applying absolute ages to artifacts of unknown age, for instance, non-diagnostic flakes, bifaces, or other obsidian tools. Sourcing studies from the area have yielded valuable data that reveal the direction of travel of material into the Carson Desert, which was not static, but changed through time. The Carson Desert and surrounding mountains form a sink where obsidian sources are lacking (Figure 11), although recent research has identified three distinct local sources (Dead Camel Mountains, Desert Mountains, and Lahontan Valley) that provided small cobble to pebble-sized obsidian nodules (Clay et al. 2014). Several larger obsidian sources are situated to the west, including Patrick, CB Concrete, and Sutro Springs. Further south are more high profile and far-ranging obsidian sources, including Bodie Hills, Garfield Hills, Mt. Hicks, Queen, Mono, and Casa Diablo. Similar wide-spread sources north of the Carson Desert include Mt. Majuba, Buffalo Hills, Bordwell Spring/Pinto Peak/ Fox Mountain, Massacre Lake/Guano Valley, and other sources of northwestern Nevada. Obsidian from these sources and more found their way into the Carson Desert and surrounding areas in the prehistoric past. The three largest sourcing and hydration studies include 176 sourced and 53 hydrated obsidian artifacts from Hidden Cave (Thomas 1985), 51 sourced and 86 hydrated samples from 25 open-air sites in Lahontan Valley (Clay et al. 2014), and 27 sourced and 24 hydrated samples from seven open-air sites in Lahontan Valley (Estes 2016a, 2016b). Generated results indicate wide disparities among obsidian hydration rates between projectile points from open-air sites and those from a sheltered context.

While Chronology is a relatively basic theme, it is perhaps the most important to which any prehistoric site can contribute, and it is also a significant issue with regard to determining the NRHP eligibility of a given property. Estimates of age not only allow for a better understanding of where within evolutionary trajectories (social or technological) a particular site or group of sites fits, but also, they afford a chance for cross-comparisons between sites, areas, and regions. With prehistoric sites, chronology is normally determined based on the presence of artifact types known to be “time-sensitive” (e.g., projectile points, beads, ceramics), on any direct dates obtained from radiometric assays of organic remains (charcoal, bone, etc.), or on any relative age estimates obtained through obsidian hydration, geomorphological indices, or cross-dating. Although prehistoric sites are best dated when multiple lines of chronological data are available, such evidence is usually scarce, and temporal estimates are often limited to implications drawn from a single data type. For this reason, prehistoric sites containing time-sensitive materials are frequently recommended as significant and NRHP-eligible because they can be placed in time and associated with past adaptive changes in settlement patterns, subsistence strategies, and technology at a particular point in time.

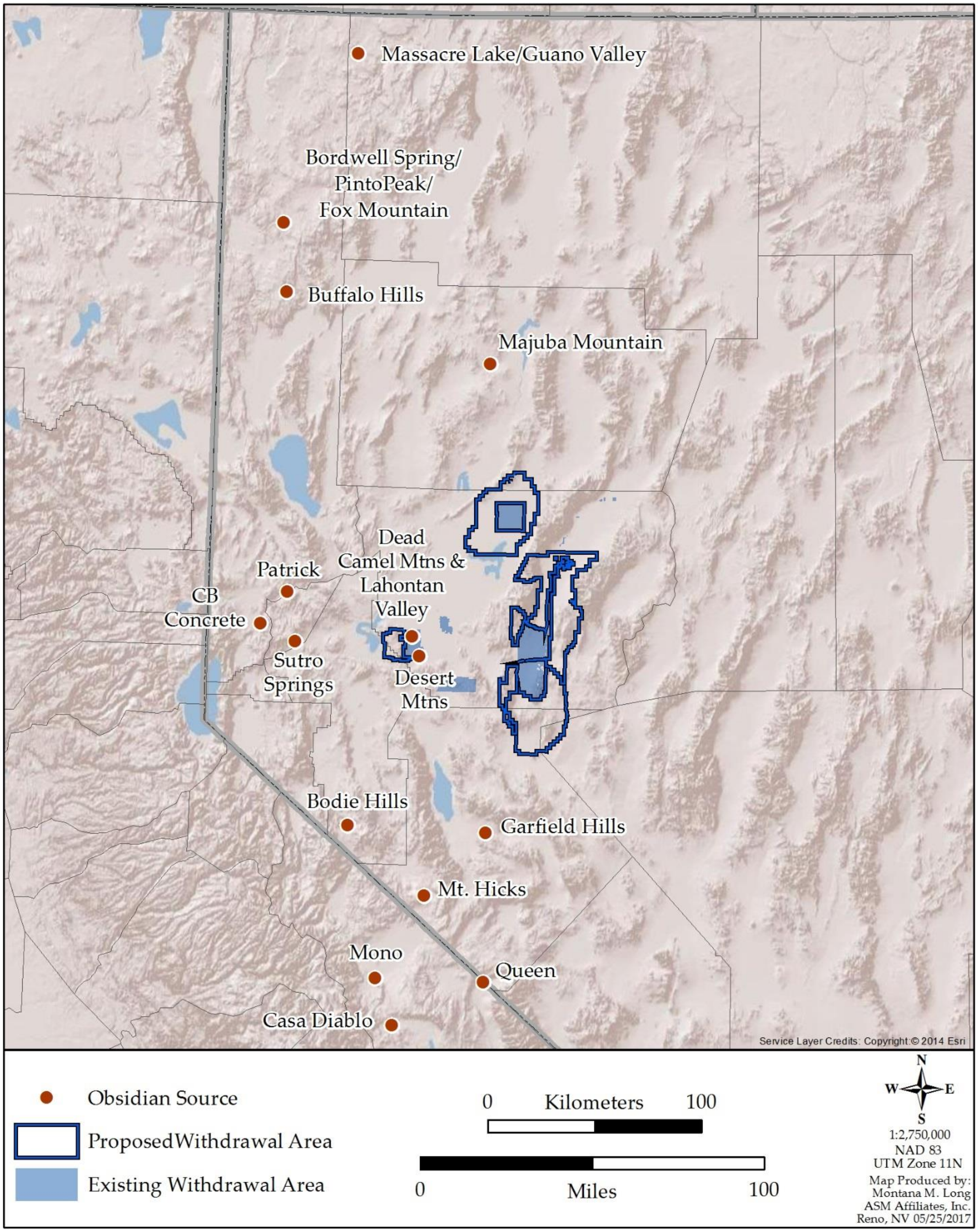

Figure 11. Obsidian source location map.

Data Needs for Chronology

To contribute meaningful information to the Chronology research theme, sites must exhibit at least one intact, unmixed, and undisturbed single-component cultural deposit. The most accurate and precise method for determining site age is through the dating of unmixed, buried cultural deposits, preferably through radiometric assay of charred, short-lived plant material. However, initial recordation is generally limited to surface identification only and must rely on the observable record to infer chronological placement. Temporally diagnostic artifacts, such as typeable projectile points, ceramics, or shell beads typically provide a coarse-grained chronology and can only be used to infer the general period of use for a given site. Artifact assemblages that contain a sizeable number of obsidian artifacts (10+ pieces per site) may be able to provide useful data pertaining to hydration studies. Single-component sites can be identified by discrete assemblages, those that are dominated by single point types, or those with similar hydration rim measurements. Obsidian hydration may also be useful to determine the age of a site or provide insight regarding site reoccupation. However, the presence of diagnostic or obsidian artifacts does not necessitate that a site be determined as significant under the theme of Chronology, as many sites may exhibit these specimens, yet be highly disturbed by looting, deflation, erosion, or other damaging impacts.

Subsistence and Settlement

Given regional evidence, prehistoric occupations in the proposed Study Area appear to extend back to the Pleistocene-Holocene transition and up to the arrival of European emigrants. Although studies of terminal Pleistocene-early Holocene land use in the western Great Basin have been few, they have generally focused on aspects of subsistence-settlement organization based on site landscape position, lithic assemblage function, and toolstone use and conveyance. Because many of these ancient sites are often preserved along relict lake shorelines, it is assumed that terminal Pleistocene-early Holocene subsistence had at least a partial lacustrine focus centered on the use of marshland habitats. Clearly, though, sites of this age also occur in various upland areas far from lake shorelines, testifying to the use of dryland habitats as well. What remains to be understood are the settlement relationships between early lowland and upland occupations and whether or not those relationships differed from similar ones identified during later times.

In contrast, studies of middle to late Holocene land-use adaptations in the Carson Desert have been able to draw on the occupation of cave sites, as well as open sites, in reconstructing subsistence-settlement organization. The fact that many caves were used as “cache caves” during middle Holocene times implies that patterns of settlement and mobility, as well as resource availability, may have been somewhat less predictable than during previous millennia. Finally, much of the focus on late Holocene subsistence and settlement patterns has been directed to the exploitation of singleleaf pinyon (*Pinus monophylla*) and of marsh resources, and how the intensive use of pinyon in late prehistoric times influenced settlement practices.

Nonetheless, the history of human occupation in the Carson Desert and surrounding area is really about how people alternately used lowland and upland habitats. Regarding lowlands, the productivity of wetland habitats and their suitability for human occupation has been the subject of much discussion (Kelly 2001; Janetski and Madsen 1990; Larsen and Kelly 1995; Madsen and O’Connell 1982; Raven 1990a, 1990b; Raven and Elston 1988, 1989; Zeanah 1996, 2002; Zeanah and Simms 1999; Zeanah et al. 1995). Zeanah (1995), Zeanah et al. (1995), and Kelly (2001) have argued that wetlands in the Carson Desert provided a year-long focus of settlement and subsistence for both male and female foragers. During warm/dry months, both men and women focused on wetland resources (fish, waterfowl, plants) until the arrival of fall pinyon; at this time, women spent more time in upland pinyon zones. In wetter months, men may have used upland zones more frequently for hunting sheep and/or other large game. Differences in the seasonal productivity of uplands drove this system; people primarily resided in the lowlands, but whenever upland resources were available they procured them by sending out skilled and knowledgeable individuals to seek out and procure specific resources.

Beyond the boundaries of the Carson Sink, nearby upland landscapes like the Stillwater Mountains and Fairview Range are dominated by sagebrush-steppe vegetation and host many seed-bearing shrubs and grasses (e.g., Great Basin wild rye [*Elymus cinerus*], prairie sunflower [*Helianthus petiolaris*], and woolly wyethia [*Wyethia mollis*]). Other important subsistence resources were likely geophytes—perennial plants that hold water and food reserves in underground storage organs (bulb, corm, rhizome, or stem tuber) during dry parts of the year. During adverse climatic conditions, especially during temperature extremes, the above-ground portion of a geophyte dies back, and the storage organ in the soil survives until above-ground growth starts again. These storage organs allow geophytes to have perennial life cycles and geographic and temporal stability. They also make geophytes a highly ranked, predictable, and reliable food source, especially at the end of winter (Fowler 1986, 1990, 2002; Trammel et al. 2008). Kelly (2001) has indicated that yampa (*Perideridia bolanderi*), sego lily (*Calochortus leichtlinii*), and bitterroot (*Lewisia redivivia*) all occur in uplands of the Carson Desert and Stillwater Mountains.

Pinyon occurs today in the Stillwater Mountains and in the Fairview Range, likely having arrived from more southern climes by 1,500 years ago (Kelly 2001). It was also certainly a key subsistence resource for prehistoric and historic Native American populations in the Carson Desert, featuring prominently in ethnographic descriptions of Native subsistence in the region (e.g., Fowler 2002; Wheat 1967). The ethnographic record, however, indicates that pinyon uplands surrounding the current survey areas were not long-term residential zones for the historic Toedökadö but were instead used seasonally. This is in agreement with current prehistoric foraging models for central and western Nevada (e.g., Kelly 2001; Zeanah 2002; Zeanah et al. 1995), which posit that residential bases were usually maintained in lowland settings (and particularly around marshy environments). The same models also predict that foothill zones should have been used for targeted and specific resource procurement, if only on a seasonal basis, for hunting, pinyon use, and the collection of other dryland plants (including geophytes).

With regard to subsistence, it is feasible that sites in the proposed Study Area might yield archaeological data relevant to the prehistoric use of marshland, dry lowland, and upland environments. Realistically, however, the kinds of subsistence data we might obtain from survey recordation are somewhat limited and typically reflect the *potential* for these types of data. The majority of sites in these areas are likely to be open-air sites which generally have fair to poor organic residue preservation conditions. However, that can be dependent on how quickly a deposit may have been buried and the soil chemistry. Any sites in the Carson Sink may be subject to the effects of past lake inundation and erosion, whereas sites in higher valley and mountains regions are likely to be affected by wind erosion, displacement by gravity, and mining/prospecting. This reduces the likelihood that cultural deposits still contain useful volumes of organic material or that artifacts have preserved food residues suitable for analysis. While the character of both flaked and ground stone tool assemblages can provide some general indications of animal and plant exploitation, the presence of vertebrate and invertebrate faunal detritus, paleobotanical remains, and blood/starch residues would allow for more specific reconstructions of habitat use and prehistoric diet. Hearth or midden features remain the most promising indicators for the presence of organic materials and residues that would be useful in understanding prehistoric settlement and subsistence.

Data Needs for Settlement and Subsistence Patterns

Residential or persistent occupation of sites in the Carson Lake are likely to be characterized by residential features, such as circular housepits or brush structures. Other features such as formal hearths may also be indicative of residential occupation. Absent these features, the data potential to address the settlement and subsistence theme begin to fall short, though other means of obtaining useful data do exist. For example, large samples of faunal remains and plant residues may help identify the time of year in which sites were occupied. Opportunistic use would be characterized by short-term residences, small assemblages, or remains, indicating that a unique environmental setting was occupied during a single season or that a specific resource was targeted there (e.g., geophytes, pinyon, etc.). Residues such as pollen, phytoliths, and starch extracted from milling equipment and blood residue from flaked stone tools can inform on the types of activities and plants and animals that were targeted. However, the best samples for all of these tests typically come from subsurface contexts, as surface artifacts have been exposed to the elements and have diminished potential for yielding positive results. Fire-affected rock typically does not preserve pollen grains due to the high temperatures achieved within prehistoric cooking features, but often retains intact starch grains. Lithic assemblages themselves can also inform on settlement and subsistence patterns; however, such assemblages must be sizeable to determine their character and technological makeup.

Toolstone Procurement and Use

With respect to prehistoric Great Basin human populations, patterns of toolstone procurement and use reflect modes of local and regional land use, basic technological needs, and the physical requirements of particular kinds of tools, all of which shared a functional relationship within the context of past settlement-subsistence systems. The composition of flaked stone assemblages, as indicated by the kinds of tools they contain, differences in the state or condition of those tools, the nature of associated flaking debris, and the kinds of raw materials represented in distinct tool classes can reveal a great deal about how different tools were manufactured, used, and/or discarded at a given location. Aspects of lithic assemblage composition also have implications for the kinds of subsistence practices, diet, and degree of residential mobility that characterized the adaptations of the human group or groups responsible for creating any set of flaked stone debris.

The reconstruction of strategies and patterns of prehistoric toolstone acquisition in a given area begins with an intimate knowledge of local geology and the ability to visually identify distinct types of lithic material in raw (unused) form, among quarrying waste, and as various finished/nearly completed tools. Although not normally available for use at the survey level, the identification of specific geochemical sources of obsidian and basalt is possible through the use of X-ray fluorescence or other methods of trace-element analysis. In areas where lithic material sources are reasonably well known in terms of their spatial extent, abundance, and quality, we can analyze flaked stone assemblages produced during subsequent stages of lithic reduction (e.g., testing and quarrying; secondary shaping and preform manufacture; tool finishing) to see how lithic materials were collected, how they were moved across the landscape (and in what forms), and what kinds of treatments they were subjected to at places of waste production and discard. When such materials are associated with or include dateable artifacts or remains, we can often identify long or short-term, spatio-temporal trends in lithic acquisition and use that may have involved direct procurement, trade, or frequent scavenging and re-use.

Excavations at Hidden Cave (Thomas 1985) generated an obsidian source profile for projectile points that reflects the primary use of obsidians from the Mono Basin—particularly Truman-Queen, Mt. Hicks, and Bodie Hills (Hughes 1985). Obsidian from Mt. Majuba was also found in some abundance, while obsidians from the Garfield Hills, Pine Grove Hills, and a few unknown/poorly studied locations were identified in minimal amounts. Considering the implications of regional sourcing studies that have generated long-distance obsidian conveyance zones for western and central Nevada (e.g., Delacorte 1997; Giambastiani 2004; Jones et al. 2003; Hauer 2005; Sibley 2013), alongside recent sourcing studies in the Carson Desert and Stillwater Mountains (Hughes 2001), it seems reasonable to conclude that most obsidian artifacts in the proposed Study Areas should represent sources from both southern and northern Nevada. Alternatively, few, if any, artifacts should derive from sources in the Truckee Meadows region (e.g., C.B. Concrete, Patrick, Sutro Springs), in northwestern Nevada/northeastern California (e.g., Bordwell Spring/Pinto Peak, Double H/Whitehorse, Paradise Valley), in central Nevada (e.g., Crow Spring, Box Spring, Cloverdale Canyon), or farther afield. Giambastiani (2004) has already included the Carson Desert within a sphere of obsidian conveyance that was anchored in the Mono Basin/Mineral County region to the southwest rather than in areas west, north, or east.

There are also many kinds of lithic toolstone present in the Carson Lake area. Recent surveys in Range B-17 (Ramirez et al. 2011) have identified many different sources of chert, or cryptocrystalline silicate (CCS), while inventories in Range B-16 have identified tested clasts of CCS and associated decortication wastes at project sites (Clay et al. 2012; Clay and Lenzi 2013). Evidently, older alluvial sediments around Carson Lake contain cobbles and gravels of toolstone-quality material that were exploited to a modest degree by regional prehistoric occupants. Although these materials cannot be traced to specific source origins, their use alongside imported obsidian provides clues to patterns of regional settlement, lithic procurement, and toolstone use in the project area.

Data Needs for Toolstone Procurement and Use

Single-component sites with large assemblages are the best candidates to contribute information to the theme of Toolstone Procurement and Use. These sites typically contain a variety of toolstone types, including local types (typically represented by larger pieces with higher percentages of cortex and simple platforms) as well as "exotic" or non-local types (typically obsidian in this part of the Great Basin). For instance, the materials used to manufacture formed tools can elicit patterns in the assemblages, and we may find that non-local materials (such as obsidian) are generally restricted to one or two tool types (usually projectile points and bifaces). Local toolstones should occur in higher concentrations, whereas non-local toolstones may indicate direct procurement or exchange. Patterns of rejuvenation on formed tools and projectile points, in combination with debitage profiles, can contribute information on prehistoric conveyance systems in place in Lahontan Basin during prehistoric times. Obsidian source profiles can be used to identify the sources and directions in which the toolstone traveled. Quarries in the area provide important information on where local materials were acquired as well as how the material was used. Single-component sites of various ages will allow for comparisons across space and through time.

Rock Art Studies

Research into Great Basin rock art dates back at least to Julian Steward (1929) who discussed motifs with informants, though rarely got straightforward answers about their meaning, who created them, or how they were meant to be viewed. He speculated that they served a ceremonial purpose that may have included puberty ceremonies, clan symbolism, or even provided shamanistic power, as well as other purposes. In any case, it was clear that these images had some symbolic meaning and were likely created to convey social meaning. In the mid-twentieth century, Heizer and Baumhoff's (1962) seminal work on the subject focused interpretation toward hunting magic, as they noted associations with hunting sites and equipment, game trails, and other features normally associated with hunting. While this view has not entirely lost favor, other models have been presented recently to explain their origin, context, and purpose. Prominent among these is the role of shamanistic power and trance states that relies heavily on ethnographic analogy and that supports cultural continuity throughout prehistory (Whitley 1987, 1992, 1994a, 1994b, 1998a, 1998b). These models typically argue that rock art was used by male shamans or during vision quests to acquire power or to showcase visual images they perceived during altered states of consciousness. As such, they are commonly regarded as personal and not a social phenomenon. Another view considers the art from a landscape perspective, incorporating archaeological remains nearby and examines the role rock art plays in social relationships at the group and individual level (Quinlan 2007; Woody 2000). Site association with rock art helps define the intended audience. Some rock art is very deliberate and placed in open settings or near habitation sites, small camps, and rockshelters used to cache equipment, such as at Grimes Point and the two major Salt Caves. Other art is hidden, with images placed in locations difficult to access or caves that few entered, such as Dynamite Cave. However, not all rock art is created to serve the same purpose. As in archaeology in general, context is key. Rock art was likely created and used for a variety of reasons by different groups and cultures throughout prehistory. As such, we should not be surprised to find merit in any of the above models, depending on the particular site or even motif within a site.

Data Needs for Rock Art Studies

The most important need for this research theme is the presence of rock art, which in general is scarce, or perhaps locally concentrated, across the Great Basin landscape. Previous studies have recorded multiple cave/rockshelter sites in the Dead Camel Mountains that contain a wealth of red-painted pictographs on tufa-covered walls. The Salt Cave sites are well-known to locals and they are open to the public, although they are fenced with signage. However, as evidenced by the Grimes Point site across the valley, rock art can also be present in open air sites, on boulders, outcrops, or cliff faces. Superimposed motifs may help to determine a relative local chronology, assuming different styles are represented. The presence of rock art is necessary, and the nature may dictate the types of additional analyses to extract additional important information to be eligible under Criterion D. For instance, the materials used in the manufacture of pictographs (or the material on which rock art is located) may be able to be dated by radiometric assay, or identified to source location. Further photographic analysis may be able to identify superimposition. Similarly, degree of patination can be analyzed to evaluate age. Associated artifacts may also yield important information useful in cross-dating specific rock art styles and designs. Under Criterion C, a property must be shown to articulate a design so fully that it expresses an aesthetic ideal, or is representative of the aesthetic value of a cultural group. Clearly defined and well-crafted motifs are necessary.

6. HISTORICAL CONTEXT AND RESEARCH THEMES

This chapter focuses on, and provides an overview of, the historic era of western Nevada. The focus is split into various interconnected thematic and well-known subjects important in the settlement and development of the western U.S. Research themes and data needs are then provided to evaluate associated historic cultural resources for NRHP inclusion. Additional research themes and questions may be found in the NAS Fallon Integrated Cultural Resources Management Plan (ICRIMP) (Smith and Michel 2013) as well as the *Nevada Comprehensive Preservation Plan* (White et al. 1991) and *An Archaeological Element for the Nevada Historic Preservation Plan* (Lyneis et al. 1982).

HISTORIC BACKGROUND

The following review is divided into five historic themes that were important in the history and development of Nevada and occur in a rough chronological ordering. These thematic background reviews include: 1) Expeditions, Emigration, and early non-native Settlement; 2) Mining; 3) Agriculture and Ranching; 4) Transportation and Communication; and 5) Military. Each thematic section is further divided into each Study Area (or combined areas when appropriate) to discuss specific data associated with each area and to identify potentially important cultural resources that may still exist.

Expeditions, Emigration, and Early Non-Native Settlement

The earliest recorded, non-Native expedition routes and wagon roads across Nevada developed mainly along the Humboldt River corridor to the north of the Study Areas, avoiding the numerous mountain crossings and unreliable water sources that characterize the central portion of the state. In the 1820s, Fur trappers Jedediah Smith (Rocky Mountain Fur Company) and Peter Skene Ogden (Hudson's Bay Company) were the first recorded non-native individuals to explore the American West. Both were in search of furs and explored the "Unknown Territory" (what was then a part of Mexico) by trapping beaver along the many rivers and tributaries of this unexplored region (McBride 2002:2-3). Fur trappers established a trail along the Humboldt River in the 1820s, much of which became part of the emigrant road to California by the mid-1840s (McBride 2002).

In 1833, after Ogden and Smith established that the rivers of Nevada were not bountiful sources of beaver pelts, other expeditions continued to scout the area for routes and resources. The Walker-Bonneville Expedition, commanded by Joseph R. Walker, entered Nevada near Pilot's Peak and then followed the Humboldt River to the Humboldt Sink, about 25 mi. north of the project area. Here, tensions with the Native Americans resulted in Walker's men killing 30 to 40 Native Americans. In the spring of 1834, Walker returned to the Great Basin from the San Joaquin Valley. This route again led Walker and his men to the Humboldt Sink. Like before, Walker encountered a group of Northern Paiutes. The encounter resulted in Walker and his men killing 14 of the Northern Paiutes (McBride 2002:3-5). Violent run-ins with the native populations resulted in overall distrust by Indians of Euroamericans and feelings of contempt for Walker (McBride 2002:5).

In December of 1843, John C. Fremont entered into northwestern Nevada in present-day Washoe County and trekked south to a large desert lake with a pyramid-shaped island. Fremont named the impressive body of water Pyramid Lake, then followed the Truckee River, which he named the Salmon Trout River, south to present-day Wadsworth. From Wadsworth he continued south to the Carson River, followed it to its sink, then turned back along the Carson River and crossed the Sierra Nevada near Carson Pass, ending at Sutter's Fort in March of 1844 (Elliott 1987:43; McBride 2002:9). Fremont led another exploration party into Nevada in 1845. At Mound Springs near the Pequop Mountains his party split into two groups. Theodore Talbot and Joseph Walker led a party northwest along the Humboldt River. Fremont led his southwest to Ruby Valley and eventually to Walker Lake where the two groups met up again (Elliott 1987:44). At Walker

Lake, they split once more. Fremont took his group north to the Truckee River, then through the Truckee Meadows and over Donner Pass, while the other group went south to Owens Valley. Fremont more accurately mapped the Humboldt, Truckee, Carson, and Walker river basins, giving him a clearer understanding of the nature of the region as an interior drainage and inspiring the name Great Basin (McBride 2002:9).

At the onset of the California Gold Rush in the late 1840s, potential prospectors followed the emigrant trail along the Carson River south through Nevada from the Humboldt Sink to Churchill Valley, Dayton, and Genoa before ascending the west fork of the Carson River to cross the Sierra Nevada at Carson Pass. The Carson River route of the California Trail quickly became the most heavily traveled road during the Gold Rush, not only for emigrants going west but for those who backtracked to prospect in western Nevada and ultimately encountered the rich silver ores of the Comstock in the 1860s (Angel 1881:440; Stewart 1962:324). In 1861, the soon-to-be state of Nevada transitioned from Utah Territory to Nevada Territory before gaining statehood in 1864.

In 1862, President Abraham Lincoln signed the Homestead Act into law which was intended to encourage emigrants to travel west and settle. The Act stated that settlers would be provided with 160 acres of land in exchange for a filing fee and five years of residence. The Homesteaders could purchase the land from the government for $1.25 an acre or, at the end of five years, the settler would have established occupancy and a patent or certificate would be issued to the occupant for the land. Homesteading under this law was phased out in 1976 due to the passage of the Federal Land Policy and Management Act, except in the State of Alaska (Bradsher 2012).

Bravo-16 Study Area

In 1844, the John C. Fremont expedition headed south along “Indian trails” from an area near where Fernley is today and encountered the (now) Carson River just west of the B-16 Study Area where the Lahontan Reservoir is located today (Fremont 1845; Johnson 2006). Fremont was hoping that the Carson River would lead them west and provide them with a trail to the Pacific; however, they were disappointed that the river was flowing the wrong way to serve as a passage and decided to follow it east in order to determine if it was a tributary of another river. On January 18, 1844, Fremont described the “Indian lodges and fish dams on the stream” (Fremont 1845:174) while they traveled northeast and camped at what later became Ragtown (Johnson 2006). However, there is no evidence that the expedition crossed the Carson River into the Dead Camel Mountains.

In 1860, Fort Churchill was built just 12 mi. west of the B-16 Study Area in order to provide protection for non-Native travelers as well as communication and freight services along the Overland Trail (see Transportation and Utilities). Fort Churchill was abandoned in 1869 but its presence just west of the Study Area may have contributed to an increase in traffic through and around the Dead Camel Mountains. The 1869 GLO map for T18N R26E shows the Carson River crossing the northwest corner of the township with substantial meadows buffering the river. A log cabin, fence, and telegraph line are located across the river, outside of the Study Area. The area of the Dead Camel Mountains remained unsurveyed and the area is simply labeled as “Barren Mountains,” indicating that the area had little to offer travelers. The 1890 GLO map for T18N R26E shows short segments of roads across Sections 33 and 34 just outside of the Study Area that may lead to unrecorded segments within the Dead Camel Mountains.

In summary, there is no indication that early non-native expeditions crossed the Dead Camel Mountains. There are no land patents recorded with the GLO and no land patents are shown on General Land Office maps for the Study Area, likely because the mountainous terrain made it an inconvenient place for settlement. Apart from roads through the Dead Camel Mountains and, possibly, an isolated artifact or two, there is very little probability for resources related to the Expedition, Emigration, and non-Native Settlement period of Nevada history within the B-16 Study Area.

Bravo-17 Study Area

There was no incentive for many of the early expeditions or emigrants to travel too far south into Fairview Valley and the adjoining Gabbs Valley until mining in Fairview and Sand Springs began to develop (see *Mining* section). Researching Fairview Valley land use was particularly difficult because there are no GLO Survey plats available for T13N to T20N in R34E prior to the 1960s and there are no recorded land patents, so the information that is available pertains to Gabbs Valley to the south. In the 1860s, John Reese scouted a route between Wellington, in Smith Valley, and Reese River to the east (Pendleton et al. 1982). The road crossed the northern part of Gabbs Valley at the southern end of the Study Area. The first non-native settler at the Hot Springs appears to be a man named William A. Woodruff in the 1880s (see *Transportation and Utilities* section) who later moved to Rawhide where he worked as a miner (Danner 1992). In the 1880s, the stop at the Hot Springs was called Kepler's Station (Danner 1992) but was also identified as "Woodruffs Hot Spring" on the 1886 Parker Map of the State of Nevada and "Woodruff's house" on the 1884 T12N R34E GLO Survey map. However, there are no recorded land patents for the B-17 Study Area and no homes or agricultural fields are shown on the early maps (see Table 6). Woodruff likely lived there from c. 1882 to 1937 when he passed away (Danner 1992). In T12N R33E, the Study Area also surrounds, but does not encompass, a land patent given to Edward O'Shaugnessy (Patent 1052843) in 1932.

Dixie Valley Training Area Study Area

Dixie Valley was not on any of the major emigrant paths, possibly due to a lack of water and its location too far to the south to avoid some of the ranges that were more difficult to traverse. However, there were a handful of agricultural households. In 1859, Captain James H. Simpson of the U.S. Army Topographical Engineers led a survey party from Camp Floyd along Egan's trail to Ruby Valley and then east to intersect the Carson River route of the California Trail near Genoa. Simpson's mission was to find a faster, yet practical route for wagons through central Utah and central Nevada (J. Peterson 2008:1). The route he mapped would subsequently be used by the Central Overland Mail (1859–69), Pony Express (1860–61), and the first transcontinental telegraph line (1861–69). This path crosses right through the Study Area serving as a dividing line between the DVTA and B-17 areas. In addition, Simpson's "Camp No. 5, Carson Lake" occurs at essentially the same location (Latitude 39˚ 16′ 47″) as the "Carson Sink Station" built in 1860 by the Pony Express (see *Transportation and Utilities* section). It was Simpson who named the key locations of "East Gate, Middle Gate, and West Gate" along what is now U.S. 50 (Carlson 1974).

Surveyor's notes from the 1882 GLO survey of T21N R35E describes the township as amenable for settlers. The surveyor states that the "…valley is a sandy loam and capable of producing abundant crops with proper irrigation, as is amply proven from the fine yield this year in the field in Secs 23 and 24" (Rogers and Bartlett 1882:61). The accompanying GLO survey map shows an agricultural field that spans Sections 13, 14, 23, and 24 in the DVTA Study Area. A structure labeled as "Brown's House" is depicted in Section 23 and a corral is shown in Section 24. The surveyor also pointed out that there were "cattle and sheep range in large numbers throughout the township" and that timber (nut pine and cedar) was available in the southeast corner of the township "...but not more than enough to supply settlers for firewood and fences." (Rogers and Bartlett 1882:61).

Bravo-20 Study Area

Although the Carson Sink has always served as a notable landmark in the trek across Nevada, there is no written evidence of homesteads or emigrant trails through the project area. Early travelers through Nevada opted to travel along the Humboldt River west of the West Humboldt Range and would have had no reason to travel along the Carson Sink. However, maps in the 1860s begin to show roads on both flanks of the Stillwater Range as mining districts began to develop along the range.

There are no recorded land patents with the State of Nevada for the Study Area. However, the first GLO survey of T22N R31E was conducted in 1882 and the surveyor recorded "Springer's house," an agricultural field, and a natural spring in Section 26 within the Study Area. The map shows two roads that intersect in proximity to Springer's house. The road running north-south is listed as the "Road to Unionville" and an unlabeled east-west road terminates at Springer's house. The surveyor described the pocket of sage and grassland among the otherwise saline sink with a spring emitting a strong flow of fresh water. He describes Springer's property in his notes in the following manner: "Jacob Springer has made a settlement at the spring before mentioned. His improvements consist of a one-story frame house, bar, and fenced field of 40 acres in grain" (Northrup and Sheehan 1882:150A). It is possible that this land was part of a Nevada State court case including Jacob Springer over land ownership based on occupancy when land is taken over by state appropriation (State v. Preble, 20 Nev. 38, 14). It is likely that Springer never formally patented the land but sought to achieve ownership through occupancy, which was not recognized when the State of Nevada tried to appropriate the property.

One township to the east, T22N R32E, was surveyed the same year. A house labeled "Stinson's House" and a field was recorded on the map solely in Section 18, although the surveyor states that it spans Sections 18 and 19 (note that Section 18 is in the Study Area and Section 19 is outside of the Study Area). "There is a settlement in the northeastern part of Section 19 consisting of house and barn and a cultivated field is located partly in Section 18 and Section 19" (Fish et al. 1882:392). ASM was not able to identify the first name of the Stinson occupying the house and cannot provide any demographic information. The distinct checkerboard land ownership within the B-20 Study Area is a direct result of the Pacific Railroad Act of 1862 (12 Stat. 489) with alternating sections patented by the Central Pacific Railway Co. issued in 1894 or 1915 (see *Transportation and Utilities* section) and that may have been a deterrent to people wanting to live in the area.

Mining

Mining Districts within the Study Areas (Figure 12) span over 150 years of mining and includes mining for gold, silver, mercury, and tungsten, among other minerals. Shortly after the discovery of silver in the Comstock Lode in the late 1850s, miners began branching out across what would later become the state of Nevada to seek their fortunes. This resulted in thousands of mineshafts and adits and innumerable prospecting ventures across the mountainous interior of Nevada. Mining Districts were established by groups of miners working in a similar geographic area where local rules and regulations were established to bring about some semblance of order in the early years (Tingley 1998:3). The passing of legislation including the General Mining Act of 1866 and the Mining Act of 1872 helped define federal mining rights and mining district regulations (Tingley 1998:3).

Veins yielding gold and ore were the dominant source of mining ventures. However, lead, copper, and other metals often co-occurred in the ore. In addition, as the values of metals fluctuated and new technologies took hold, other metals and minerals were in demand that occurred within the Study Areas. As a result, there are mining efforts for salt, antimony, fluorite, diatomite, tungsten, and bentonite all of which were mined from Mining Districts in the Study Area.

During World War I there was an increase in the operating costs of silver mines including labor and materials. During World War II, the price of silver was at a low; in 1940, silver was valued at $0.34 an ounce (Lewis 1967) but other metals such as quicksilver (mercury), tungsten, antimony, and manganese were in higher demand presumably because of the use of these metals in the war effort. The industrial uses for diatomite include "filtration, mineral filler or extender, insulation, absorbent, and mild abrasive" (Quade and Tingley 1987). Fluorspar was used for "fluxing in the steel industry" (Vanderburg 1937:24) and reportedly used in the construction of steel for the Oakland-San Francisco Bay Bridge.

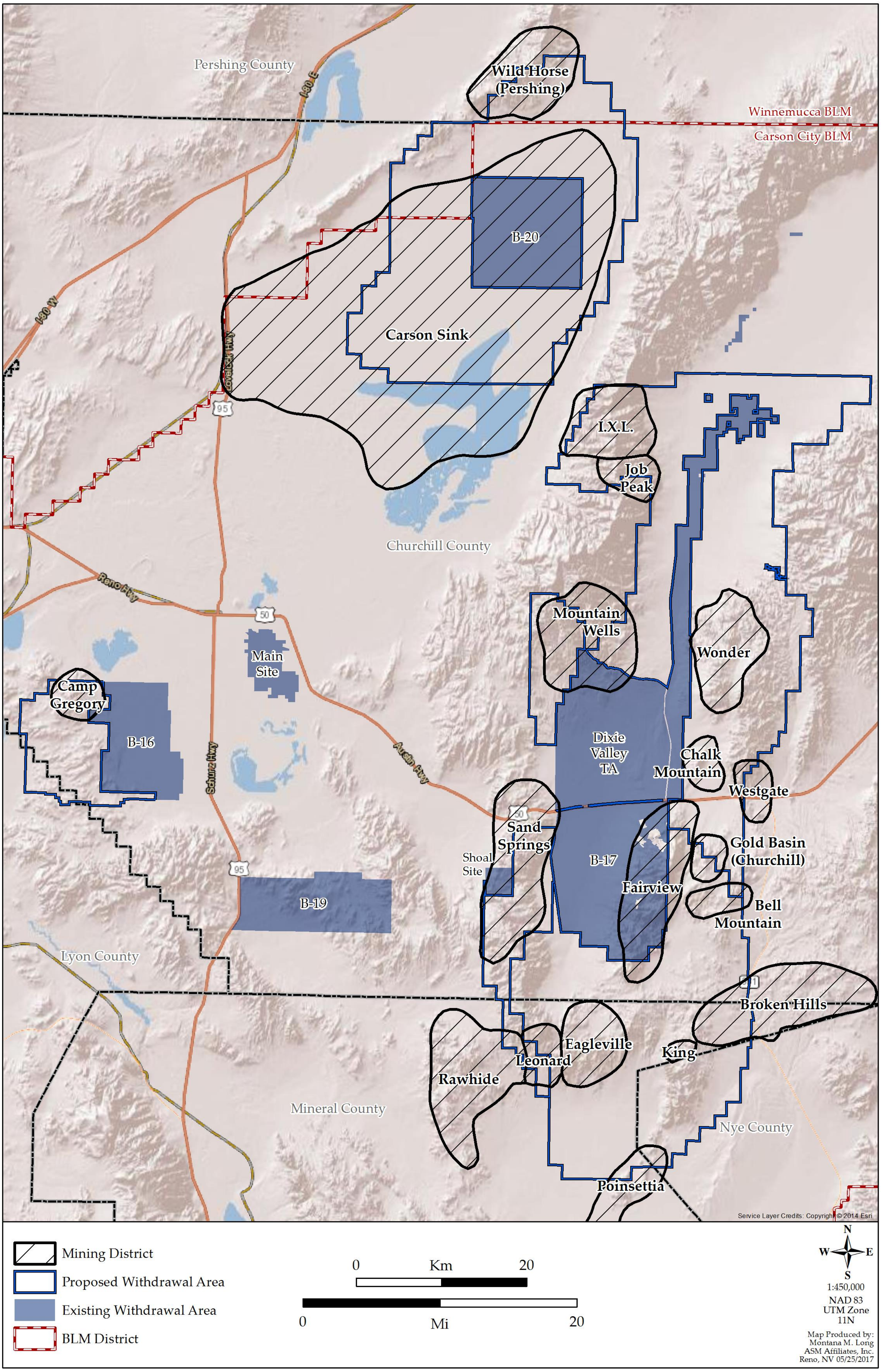

Figure 12. Mining Districts in the proposed Study Areas.

Some of the local Fallon and Stillwater families clearly diversified their economy and juggled several ventures simultaneously. Family names that are also known for ranching or commerce in the area also show up on mining claim locations and deeds. For example, the Kent, Freeman, Kaiser, and Crehore family names show up often between the ranching and mining history of the DVTA and B-17 Study Areas. It is likely that diversifying their investments helped the families avoid fluctuations and changes in the economy over time including during wars, economic recessions and depressions, and take advantage during upsurges in the value of various minerals.

The four Study Areas within this scope area encompasses portions of a minimum of 20 mining districts (Table 8). The district boundaries and names discussed in this section are largely consistent with Tingley's (1998) study of the *Mining Districts of Nevada*. However, adits, prospects, shafts, tunnels, rock cairns, and claim markers are often found outside of the designated boundaries. These may represent independent efforts, unpatented claims, failed attempts to follow a vein, or non-contemporary prospecting.

Table 8. Historic Mining Districts Overlapping Study Areas (Data from Bennet and Hoke 1975)

Historic Mining Districts	Year Developed	Period of Greatest Activity	Commodities Extracted	Recorded Production
B-16 Study Area				
Camp Gregory*	1909	1909-1912*	Gold, silver	unknown
Wild Horse**	1951	1950s and 1960s?	Diatomite	unknown
B-17 Study Area				
Bell Mountain	1914	1914-1916	Silver, gold	unknown
Broken Hills	1913	1920	Silver, lead, fluorspar, tungsten	$6 million (primarily from Kaiser mine)
Eagleville	1870s	1870s-1910s 1920s-1930s	Gold, silver, tungsten, barite	small
Fairview	1905	1906-1907	Gold, silver	$4,419,800 (Shamberger 1973)
Gold Basin	1924	1924	Gold, silver	Unknown
King	1926	1926-1927	Gold, silver, lead	$1,400
Leonard	1870	1930s – 1960s	Gold, silver, tungsten	$9 million
Poinsettia	1911 (Black Hills)	1950s – 1960s (Black Hills)	Mercury, gold, antimony, copper.	unknown
DVTA Study Area				
Chalk Mountain	1860s?	1923-1924 1937-1945	Gold, silver, lead	$120,000
IXL (Silver Hill)	1878	1913	Gold, silver, lead	small
Job Peak	1915	1965	Gold, mercury	small
Mountain Wells	1862	1860s	Silver, fluorspar	small
Rawhide	1906	1908-1920s 1930-1957	Gold, silver, tungsten	$4 million
Sand Springs	1905	1950s	Silver, gold	$30,000
Westgate	Unknown	1915	Gold, silver	small

Historic Mining Districts	Year Developed	Period of Greatest Activity	Commodities Extracted	Recorded Production
Wonder	1906	1907-1920 1934-1942	Gold, silver, copper, lead, molybdenum, fluorspar	$6 million
B-20 Study Area				
Carson Sink	1909	1910	Salt	unknown
Wild Horse	1906	1906-1960s	Antimony, lead, silver, copper, zinc, gold, fluorspar	unknown

*Camp Gregory dates of production based on newspaper accounts.
** Quade and Tingley (1987) mistakenly call the group of claims "White Horse"

Bravo-16 Study Area

Camp Gregory

The Camp Gregory Mining District is centered on Red Mountain in the northern section of the Dead Camel Mountains. It overlaps with the northern portion of the B-16 Study Area and is primary located in T18N R27E, overlapping slightly with T17N R27E. On the USGS 1985 Sheckler Reservoir, NV 7.5-minute topographic quadrangle, the westernmost shaft is later labeled as the "Camp Gregory Mine." Tingley (1998) indicates that the district produced gold, silver, mercury, and diatomite although the production of diatomite is likely referring to the Wild Horse area, which is discussed in greater detail below.

Surprisingly little is known about the Camp Gregory Mining District or how it got its name, although Tingley states that it was sometimes referred to as the "Dead Camel Mountains area" (Tingley 1998:19). Newspaper records indicate that work took place at Camp Gregory from at least as early as 1909 to approximately 1912 (Reno Evening Gazette [REG] 1909; Nevada State Journal [NSJ] 1912). The claims, as described in the REG 1909 article, included the Crystal mining claim with a shaft that was at a depth of 72 feet and the Scotia mining claim with a shaft which was at a depth of 63 feet (REG 1909). The newspaper notes that there had not been an "attempt to boom the camp" and there were few opportunities for people who wanted to participate. The paper reported that "[t]hey are not offering anything for sale. There is no stock to be placed on the market. There is no townsite laid out. They are not asking anything of our people, but they are going quietly along making an earnest endeavor to develop the mineral resources of this locality" (REG 1909). There is also no indication that the claims were patented, a formal mining district formed, or that there was a Mineral Survey by the GLO. The Scotia Mining Company, and W. L. Cook left Camp Gregory in 1912 to work near East Gate but left a caretaker on site (NSJ 1912).

A mineral resource inventory of the area suggested that work in the area took place around 1920 and 1935. Quade and Tingley's description of the area states:

> Nothing is known of the mining history of the area. There are two deep, vertical shafts at the site of the Camp Gregory Mine and large mine dumps can be seen at the shaft collars. The remains of a camp are present in the wash northwest of the mine; rusting cans and other debris present at the site hint that activity here, probably gold prospecting, may have occurred sometime in the 1920 – 1935 era [Quade and Tingley 1987:91].

Quade and Tingley's estimated time range for mining in the Camp Gregory area appears to have developed from their ground observations of the artifacts and mining techniques. It is possible that mining might have continued into the 1920s and 1930s by independent miners but that it was not recorded in newspapers or patents. A cultural resources inventory of the area might help better define the time range.

Maps seem to indicate that mining in the Camp Gregory area was relatively restricted to a single lobe of Red Mountain in the Dead Camel Mountains. The USGS 1951 Fallon, NV 7.5-minute topographic quadrangle shows three shafts and nine prospects on a southeast lobe of Red Mountain within the B-16 Study Area (Figure 13). Tingley's district boundary for Camp Gregory is quite large, encompassing most of Red Mountain (Tingley 1990a, 1998) and it is possible there may be prospects and other mining-related features that are not recorded on the topographic quadrangles.

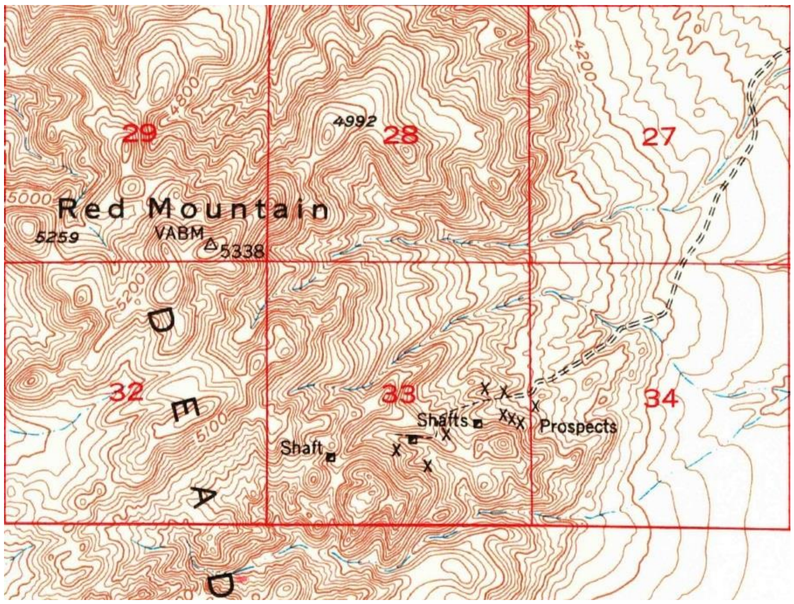

Figure 13. Camp Gregory mining features as shown on the 1951 15' Fallon, NV topographic quadrangle, T18N R27E.

Available data on previous cultural resources inventories and recorded archaeological sites indicate that no cultural resources have been recorded in the Camp Gregory district. Although this area was considered for further mineral exploration by the Red Camel project by Noranda Exploration in 1982, it appears that they did not proceed with plans for development (Tingley 1990a).

Wild Horse

The Wild Horse mining claims are located northeast of Salt Cave along the eastern edge of the B-16 Study Area (Figure 14). The claims span Sections 10, 11, 14, and 15 in T17N R27E. The Wild Horse claims group was lumped with the Camp Gregory mining claims in a 1990 *Mineral Resource Evaluation* for the Withdrawal Lands (Thompson and Boleneus 1990). However, the group is not contemporary with the Camp Gregory mine operations which date to the 1920s and 1930s. In addition, mining in the Camp Gregory area was intended to access precious metals (gold and silver) and the Wild Horse claims were laid out to obtain diatomite in very different geological deposits (Quade and Tingley 1987). Thompson and Boleneus characterized the diatomite in the claim group as "…pure white, homogenous, and apparently of good quality" with diatomite lenses that are up to 30 ft. thick (Quade and Tingley 1987:78). Quade and Tingley (1987) also mistakenly call the group of claims "White Horse" but historic documents associated with the claims label them as the Wild Horse claims. ASM could not locate information on the shipped tonnage or monetary yields from the claim group.

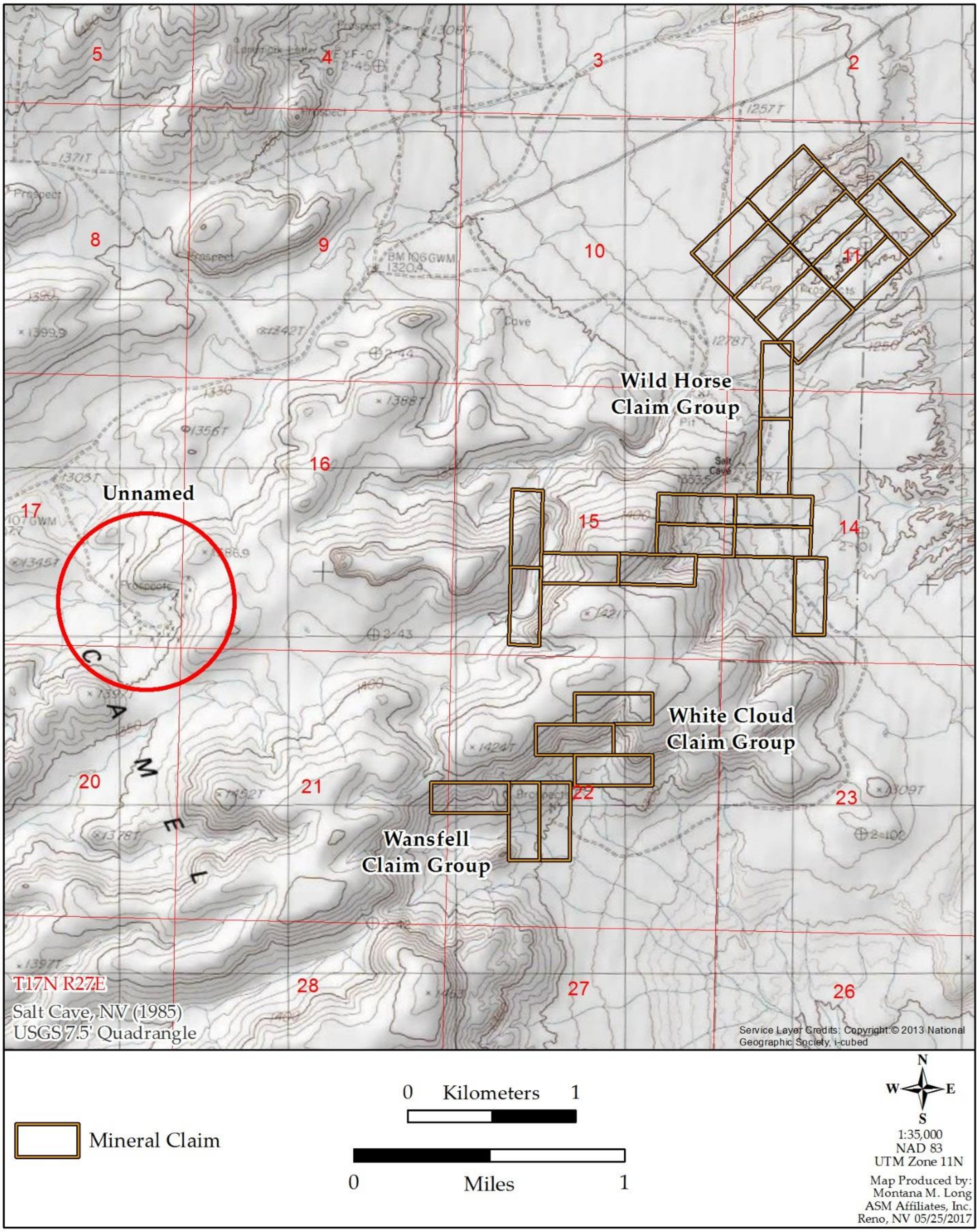

Figure 14. Mining Claims associated with diatomite extraction on the 1985 7.5' Salt Cave, NV topographic quadrangle T17N R27E.

A mining deed filed with the Churchill County Recorder in May 1951 identified the Wild Horse claims (#1-5) as part of the Wild Horse Mining District (County Recorder, Document 74021) but later paperwork does not designate a mining district, most likely because it would have required extra paperwork. Paperwork is contradictory, with the location map indicating that Wild Horse claims #1 through #20 were located in fall of 1952 by E. D. McCoy and C. M. Campbell as opposed to the 1951 date identified in the mining deed. The Wild Horse claims #21, 22, and 23 were located on April 18, 1953 by E. D. McCoy, C. M. Campbell, Verna Campbell, and S. J. Campbell (Churchill County Recorder Document 130636). The Campbells have filed Proof of Labor affidavits for the Wild Horse claims as late as 2010 (Churchill County Recorder 416047). Work on the claims over a 58-year period seems to have been extensive with trenching that is visible on aerials and there are undoubtedly remnants on the ground surface. It does not appear that the area has been previously recorded and, apart from a few prospects, is not shown on topographic quadrangles.

White Cloud and Wansfell

Two claim groups with paperwork filed at the Churchill County Recorder are located in Section 22 of T17N R27E. The White Cloud claim group includes three claims (White Cloud No. 1 – 3) located in 1954 and 1955 by N. O. Berry, James R. Dutton, C. M. Campbell, and Stephen J. Campbell. The location map states that the claims were marked with "heavy numbered center posts; corner and side line markers of rock mounds" (County Recorder 130634). The Wansfell claim group was located in the summer of 1954 by Ed McCoy, C. M. Campbell, and S. J. Campbell. The group includes three claims (Wansfell No. 1 – 3) marked in the same manner as the White Cloud claims (Churchill County Recorder 130635).

There is no information on what mineral resource the claims were designed to access but since they are contemporary with the Wild Horse Claims and the Campbell's are involved in all three of the claim groups, it is likely they were consistently mining diatomite. However, it is not likely that there was considerable activity on the White Cloud and Wansfell claims given that no further paperwork was filed with the County Recorder and the USGS 1985 Salt Cave, NV 7.5-minute topographic quadrangle does not show a great deal of work in the area. Associated work seems limited to a road, shown following the eastern flank of the Dead Camel Mountains until turning west into an alcove of the range and terminating at a prospect (see Figure 14).

Based on NVCRIS results, the Wansfell and White Cloud mining features have not been previously recorded.

Unnamed

A cluster of prospects within the Dead Camel Mountains are visible on the USGS 1985 Salt Cave, NV 7.5-minute topographic quadrangle spanning Sections 16 and 17 of T17N R27E (see Figure 14). However, there is very little data available about these prospects apart from maps. The prospects are not shown on the USGS 1951 Fallon, NV 15-minute topographic quadrangle although a road is shown that terminates at the back of a broad canyon in the Dead Camel Mountains. The USGS 1985 Salt Cave, NV 7.5-minute topographic quadrangle shows the same road terminating at the prospects. The road was likely created for access to the prospects so it is reasonable to assume that mining in that area occurred as early as 1951. It is possible that these claims, which appear to access diatomite, are contemporary with the Wild Horse claims and date to the 1950s. However, there are no patented claims for this area, no production values, and no newspaper articles providing information about who may have been mining in the area.

Based on NVCRIS results, this cluster of mining features has not been previously recorded.

Dixie Valley Training Area and Bravo-17 Study Areas

The mining districts in the DVTA and B-17 Study Areas are discussed collectively in the following section for two reasons. Not only do several of the districts (Fairview, Gold Basin, Bell Mountain, Leonard, and

Sand Springs) overlap both of the districts but some of the districts have a shared history as miners move between districts. The districts are discussed from north (in the DVTA Study Area) to south (in the B-17 Study Area) as they appear on Tingley's 1998 map.

I.X.L.

The I.X.L Mining District is almost entirely encompassed by the DVTA Study Area with the exception of the western edge of the district. The district covers most of T21N R33E and overlaps with T21N R34E. Tingley's boundary designation also includes the west side of the Stillwater Range which was sometimes discussed separately as the Silver Hill District. The Silver Hill area on the western flank of the Stillwater Range includes some of the earliest locations for the district made by Charles S. Kellogg in 1860 and formally organized in 1879 (Tingley 1998). One of the first Mexican smelters was located in the District. Silver Hill was described by Dan DeQuille in his 1861 book *Washoe Rambles*. Discovered early in 1960, by June, about 50 ledges had been located, easy to smelt and with high assay value. The townsite within IXL Canyon had around 200 residents. Soon after the town was established, an express line between IXL and Virginia City was initiated to facilitate the shuttling of miners to the new district (Lingenfelter in DeQuille 1963 [1861]). Paher states that in 1880 the camp had a boarding house, two blacksmiths, and 20 miners (Paher 1970).

Black Prince Group / IXL Consolidated

The Black Prince Group contains some of the earliest claims in the district located by Charles S. Kellogg in 1878 who prospected the area for the next decade (Vanderburg 1940). The claims are located at the upper reaches of IXL Canyon. According to the Mineral Survey (Stewart 1899), the claims were owned by Charles Kaiser in 1899 and included six claims (I.X.L., IXL 1st Extension, Twin Sister, Twin Sister No. 2, Black Prince, and 1st Extension Black Prince) and were identified as the IXL Consolidated Group. The 1899 claim plat shows the claim group as having a total of 10 tunnels, three shafts, and 10 open cuts (Stewart 1899).

By 1940 the group was owned by Charles Kent (see Ranching and Agriculture) and was only listed as four patented claims instead of six, but had been inactive for some time (Bennet and Hoke 1975; Vanderburg 1940). In 1947, Schrader stated that the Black Prince Group was owned by Charles Mottini (Schrader 1947).

It is worth noting that Kaiser had a stone cabin near the southern boundary of the claim adjacent to several tunnels on the Black Prince claim. Associated domestic and mining-related refuse might be nearby.

Bonanza Group

The Bonanza Group of 15 claims is located along the northern slope of IXL Canyon. The claim boundaries are shown on the 1930 GLO map for T21N R34E as Mineral Survey 1936 (Stewart 1901a) Section 19. The survey is labeled with "Adolf Giannini House." The Mineral Survey states that the claim was located in 1897 and shows the location the Bonanza claim with five tunnels, a single cut, and an incline as it appeared in 1901. The associated Bonanza millsite claim is located to the southeast (downslope) of the Bonanza claim. Two cabins were included on the millsite claim map labeled "Weyburn's Cabin" and "Mottini's Cabin." The Spring Mine (Stewart 1901b) is likely associated with the Bonanza mining group and was located in 1896. It was surveyed in 1901 and was owned by Charles Mottini.

Vanderburg stated that the Bonanza group consists of 15 claims owned by Adolph Giannini. Vanderburg recorded a 300-ft.-long adit and several shafts (Vanderburg 1940). They identified several adits and prospects. Mining-related materials observed at the claims included "tools for hand mining and camp accommodations for two men" (Vanderburg 1940:34). The Bonanza Group dominated the production for the entire district and yielded nearly $20,000 in silver, horn silver, gold, and lead (Vanderburg 1940). This might be the same area that Schrader later called the "Mottini Mine."

The USGS 1972 IXL Canyon, NV 7.5-minute topographic quadrangle shows several mines and prospects in T21N R34E Section 19, heading up IXL Canyon into T21N R33E. It also labels the area as “Silver Hill (Site)” and “Ruins” which are undoubtedly related to the millsite. The Silver Hill Townsite was recorded in 1993. The Spring Mine and Bonanza mining claims are surrounded by the Study Area and it does not encompass this patent. However, the area where the millsite is shown does appear to be within the Study Area as well as several prospects and adits located on the east-facing slope north of the IXL Canyon.

Gold Bar Group

The Gold Bar Group is located in Cox Canyon and was owned by Charles P. and Leon Cirac (the Cirac brothers). The 1908 Carson Sink, NV 1:250,000 topographic map shows a shaft at the head of Cox Canyon and an L-shaped structure at the mouth of the canyon in roughly the same places as a shaft and “ruins” are marked on the USGS 1969 Cox Canyon, NV 7.5-minute topographic quadrangle. Vanderburg noted several adits and prospects. By 1940, the Cirac brothers had owned the property for 30 years but their gold production was low (Vanderburg 1940).

Revenue Group

The Revenue Group consists of four unpatented fluorspar claims on the north side of Cox Canyon located by the Cirac brothers in 1938. There is limited information on the Revenue Group but what is known was recorded around 1940 (Vanderburg 1940). At the time, Vanderburg observed a 10-ft.-long adit and noted that transporting the fluorspar out of the canyon was difficult since the road to Stillwater was in bad condition. In 1975, Bennet and Hoke noted that 830 tons of fluoride had been produced by the claims and fluorspar was still present in veins 3 ft. wide (Bennet and Hoke 1975).

The Black Prince, Bonanza, and Spring claims are excluded from the Study Area but there are likely associated mining-related features along the entire length of both Cox and IXL Canyons. The cluster of adits, prospects, and two sets of ruins marked in the upper reaches of the IXL Canyon on the USGS 1980 IXL Canyon, NV 7.5-minute topographic quadrangle likely belong to the Black Prince Group and the Bonanza Group.

Job Peak

The Cirac brothers prospected in the Job Peak area before hitting a strike in 1915 which drew attention to the area. Gold-bearing veins were found to cross Job’s Canyon. This area was included in the much larger Silver Hill District that once encompassed most of the Stillwater Range (Tingley 1998:42) although mining in the area did not commence until the 1910s. The southern boundary of the IXL and northern boundary of Job Peak Mining Districts are adjacent along East Job Canyon. Schrader (1947) states that L.W. Crehore (see *Agriculture / Ranching* section) shipped ore from Job Peak to the Western Ore Purchasing Company. At the time that Schrader recorded the district, there seemed to be a single 40-ft. shaft. This is most likely the single shaft shown on the USGS 1972 IXL Canyon, NV 7.5-minute topographic quadrangle in T20N R33 ½ E Section 1. The mine is labeled as “Creore Mine” and is located at the head of Creore Canyon which is clearly an alternate spelling of Crehore. A two-track road follows the canyon from the valley floor to the mine and adjacent prospects. The yield from the ore was lead, silver, and copper (Schrader 1947). However, there is not a great deal of information for this district and it is not clear what the final production value was for the seemingly limited amount of mining.

In 1975, Bennet and Hoke assessed the Job Peak mining area and made it quite a bit larger than Tingley’s boundary designation. The main resource being recovered, according to Bennet and Hoke, was mercury, and a “small, underground mercury mine” was operating in 1965. The area also included an aerial tramway and a “2-tube Rossi-type retort” were used for the mercury mining (Bennet and Hoke 1975). The “Creore Mine” is a KBNR site (Pendleton et al. 1982).

Mountain Wells (Mountain Well, La Plata, Chloride)

The Mountain Wells Mining District spans two discontinuous sections of the DVTA Study Area at the southern end of the Stillwater Range. Tingley's district boundary has the Mountain Wells district encompassing La Plata Canyon, Black Knob, and Elevenmile Canyon just southeast of Table Mountain down to the flats of Dixie Valley (Tingley 1998). The district roughly covers the south half of T19N R33E and the north half of T18N R33E and encroaches on adjacent townships to the east and west.

The Mountain Wells Mining District was organized after silver was located on the east side of the Stillwater Range in 1862. In 1863, stone buildings were constructed creating the La Plata mining camp. The Silver Wave Mining Company owned the townsite and an adjacent wood ranch (Vanderburg 1940). In 1864, La Plata was briefly named the Churchill county seat from 1865 to 1868, and it was, possibly, the largest camp in the Churchill County in the mid-1860s (Paher 1970). La Plata hosted a post office from April 1865 to November 1867 (Frickstad and Thrall 1958). However, the district was never very productive. Claims were sold to companies from the east in the 1860s but the production was relatively low and did not sustain interest.

The Silver Wave Mining Co. constructed a 10-stamp mill at the townsite of La Plata in 1864 but the mill was moved to Nye County not long after. A second mill was erected in Elevenmile Canyon but did not see a lot of production because there was not enough ore (Quade and Tingley 1987). The 1868 State Mineralogist report stated that "the mill was torn down and removed to White Pine" and described the townsite as "desolate" (Nevada State Mineralogist 1869:86). In 1868, with production values in Mountain Wells flagging, Stillwater took over the role as county seat, the post office closed, and a good number of the miners left to participate in the White Pine boom, which effectively drew a close to this district's boom. Schrader (1947) estimates the production of the Mountain Wells district during this boom as "several thousand dollars." Small-scale prospecting continued after 1869. There was a brief boom in 1906 and 1907 but it did not draw the same number of people or deliver substantial production of ore.

There was a brief revival in the 1900s and 1910s but it was not sustained (Paher 1970). In 1906, the Reno Evening Gazette reported that "[a]t La Plata, Carter and Brockbank are encountering some very rich ore. They have twelve openings on their claims and the assays run from 80 to 1500 ounzes (sic) in silver, and from $5 to $200 in gold…They had a townsite surveyed last week and four-fifths of the lots are already sold. The new town is named Chloride" (RGJ 1906). This brief boom is said to have brought in 150 people to the Chloride camp (REG 1907a). Three new mining companies were organized for work around Chloride including the Bo-Peep Mining Company, the Black Butte Wonder Mining Company, and the Mountain Cedar Mining Company (REG 1907b). A small amount of silver was shipped out of the district in 1919 and 1920 (Lincoln 1982) and an interest in rare metals drew miners in the 1920s. In 1927, a man named E. L. Connell was mining at La Plata for cerium, which was used in light bulb filaments, making porcelain and tiles, and mixed in with asbestos (REG 1927). Fluorite was located in the district in 1939 but there are no documented production values (Vanderburg 1940).

In 1987, Tingley and Quade visited Mountain Wells to take mineral samples and record their observations. Tingley and Quade (1987:58) found that: "[t]he remains of the stone building which housed the 10-stamp mill in La Plata Canyon can still be seen at the old townsite. The site of the old mill in Elevenmile Canyon, southeast of Black Knob Spring … is marked by stone foundations, piles of bricks from walls and old boilers, and fragments of rusting iron and purple glass." They also found that the remains of the 10-stamp mill in La Plata were also visible but there were no tailings or remains that would help them estimate output or production.

Very little is written about the Mountain Wells Mining District, which is surprising given that La Plata was the Churchill County seat for a brief period and had a substantial mining camp. Documents are likely scarce due to the poor production and short occupation. ASM also could not locate a map of the La Plata camp or associated claims. Paher (1970:95) states that the townsite had a post office, three mills, and business but "[t]here is no evidence to show that a courthouse was built; the county was too small and poor to afford a building." The townsite may provide some data on demography and early political organization in the county and in the state, for that matter. The historic site of La Plata is a KBNR site (Pendleton et al. 1982). Ruins from the mill in Elevenmile Canyon have been recorded (Michel 2014); however, the site lies just 100 m beyond the Study Area boundary.

Wonder

The entirety of the Wonder Mining District is located within the DVTA Study Area and spans T19N R34E, T19N R35E, T18N R34E, T18N R35E, and most of the Louderback Mountain Range. Apart from Fairview, the Wonder District is likely the highest ore producer in the Study Areas. At least four mining camps are associated with the district including Wonder, Victor, Kingston, and Hercules (Tingley 1998). There may have also been a cluster of people living in the Red Top Gulch.

T. J. Stroud made the first location in the Wonder District on the Jackpot claim group and the location of the Nevada Wonder mine followed soon after (Vanderburg 1940). The rich silver-gold ore of the district drew miners away from Fairview (Vanderburg 1940). The Wonder Mining District includes camps at Victor, Hercules, and Wonder. In 1906, the Mining and Scientific Press reported that a stage was making a six-hour daily trip between Fairview and Wonder. At that time they described the newly settled Wonder camp as "60 to 80 tents" but water was being hauled from Westgate and being sold at $6 a barrel (Boericke 1906:59). Ten years later, the Mining and Scientific Press reported on the Nevada Wonder Pipe-Line which had been installed in 1910 as a gravity-flow pipeline from Horse Creek. Specifically, the paper reported on the redwood settling tanks, the 40-watt lightbulb that prevented the lines from freezing, and the notification system for low-flow in the pipeline that alerted miners to disruptions in the flow via telephone (Burgess 1916). By January 1907, the Reno Gazette Journal (RGJ) stated that 700 people were living in Wonder and investors were promising a railroad line, a telegraph line, and an electric light plant (RGJ 1907). Wonder's post office was established in September 1906 and was discontinued in August 1920. The post office at Hercules only lasted two years between 1906 and 1908. Post offices at Kingston and Victor lasted less than a year in 1907 (Frickstad and Thrall 1958).

Atlas Wonder Mine / Jack Pot

The Jack Pot mine was located in 1906 by Tom Stroud and was one of the first claims in the district. Tingley states that $40,000 was reaped from a single shaft. It was sold to Atlas Wonder Mining Company in 1910 and their developments included a two-compartment shaft that was 740 ft. deep (Tingley 1988). Adjacent workings included Hercules and Grand View. In January 1907, the Jack Pot was considered the richest mine in the camp and the main shaft was already 200 ft. deep (RGJ 1907). The Jack Pot shaft burned in the 1920s (Lewis 1967).

Nevada Wonder Mine

The Nevada Wonder mining claims cover five patented claims that include the primary three-compartment shaft that is 1,342 ft. deep and an associated shaft that is 2,000 ft. deep.

> Equipment on the property includes a 25-horsepower single-drum gasoline hoist, Rix portable compressor, ore bins, wood head frame, blacksmith shop, and mining tools. In the early part of 1939 several sets of lessees were employed in the upper levels of the mine, and the ore was trucked to the custom milling plant at Westgate for treatment [Vanderburg 1940:54].

The mill was supplied with electricity via a 150-mi. transmission line from Bishop, California which was purported to be the longest in the U.S. at that time (Lewis 1973) (Figure 15). However, the mill and the transmission line were stripped from the property in 1925 when junk dealers purchased the property, presumably to repurpose the machinery (Lewis 1967). When production on the Nevada Wonder Mine picked up in the 1930s and 1940s, Wonder miners were primarily small-scale lessees who used the mill at Westgate.

The first phase of production came to an end due to a multitude of causes including a lower grade of ore and higher manufacturing costs for silver. The last recorded year of production for the Nevada Wonder Mine was 1940 and, apparently, some of the shafts had caved in by this point (Lewis 1967; Vanderburg 1940). The Wonder mines were closed by Wartime Federal Order L-208 in 1942 (Lewis 1967). The wartime order banned work at all nonessential mines and most affected the gold mines. Presumably, the order was used to draw miners in to wartime efforts. The ban was lifted in 1945 but, by this time, many of the closed mines had folded (Puckett 2006).

THE MILL OF THE CHURCHILL MILLING CO., WONDER, NEV.

Figure 15. Nevada Wonder Mill in 1916 (Daman 1916:1).

Seeing an opportunity at the start of the Wonder District boom in 1906, M. K. Toohey and Higgins applied for water rights at Coyote Springs to a “proposed power plant site” and then on to the Victor and Red Fox camps for “mining, milling and domestic purposes” (DWR 1906) (Table 9). However, both applications were cancelled for various reasons. It was not until investors from the East Coast became involved in the District that a pipeline was installed from Horse Creek 10 mi. away (Vanderburg 1940). Investors from the East Coast took over the Nevada Wonder Mine and constructed a 200-ton cyanide mill on the claim in 1913 (Vanderburg 1940). The mill was constructed on the Ruby No. 1 mining claim.

Table 9. Applications for Water Rights for the Wonder Mining District

Application	Name	Township Range	Section	Year
290*	M.K. Toohey and C.C. Higgins	20N 33E	Not Specified (Coyote Springs)	1906
309**	J.C. Farrell	20N 33E	Not Specified (Coyote Springs)	1906

*Cancelled
**Denied due to conflict with application 290.

Three separate sites that include adits, mines, and structures associated with the Wonder Mining District have already been recorded within the Study Area.. In addition, the Hercules Townsite has already been recorded and was recommended as not eligible for listing in the NRHP. Many of the claims (likely patented) are excluded from the Study Areas but a dense concentration of prospects, shafts, and adits span an area 5 mi. square in the Louderback Mountains that have yet to be recorded.

Chalk Mountain

The entirety of the Chalk Mountain Mining District is located within the DVTA Study Area and a majority of the district is contained within the eastern half of T17N R34E. The district boundary, as defined by Tingley, encompasses the relatively isolated Chalk Mountain geographical feature which was mined for lead, silver, gold, molybdenum, and vanadium (Tingley 1998:20). Mining deeds on file with the Churchill County Recorder indicate that the earliest claims, dating to 1878, were located on the eastern flank of Chalk Mountain (Gray Eagle, West Gray Eagle, and Red Eagle claims for E. E. Wightman, Mary Cain, and F. Wohnoschaff) and were recorded as part of the nearby West Gate Mining District (Churchill County Recorder Document 187225). Based on the Recorder's documents and newspaper archives, there was a brief lull in work at Chalk Mountain until the early twentieth century. In 1905, the Nevada State Journal reported that the Cirac brothers (who also had claims in the IXL District) were working on three claims (Alameda, Colorado, and Leadville) at Chalk Mountain (NSJ 1905). Just a year later, the RGJ reported that P. Langdell was working on four claims named as the "Silver Horn" group of mines. Three mining claims (Mineral Survey 4180) (Peet 1913a) are excluded from the Study Area along the northwestern flank of the mountain. The claims were located in 1905 and 1906 and were recorded as Central, Copper King, and Horn Silver, claims of the Minnesota Nevada Investment Company. At the time of the 1913 mineral survey, these claims were considered part of the Fairview Mining District. Two shafts and three cuts were recorded as improvements to the property but there is no indication that there was a cabin or any mechanical improvements in the notes. In 1986, Quade recorded the Berg Claims in T17N R34E Section 14 as "several shallow shafts, two adits, and several prospects within several hundred yards of each other" on the west side of Chalk Mountain with UTM locations that partially overlap with MS 4180 (Quade 1987).

In 1923, E. M. Dawes headed up the Chalk Mountain Silver Lead Mines Co. and developed claims along several deposits of ore primarily along the east flank of the mountain (Vanderburg 1940). Counts for mineral production out of Chalk Mountain are sometimes counted in with Fairview (Vanderburg 1940). In fact, the caption for a 1923 map of the mining claims belong to the Chalk Mountain, Silver, Lead Mines Co. indicates that it is part of the Fairview Mining District. The map includes nine claims named Chalk Mountain Nos. 2, 3, 4, 5, 6, 7, 8, 9, and 11. The activity took on some momentum and eight smaller companies explored the areas in 1925 and 1926. In an undoubtedly promotional move, Dawes reported to the Nevada State Journal that Chalk Mountain Mines Inc. had shipped $100,000 in ore in just a few months (NSJ 1925). Vanderburg (1940) states that the Chalk Mountain Silver Lead Mines Co. installed "a 50-ton mill employing table concentration and having a Diesel power plant" in 1929 but it did not operate as expected so the mill was sold and work on the mountain was suspended. Of the equipment Vanderburg notes includes a "40-horsepower Fairbanks-Morse gasoline hoist, blacksmith shop, tools for hand mining, and camp accommodations for a crew of about 20 men" (Vanderburg 1940:18). By 1939, only a few lessees were working on the Chalk Mountain companies' property and in 1940 Vanderburg reported that production was minimal and companies became disinterested after some prospecting.

Records indicate that, over the course of a century, a large number of independent miners and mining companies maintained claims on Chalk Mountain. The extent and density of mining-related features are visible on the USGS 1972 Drumm Summit, NV and the USGS 1972 West Gate, NV 7.5-minute topographic quadrangles (Figure 16), which show at least 30 shafts and dozens of prospects associated with the mountain. In 1975, five companies or claimants were still listed as active in the area. Mining on Chalk Mountain might have ceased by 1985 (Moore 2001).

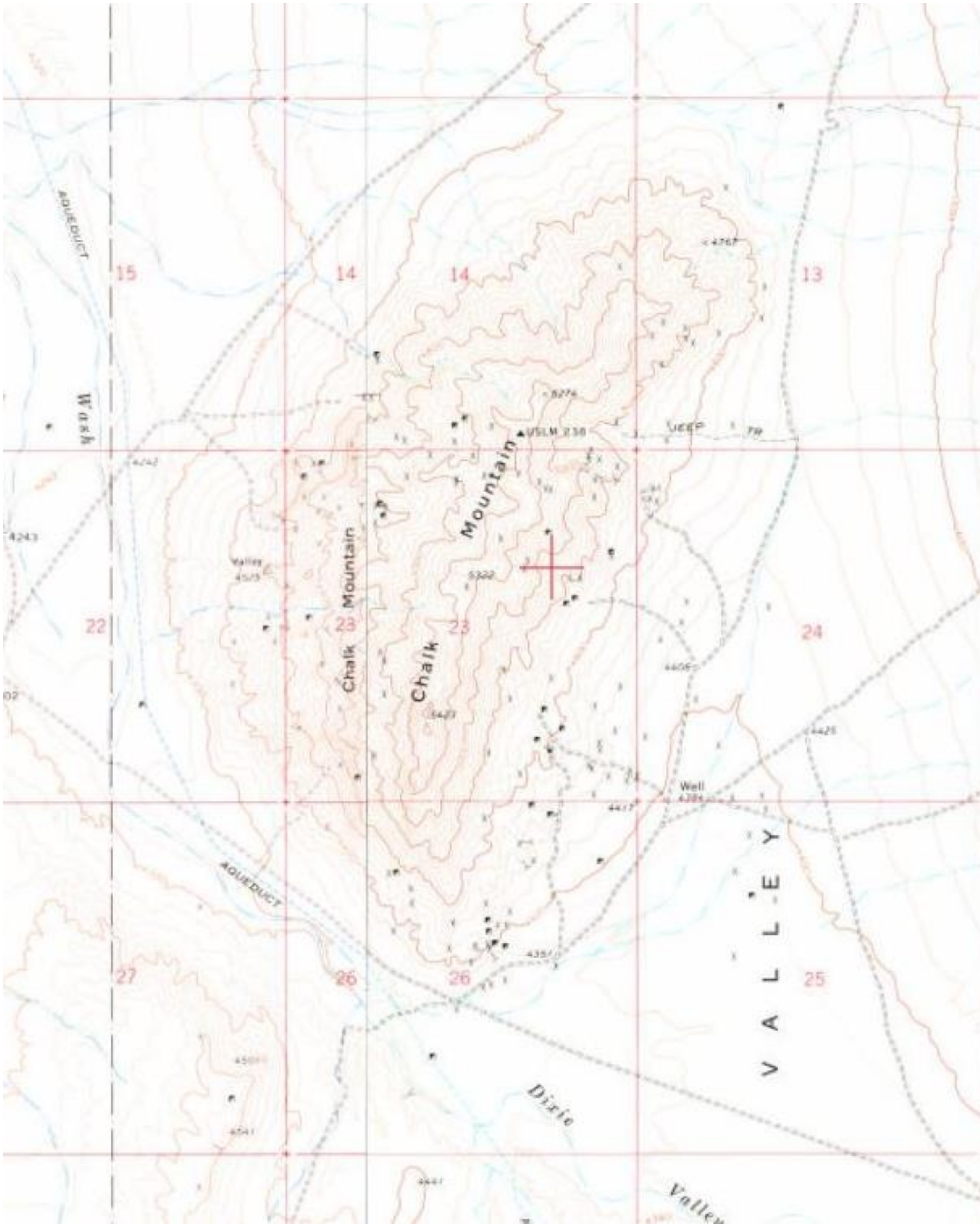

Figure 16. Chalk Mountain mining features on the 1972 Drumm Summit, NV and the 1972 West Gate, NV 7.5’ topographic maps.

A large mining complex including a camp was recorded in 2001 by NDOT on the west side of Chalk Mountain. The site includes shafts, prospects, and adits associated with the Chalk Mountain Westside Mines as well as tent platforms, trash scatters, rock-lined dugouts, as well as standing and collapsed structures. The site was left unevaluated because the evaluator felt there was not enough information to provide an evaluation (Moore 2001). Dozens of shafts, prospects, and tunnels remain to be recorded.

Westgate (alt., West Gate)

The Westgate Mining District straddles U.S. 50 in the eastern portion of the DVTA Study Area. Only a small portion of the district's northwest corner overlaps with the Study Area in T17N R35E. The District encompasses the southern portion of the Clan Alpine Mountains, spans Stingaree Valley and covers the northern foothills of Bell Mountain. As described by Bennett (1975), the first finds in the district occurred in 1906, but most of the production and development occurred between 1910 and 1920. Production centered on silver, lead, gold, and antimony (Tingley 1998:77).

In 1975, there were five claimants still active in the area for the Dark Night Group, Red Star Group, Shamrock Group, MG Group, and the placer and mill site (Bennett 1975). The Shamrock Group was described by Vanderburg (1940) as eight unpatented claims which yielded gold in 1936 but the production was relatively small. There was a 64-ft. deep shaft and a 300-ft. adit. The group also had "a blacksmith shop, a home-made gasoline hoist, tools for hand-mining, and accommodations for a crew of several men" (Vanderburg 1940:29).

The Westgate Mill was constructed in Stingaree Valley at the foot of the Clan Alpine Mountains in 1939 (Vanderburg 1940). It was constructed by the Westgate Mining and Milling Company and could process 35 tons of ore a day (Bennett 1975). The Westgate Mill processed ores from various districts including Wonder, Fairview, Eastgate, and other districts mentioned in this section (Vanderburg 1940). The mill was described by Vanderburg (1940:29):

> The mill is equipped with a 9- by 15-inch Blake-type crusher, a set of 22- by 12-inch Denver rolls, three Snyder disk samplers, a 4- by 4-foot Eimco ball mill, a Simplex classifier, three 10- by 12-foot redwood airlift agitators, four 18- by 10-foot redwood thickeners, a 4- by 7-foot 20-leaf clarifier, a Merrill-Crowe zinc dust-precipitating unit, and auxiliary cyanidation apparatus. Other equipment includes an assay office, a melting furnace, and camp accommodations for a crew of 10 men. Power for milling is supplied by 2 D-11,000 Caterpillar Diesel engines equipped with electric generators. Water for milling is obtained from a well near the millsite.

The Westgate Mill and associated structures have been recorded and the site is located within the DVTA Study Area. However, Tingley's district boundary for Westgate places the Westgate mill <u>outside</u> of the district boundary.

Sand Springs

The Sand Springs Mining District, as defined by Tingley, overlaps with the DVTA Study Area south of U.S. 50 and encompasses nearly the entire Sand Springs Range. The northern portion of the district spans U.S. 50 outside of the Study Area. The southern portion of the district along the Sand Springs Range contains silica but there is no indication of extensive mining or production in the area (Bennett 1975).

Dan Tucker Group

The Dan Tucker group includes the Decoma, Sunflower, Dan Tucker, Summit King, Tramp, and May Day (IMS 4758) claims in sections 2, 10, 11, and 12 of T16N R32E outside of the DVTA Study Area. The first shipment, in 1919 yielded $215 to $300 a ton. The Dan Tucker Mining Co., organized in 1925, managed the development of the mines and changed hands several times. The mine was leased to Smith, Towle, and Young in 1926. They constructed an amalgamation mill at Sand Springs for the Dan Tucker mine ore (Vanderburg 1940). E. Tailleur, F. Tailleur, and Dick Kemp bought the claims and eventually formed the Summit King Mines, Limited operated the Dan Tucker Mine in 1939. In 1923, the Dan Tucker Group was the sole location for development in the district. The Dan Tucker claim area was prospected by C. W. Kinnney in 1905 but extensive work was not started until 1912 (Vanderburg 1940). Kinney and Leslie Leonard excavated a 100-ft. shaft. At some point in the 1940s, the claims extended to include P&M, Double Ender No. 2, Noble Fraction, Neglect, Man O'War, and Homestake. A house and a blacksmith shop are shown in proximity to the Dan Tucker shaft on the claim. At the time of Vanderburg's assessment in 1940, there were three shafts, a gasoline hoist, a compressor, a blacksmith shop, and camp buildings. Vanderburg estimated the production from the Dan Tucker mines at $30,000 (Vanderburg 1940). Production for these claims had ceased by 1951 (Quade and Tingley 1987). The Dan Tucker Group was the most well-known and prolific producer in the Sand Springs District but it is located outside of the DVTA Study Area.

Various Tungsten Mining Claims

In 1987, Quade and Tingley reported that "there are several small tungsten deposits…along the northeast side of the Sand Springs Range" (Quade and Tingley 1987:64) that were actively mined in the early 1950s. The claims that used to be called Stardust, Garnet, and Sunflower were encompassed by the Shamrock tungsten claim. The U.S. Bureau of Mines (USBM) noted a tungsten mine in Section 20 of T15N R32E near the crest of the range. The Reveley and Red Bird property includes four unpatented claims (USBM 1963). The Red Top Tungsten Mine was also located in the Sand Springs District at the head of Red Top Canyon as three unpatented claims. This property included a 50-ft. shaft, trenches, and a stope (Anonymous n.d.). In 1943, the Nevada State Journal reported that tungsten mining in the Sand Springs District started in 1940 and that a cluster of tungsten groups was owned by V. Cye Cox from Fallon (NSJ 1943).

Fairview (Dixie Valley Training Area and Bravo-17 Study Areas)

The Fairview Mining District encompasses the Fairview Mountains from U.S. 50 to Slate Mountain at the south end of Churchill County. The eastern edge of the Fairview District overlaps with the southern end of the DVTA Study Area and the northern end of the B-17 Study Area. A cluster of patented mining claims associated with Fairview are surrounded by, and not included in, the Study Area (MS 4184). The Fairview Mining District was organized in 1906. In some records, the adjacent Bell Mountain and Gold Basin mining districts have also been included in the Fairview District (Schilling 1976; Tingley 1998:88) but for the sake of this report, they are all considered independently. Although its boom ended in 1908, the Fairview Mining District ultimately produced more than $4,000,000 in silver and gold ores, with silver accounting for nearly three-fourths of total mineral production.

In 1905, F. O. Norton discovered rich, silver-bearing ores just northwest of Fairview Peak on the claims later named the Washington, Oregon, Idaho, and Dakota claims (Shamberger 1973:5). One year later, there were nearly 400 mining claims within a 12-mi. square area. Perly Langdell located the most valuable claims (Boulder and Boulder No. 1) (Schrader 1947). Langdell sold the claims to Webber; Webber sold the claims to the Nevada Hills Mining Company; and the Nevada Hills Mining Company consolidated with the Fairview Eagle Mining Company in 1911. The area where the Boulder Claims had been became known as the Nevada Hills Mines and these claims formed the central area for the richest producing property in Fairview. The mine was closed in 1917 due to a "lack of ore" (Quade and Tingley 1987). The Fairview Eagle property, adjacent to the Nevada Hills claims to the northeast, was another important producer in the District. By 1907, 20 hoists were being worked on the property (Schrader 1947).

Fairview Townsite

The town of Fairview was established 2 mi. northwest of the Nevada Hills mine with a population of 2,000 on the east side of Labou Flat (Schrader 1947). It boomed to a population of several thousand in 1906, and by 1907 the town still had a population of 1,000 and "boasted two hotels, several restaurants, stores, and two newspapers" (Vanderburg 1940). The townsite had a post office, hotels, newspapers, and telephone utilities. The Fairview post office was in operation between April 1906 and May 1919 (Frickstad and Thrall 1958). The school at Fairview was open between 1910 and 1918 (Shamberger 1973). The townsite was supplied with a telephone and telegraph line and hydro-electric power (Shamberger 1973). The two newspapers, the Fairview News and the Fairview Miner, ran between 1906 and 1908. In 1910, another townsite developed 0.5-mi. northwest of Nevada Hills mine and it was known as New Fairview or Upper Town; however, by this time the population was only a couple of hundred people (Schrader 1947). Water had to be hauled to Fairview and the Nevada Hills camp sites from Eastgate. The Nevada Hills mine became the sole producer of the camp after 1912 (Schrader 1947).

The similarly named Fairfield townsite was located at the northeastern corner of the district close to U.S. 50 but appears to have only been occupied for a short time in 1906 (Davis 1994; Shamberger 1973). Shamberger (1973) has also suggested that two small mining towns/camps were once present in the vicinity of Bell Canyon. One of them, Togo, was supposedly recorded in September 1906. Shamberger (1973:Map 1) plots the site midway along a road that exits central Bell Canyon north toward the Bluff Mine, Gold Coin Mine, and Gold Coin No. 2 Mine (USGS 1972 Bell Canyon, Nevada 7.5-minute quadrangle). Neither townsite is depicted on the USGS 1910 Carson Sink, NV 1:250,000-scale map, indicating they were likely dead and gone by that time.

Nevada Hills Mining Claims and Mills

The major workings in the northern part of the district were at the Nevada Hills Mine east of the town of Fairview. Nevada Hills had its own townsite that drew people away from the Fairview townsite on Labou flat so that they could be closer to the major mining activity. Nevada Hills was likely occupied between 1907 and 1918, at the latest (Shamberger 1973). Shamberger (1973:20) summarizes the amenities in the camp:

> Following the Nevada Hills Mining Mill in 1911, the Nevada Hills Mining Company built a boarding house, a store, and domiciles for the management, with the result that the force of men employed were able to live on the company's property. By that time most of the mining activity was centered at the Nevada Hills Mining Company's property.

Production in the Fairview District declined rapidly when the Nevada Hills mill closed in 1917 and the post office followed in 1919. The Nevada Hills Mine group was the major producer for the Fairview Mining District and dominated the production values for the District. In 1918, the Nevada Hills Cyanide mill was offered for sale in the Engineering and Mining Journal (Figure 17).

Fairview Mining Groups Summary

The full extent of the Fairview Mining District is too extensive to cover intensively in this overview. A concise description of the major mining groups located outside of the Study Area is offered here to provide the reader with a quick overview of location dates and mining claim names. The Mizpah Mine, centrally located in the Fairview District, was located in 1906 by Otto Steinheimer and mining continued until 1911. The Jelinik (Big Ledge Mine) was located in 1906 on the south side of Mizpah Canyon. Mining on the property continued until, at least, 1928 resulting in several adits along the canyon walls. The Snyder/Gold Coin and Bluff/Nevada Fairview Mine group was located in 1906 at the head of Snyder Canyon north of Crown (Bell) Canyon. The Nevada Crown Mine was worked between 1906 and 1909 by W. H. Port, M. L. Sampson, and W. H. Walker. The group includes an adit and two shafts located just north of Crown Canyon (Bell Canyon). The road through Bell Canyon was once referred to as "Downeyville Road" or "Downeyville Pass Road," as it traversed the Fairview Range to connect Fairview Valley with Bell Flat, Quartz Mountain, Downeyville, and Tonopah (Schrader 1947; Shamberger 1973:3). Any production from these claim groups in the central and southern portion of the Fairview District was dwarfed by production at the Nevada Hills claim group which dominated mining efforts for the lifespan of the district (Quade and Tingley 1987).

Figure 17. Nevada Hills Cyanide Mill advertisement in the Engineering and Mining Journal, 1918.

The Fairview townsite and the dense cluster of mining-related features in the northwest corner of the district associated with the Nevada Hills Mine lay outside of the Study Area. In fact, most of the mining activity in the district occurred on the western flank of the Fairview Range, out of the purview of the Study Area. The short-lived Fairfield townsite is located within the Study Area and has been recorded 4 although it remains unevaluated. There are likely to be prospects, refuse deposits, and other ephemeral mining-related features on the crest and eastern flank although it is relatively steep. NVCRIS records indicate that none of the mining-related features of the Fairview Mining District have been recorded with the exception of scattered historic refuse deposits as part of multicomponent sites or independent that may be associated with either Fairview or the Bell Mountain Mining District and a mining shaft in Bell Canyon. A “shack” is marked on the 1957 Reno, NV 1:250,000 topographic map in the vicinity of the Gold Coin Mines roughly in the same location as a structure marked on the 1910 Carson Sink, NV 1:250,000. Although this structure is outside of the Study Area, it must have served as an important landmark for several decades. The Togo and Canyon mining camps within the district have yet to be located and the cabin may represent a long-standing structure from one of the camps.

The mining group excluded from the Study Area was located in 1906 and the six claims include Eva B, Eva B. No. 2, Argel No.1, Argel No. 2, Argel No. 3, and Prince Albert (Peet 1913b). At the time of the mineral survey in 1913, development on the group included two shafts, eight cuts, one drift, and two tunnels. It is not clear if any mining-related resources extend beyond the claim boundaries.

Gold Basin (Camp Wilson)

The Gold Basin Mining District is located east of Fairview Peak and abuts the Fairview District along its western edge. The district is visible on the USGS 1974 Bell Canyon, NV and Bell Mountain, NV 7.5-minute topographic quadrangles as a cluster of prospects and shafts (Figure 18). A single shaft located in nearby Branch Canyon is also associated with the district (Schrader 1947). The district was likely discovered in 1924, although, given its proximity to the Fairview District, it was probably prospected at some point prior (Tingley 1998:35). In the Churchill County Records, the first Mining Deeds were filed for the Gold Basin

Mining District (or Camp Wilson) in 1924 for the Neglected, Hidden Treasure, Ruby King, and Ruby King #1 claims by J. W. Droke and C. M. Hoover (Churchill County Recorder Document 37074).

The Gold Basin Mine is the most prominent claim in the district. At the time of a field visit in 1935, there was a single adit that extended for 130 ft. There was a gasoline-powered compressor at the mine and they were constructing and using an Ellis mill at Westgate (York 1935). Vanderburg (1940:28) stated that the Gold Basin Mining Company development included a 250-ft.-long adit, a winze, and several camp buildings but was inactive in 1939. He included this in the Fairview District. Schrader's recordation of the district includes the Hercules prospect, the Smith prospect, several gold placers, and the Gold Bug Mine. Schrader reported that there was placer mining using a dry-washing process in the lower half of Branch Canyon but the mining technique was not appropriate for the ore (Schrader 1947). Production out of the district was likely minimal due to small veins and low-grade gold and silver and ore (Schrader 1947). It appears that none of the mining-related features within the district boundary have been recorded.

Bell Mountain

Most of the Bell Mountain Mining District is in the B-17 Study Area and crosses the northern halves of T15N R34E and T15N R35E. Sometimes included in the Fairview Mining District, the Bell Mountain District includes the Bell Mountain Mine and the low hills northeast of Bell Flat (Tingley 1998:14). The initial discovery of gold and silver ore in the district was made in 1914.

W. W. Stockton located the Bell Mountain deposit ore that held both gold and silver in March 1914 (Schrader 1947). There is a 60-ft. shaft in the area. Claims on the Bell Mountain property includes Edith, Homestake, Homestake Nos. 1-5, Sunny Jim, and a claim owned by Logsdon and B. S. Wiley. At the time of the negotiations, Stockton drew a sketch of the claims helpfully showing the location of a tent on the Edith Claim, Shaft #1 on the Homestake Claim, and Shaft No. 2 on the Homestake No. 1 claim (Figure 19). When E. E. Carpenter was discussing the potential for the property, he also discussed power and water saying that the "power line from [likely Bishop] to Wonder runs within four or five miles of the property, consequently the installation of power would be a small item. Water sufficient for the treatment of a large tonnage could, I believe, be securred (sic) from Westgate where water is now pumped for mining operations for Fairview. There is also a possibility of securing water from wells in Belle Flat at a distance of from a mile to several miles in the opposite direction from the property" (Carpenter 1916a:3-4). Apparently, Stockton was residing and working in Rawhide while the negotiations with the Wonder Company were ongoing. Carpenter offered to hire four miners from Rawhide and bring them to Bell Mountain. Carpenter explains to a colleague: "The wage scale at Rawhide, which I expect to put into effect at Bell Mountain gives the miners $4.00 per day, so I gave Mr. Stockton $150.00 per month. He will, at present, have to do the cooking after working hours, sharpen the steel and do blacksmith work besides doing his real share of the mining" (Carpenter 1916b:2).

The Nevada Wonder Mining Co. took an option on the Bell Mountain property in October 1916 and added a 580-ft. adit with a 250-ft. winze but the yield did not pan out and extracting the ore would have been expensive. Schrader visited the property at Bell Mountain in the 1910s and 1920s and there was a 25-horsepower Fairbanks engine to run an air pump, compressor, and smaller engines (Schrader 1947) but there is no strong indication that extensive development or production occurred on the property after the 1920s. A San Francisco company took an option on the property in 1925 (Schrader 1947).

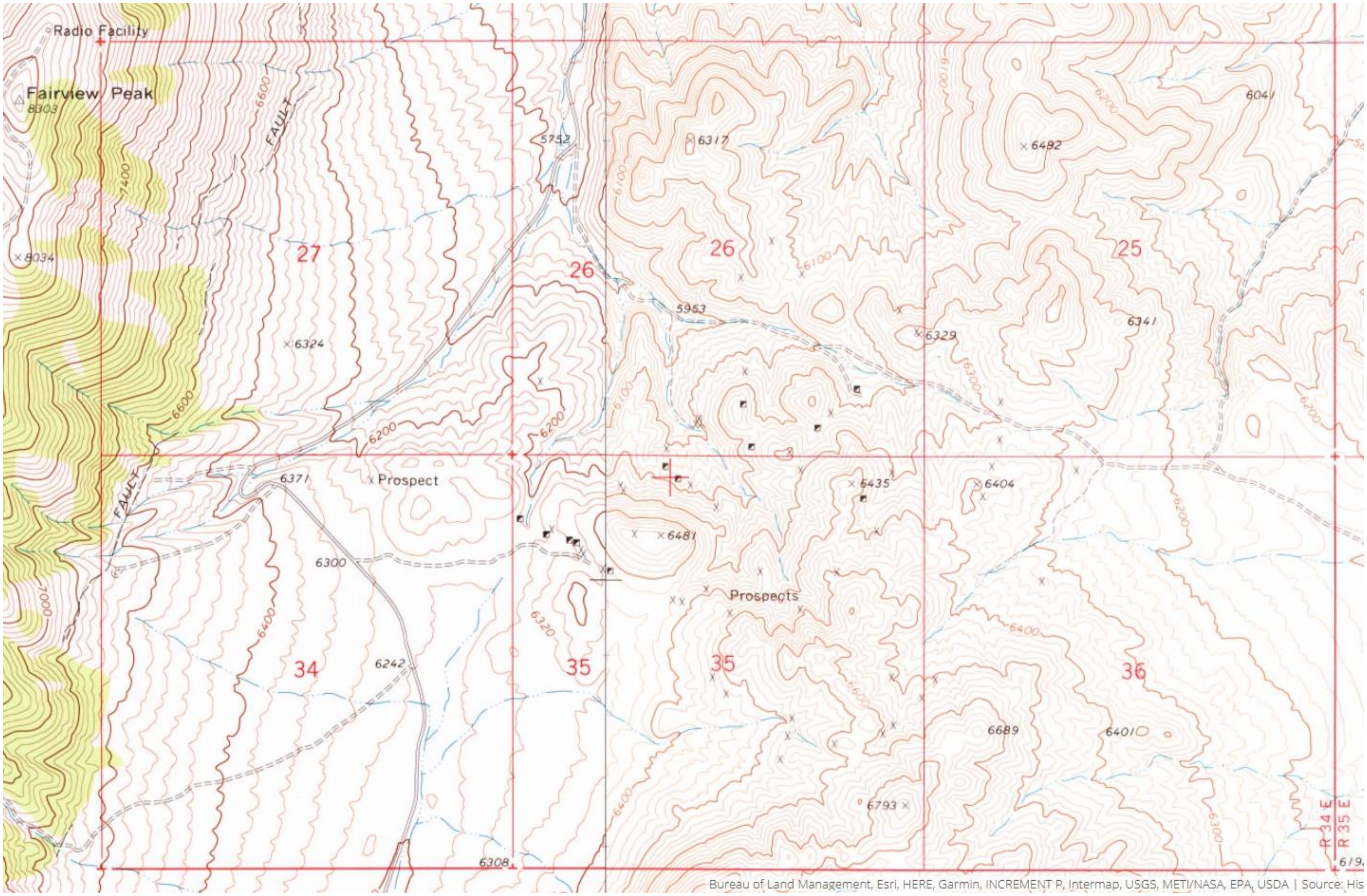

Figure 18. Primary mining features in the Gold Basin mining district as shown on the 1972 Bell Canyon, NV and the 1972 Bell Mountain, NV 7.5' topographic quadrangles.

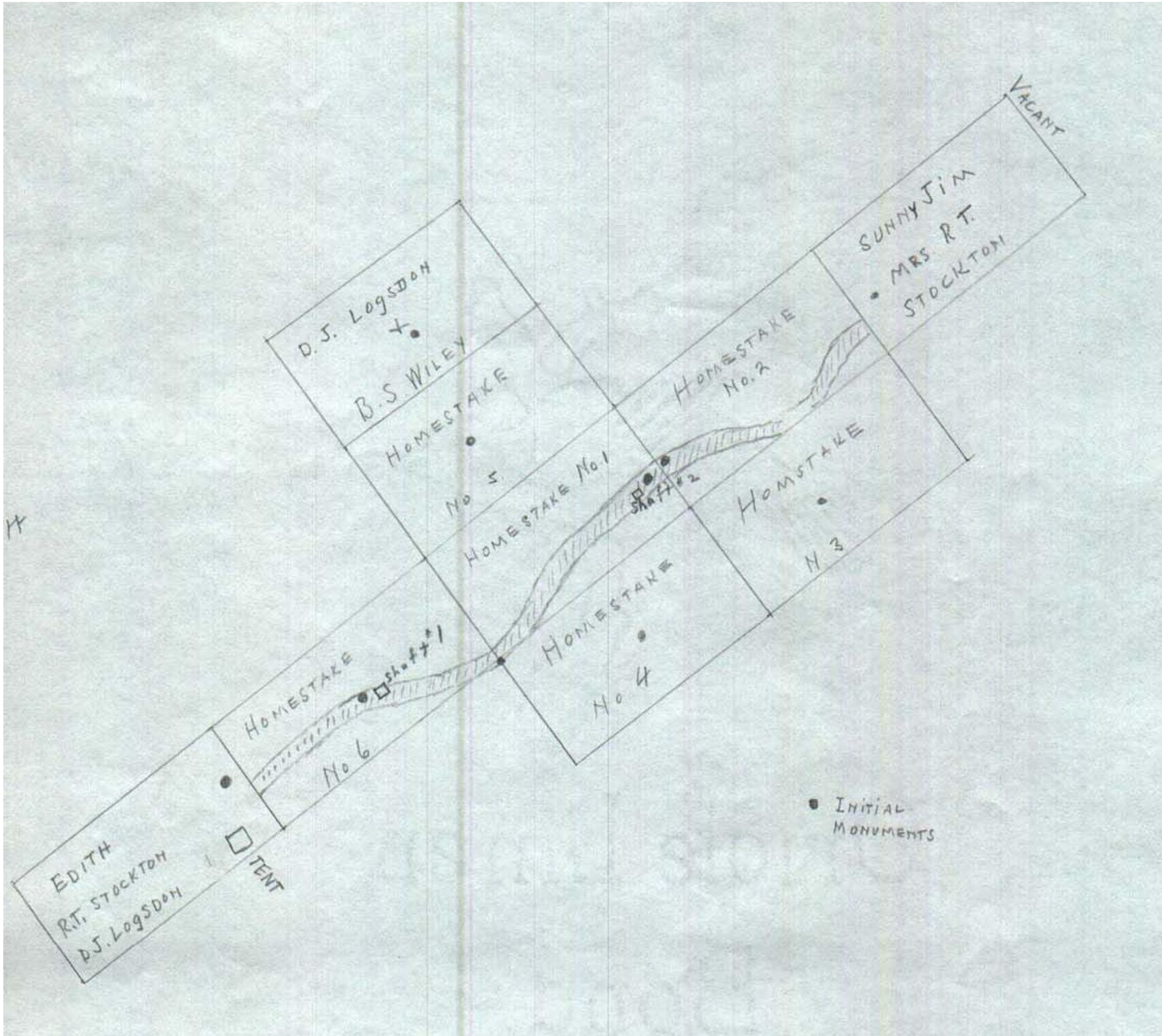

Figure 19. Sketch of the Bell Mountain Mining Claims showing location of claim markers, mine shafts, and a tent (Stockton 1916).

The Bell Mountain Mine has been recorded. ASM could not locate a production amount for the district but, given the low grade of ore, it was likely very small. Modern mining (1970s and 1980s) appears to have been conducted in the area by the Bell Mountain Mining Company and many of the historic mining features may have been affected.

Broken Hills

Prior to its current iteration, the Broken Hills Mining District had been considered part of the much larger Hot Springs Mining District that included most of the districts in the lower half of the B-17 Study Area including Rawhide, Eagleville, and Leonard. The current district boundary spans Mineral, Churchill, and Nye counties. The district produced gold, silver, lead, antimony, fluorspar, and tungsten. Schrader reports that James M. Stratford discovered the Broken Hills district in 1905 but did not have adequate resources to mine and develop the site until he returned with his partner, Joseph Arthur in 1913 (Danner 1992; Schrader 1947). Collectively, they worked the Broken Hills and Belmont Mines until 1920 and shipped about \$70,000 worth of silver-lead ore. Fluorspar deposits were concentrated in the Monte Cristo Mountains inside of the Study Area and includes the Kaiser Mine which was a very prolific fluorspar production location (Tingley 1998).

In 1926, E. Vanderhoff applied for a water use permit for the Mt. Anne Springs in T12N R34E to use the water for mining and/or milling in Broken Hills, but the application was later withdrawn (Application 7754). It is not known what mining group this was intended for.

Broken Hills Mine Group and Camp

The adjacent Calico Quartz Mountain Mines Company's five claims, efficiently named Calico, Calico No. 1 – No. 3, and Calico No. 5 included one adit, one tunnel, four shafts, one trench, and four pits. Similar to the Broken Hills claim group, all of the claims were located in 1920 with the exception of Calico No. 5 which was located in 1925 (Bruce 1926). In 1920, Stratford and Arthur sold their property for $75,000 to the Broken Hills Silver Corporation. Vanderburg (1937) estimated the total production of the lead-silver ore at about $100,000 for this property. After the sale, the Broken Hills camp drew several hundred people in 1920 when the district experienced a brief prospecting boom (Schrader 1947). The company shipped an additional $120,000 worth of silver-lead ore bringing the total to $220,000.

The Broken Hills townsite must have been located on the West Extension claims which were located in 1925 and 1926. The set of three claims (West Extension, West Extension No. 1, and West Extension No. 2) had 22 houses and a garage, as well as three shafts (Bruce 1927a). Water had to be supplied from Lodi, 15 mi. southwest of Broken Hills (Schrader 1947). In 1927, the Broken Hills claims were surveyed for the San Rafael Development Corporation (MS 4650). The survey showed several structures in a cluster of mining claims (January, Broken Hills Fraction, Broken Hills Special, Broken Hills Special No. 1 and No. 2). The structures include four bunkhouses, a garage, an office, a cook house, and assay office, a house, an ore bin, shop, store, and engine houses. The claims are identified as having been located in 1920 with the exception of the January claim which was located in 1925. At the time, work on the claims included two cuts, two trenches, and two shafts (Bruce 1927b).

Bell Flat Tungsten Property

The Bell Flat Tungsten property is located along an unnamed drainage on the eastern flank of Slate Mountain and lays entirely within the B-17 Study Area. The property alternately is described as part of Broken Hills and Fairview but for the sake of this report, it is included with the Broken Hills district because it is more temporally consistent. An undated claim map for the group includes thirteen claims named as Midnight, Midnight 1 to Midnight 5, Shelite (sic), Shelite 1 to Shelite 5, and Gateway which is located at the base of the drainage. A cabin and well are shown on the Gateway claim and a second well is shown on the Shelite 5 claim (Harris and Pine 1945). There appear to have been at least three adits on the property. The only production values available include seven tons of ore by 1963 without a monetary value offered (USBM 1963).

Baxter / Kaiser Mine Group

The Baxter/Kaiser Mine Group is confined to an unnamed hill east of the Monte Cristo Range within the B-17 Study Area. Fluorspar was located in the foothills of Mount Annie in 1922. The claims were located by Vet S. Baxter (Vanderburg 1937) but the name gradually transitioned to Kaiser in the late 1930s. At the time of the location, fluorspar was not in great demand but the deposit of fluorspar was so pure that "the mine became one of the nation's leaders in high quality fluorspar" from the 1930s to the 1950s (Danner 1992: 153). The Kaiser Mine and several shafts are located in Section 25, T14N R34E. In addition, there are two Kaiser wells located in nearby sections (Sections 19 and 31 T14N R35E), both with aqueducts leading to the Kaiser Mine area. A 1941 claim map of the Kaiser Mine claims shows that the claims included a row of cabins, a bunk house, a boarding house, four houses, and five mining shafts. The Kaiser Mine is said to have produced 6 million dollars in fluorspar between 1928 and 1957 and had been completely mined out (Bennett and Hoke 1975).

The Bell Flat Tungsten Mine has not been recorded and the Kaiser Mine is a KBNR site numbered as CrNV-03-1997. Both mining groups are encompassed within the B-17 Study Area. The Bell Flat Tungsten property includes three adits, two wells, and a cabin at the very least. The presence of cabins and other living quarters on both properties indicate there is undoubtedly associated refuse at each location.

King (a.k.a. Monte Cristo)

The King Mining District is located in the northeast section of Gabbs Valley in Mineral County, west of the Monte Cristo Range and the Broken Hills Mining District. The district is discretely defined along a northwest-facing slope in the Monte Cristo Mountains and is confined to, at most, a square mile. In September 1926, B. H. Donelly and Tex Mondell located a vein of silver, gold, and lead ore in a pre-existing shaft. Within a few months, nearly a hundred men were camped near the King and Queen mining claims collectively known as the Donnelly Group (Vanderburg 1937). The Desert Queen Mining Company ended up taking over the claims just a year later (Schrader 1947). In the first six months of 1927, they had shipped 35 tons of gold ore at $40 a ton which would equal $1,400 production. There seemed to be interest in development of the old mine in the 1960s. In summarizing the work that occurred over the 1920s and 1930s, potential developers stated that “their activities resulted in numerous drifts, x-cuts, shafts, winzes, open cuts, and channels” but that there was limited production partially having to do with poor road conditions and lack of advanced mining equipment (Wren 1963). Several of the King District mines have been recorded in the Abandoned Mine Land Inventory and have been recorded under the same agency number.

Rawhide (Regent)

The Rawhide district was discovered in 1906 and was most active between 1908 and 1920. Minerals produced in the district include gold, silver, copper, lead, antimony, and mercury. Only a small portion of the northeastern corner of the Rawhide District overlaps with the DVTA Study Area. As such, this report will not address the numerous claim groups within the district except in a cursory capacity. A very thorough historical context devoted to the Rawhide Mining District was prepared by Archaeological Research Services (ARS) for the Kennecott Rawhide Mining Company in 1993 (Palmer et al. 1993). In 1970, Shamberger authored a public interest history of Rawhide that primarily focuses on the townsite (Shamberger 1970). The district covers Buckskin Mountain, extends south to encompass Koegel Hills, and extends east to include a portion of the Big Kasock Mountains.

It is likely that Rawhide had the highest monetary production of all of the districts in the B-17 and DVTA Study Areas.

Regent

Regent was an earlier mining district 2 mi. northwest of the town of Rawhide on a toe ridge of the Bullskin Mountains. Once finds occurred near the Rawhide townsite, the district was expanded and collectively called Rawhide (Tingley 1998:59). Possibly because of the prominence of Rawhide, claims in the Leonard and Eagleville mining districts are often folded into the Rawhide District.

Rawhide Tungsten Property

The Rawhide Tungsten Property is located within the DVTA Study Area in Section 27 of T14N R32E and includes the claims named Crescent, Elizabeth, Oscar, Scheelite Nugget, and Last Hope. In the 1960s, the property included a 400-ft. adit, and several open surface cuts exposing sheelite mineralization (USBM 1963).

Rawhide Mining Camp

The Rawhide Mining Camp was bounded by Grutt, Hooligan, and Balloon Hills to the south and east. According to Shamberger, the population grew from a handful of people to a population of 7,000 in 1907. The population of Rawhide at its peak may have been as high as 10,000 people (Myrick 1962). A railroad grade was laid for the Rawhide Western Railway that would have connected the Southern Pacific's Mina stop near Shurz with the town of Rawhide; however, construction of the grade and any laying of tracks was halted due to a fire at Rawhide in September of 1908. Water was delivered to Rawhide from the Dead Horse Well Water Company from Dead Horse Well in Gabbs Valley for $2.50 a barrel (Myrick 1962). Rawhide had a post office from 1907 to 1941 (Frickstad and Thrall 1958). Reportedly, the camp had two banks that both failed (Whytock 1910). Small-scale miners were still living in Rawhide into the 1930s and 1940s and did a small amount of mining (Vanderburg 1937). The Rawhide Cemetery is located north of the townsite.

Rawhide Mills

Vanderburg (1937) noted that "two mills of an unusual type were erected" in the Rawhide District in 1909 that used different methods of crushing other than stamps. The Tadmor Mill uses a heavy muller and the Cannonball Mill has a series of rings and balls on a flat iron plate which crushes the ore as it moves from the interior to the exterior (Wolcott 1909). The mills were not in place long before being moved and did not produce a great deal of ore or income for the mines (Vanderburg 1937).

Rawhide Placer Deposits

Placer work within the Rawhide District occurred in Rawhide wash just south of the town and into the alkali flat at the northern end of Gabbs Valley and at base of the southern slope of Big Kasock Mountain and the Sinkavata (Sinkuata) Hills. Lack of water was a problem for Rawhide placer miners so they used a method of dry-washing to circumvent the issue (Wolcott 1909). Placers on the southeast slope of Hooligan Hill were worked in 1913 and resulted in $250,000 in production. Interest in placer mining at Rawhide was rejuvenated in the mid-1930s but did not yield much in the way of production (Vanderburg 1936a). The best placers, located on the southern slope of Hooligan Hill, were optioned in 1935 and renamed the Pilot placers (Vanderburg 1937).

Most of the Rawhide district is located outside of the Study Area. The Rawhide townsite is only 0.5-mi. east of the Study Area boundary. Prospects scattered across the Big Kasock Mountain portion of Rawhide are visible on the USGS 1980 Rawhide, NV and Big Kasock Mountain, NV 7.5-minute topographic quadrangles. These would be within the Study Area and have not been recorded. This is also likely to be evidence of placer mining in the alkali flat in the Study Area that covers the northern portion of Gabbs Valley. The historical context for Rawhide (Palmer et al. 1993) provides a guide for establishing significance for evaluation purposes as well as management recommendations for resources within the district. The authors stated that the Rawhide Mining District appeared to be eligible for listing in the NRHP under Criteria A and D and possibly Criterion C, but that the district had not been subject to a thorough inventory.

Leonard (Overlaps Dixie Valley Training Area and Bravo-17 Study Areas)

The Leonard Mining District overlaps with both the DVTA and the B-17 Study Area in Mineral County; however, the two main claim groups (Sunnyside and Nevada Scheelite) are located within the B-17 Study Area. Although small, the district overlaps the corners of four different townships: T14N R32E, T14N R33E, T13N R32E, and T13N R33E. The Leonard Mining District is tightly bounded by the Rawhide district to the west and the Eagleville district to the east. The proximity of all three districts is a source of confusion in the historic documents with mines interchangeably associated with Leonard, Regent, or Rawhide districts. Prior to their separate, more intensive developments, all of these districts were associated with the Hot Springs Mining District. Tingley states that the district was sometimes called Sunnyside after a small gold claim/camp near the Nevada Scheelite company claims. The district is named Leonard after a mine to the west that caused the enlargement of the district (Tingley 1998:45). Tingley states that the district was discovered in the 1870s (Tingley 1998) and it is important to note that the Sunnyside Claim Group was discovered in the 1870s; however, the other claim groups in the district were twentieth century claims that accessed different minerals. Collectively, the district yielded tungsten, gold, silver, and antimony.

Nevada Scheelite Mine / Camp

A large section of the Leonard District is composed of Nevada Scheelite claims, which produced tungsten. The claims include Titan, Titan No. 1, Ma Parker, Viking's Daughter, Princess, Turtle, Tungsten, Tungsten No. 1, Don, Blanco, Blanco No.1, Blanco No. 2, Duke, Gussie L, Blue Bell, and Lead Mountain. The presence and utility of tungsten in the area was not actualized until 1930 with production commencing in 1936 through 1944. The timing of the tungsten mining was particularly helpful for the war effort and the Nevada Scheelite, Inc. ran the claims from 1939 to 1951 (Mallery 1969). In 1942, surveyors conducted Mineral Survey No. 4773B for the Scheelite claims and mapped the Blanco Mill Site (with a well) located in T13N R33E in the Regent (or Sunnyside) Mining District as part of Nevada Scheelite, Inc.'s claims. In 1947, the Nevada Scheelite company applied for water rights for mining and milling purposes for Section 30 in T13N R33E (Applications 12100 and 12101). Mineral Survey 4773A shows 11 structures on the Don Claim (MS 4773A) including a sawmill, hoist house, change room, blacksmith shop, boarding house, and a cluster of six buildings.

In 1963, the USBM reported that the Scheelite claims were operating "from 1937 to 1957 producing at the rate of 130 tons" of ore a day (USBM 1963). From 1957 to 1967, there was a cessation in production at the mines although the land and mines were maintained. Kennametal, Inc. applied for a mineral patent on the Nevada Scheelite claims in 1969. The mineral patent was given to Kennametal on 7/27/1971 (Accession No. 27-72-0005) under the authority of July 26, 1866 Mineral Patent-Lode (14 Stat. 251). In the application, the authors indicated that the mining camp included milling and processing buildings, offices, houses, dormitory, commissary, and a school. At the time, 100 people were living in the camp (Mallery 1969). According to the report, the mine produced $9 million worth of tungsten from 1951 to 1957, with values prior to 1957 unknown.

Sunnyside Claims (T13N R33E)

The cluster of Sunnyside claims was discovered in the 1870s by Richard Flynn and are located just east of the (as yet undiscovered) Nevada Scheelite mining camp and claims and north of the Eagle Mine. Sunnyside included both the Sunnyside claim and the Great Eastern claim, South Star Groups, North Star Groups, and Borden Groups. At the time that Schrader wrote about the Eagleville district in 1947, the Sunnyside camp was included in Eagleville and the Leonard mine was considered an isolated straggle; however, the field work had been conducted from 1911 to 1920. Schrader notes that the former powerline that supplied Fairview and Wonder passed through the Sunnyside camp (1947). Sunnyside has been assigned to the Eagleville District by Schrader likely because the discovery was contemporary with mines at Eagleville. (1947). The Sunnyside claims were owned and operated by Tom Kenyon, a descendant of Asa Kenyon who was one of the first white residents of the Fallon area and had a store at Ragtown. W. H. Leonard who also owned claims in Rawhide and claims from the Nevada Scheelite group, had a claim at Sunnyside called the Leonard Barite Mine which was opened in 1928 and produced a considerable amount of barite. From 1929 to 1931, approximately 15 tons of barite ore a day was shipped to Oakland, California by the American Development Company (Schrader 1947).

The Nevada Scheelite Camp and the Sunnyside Camp are both KBNR sites.

Eagleville

The Eagleville Mining District is located south of Slate Mountain and west of the Monte Cristo Mountains in a U-shaped range sometimes called the Sinkavata (Sinkuata) Hills. Eagleville was, at one time, lumped into the larger Hot Springs District which included the northern edge of Gabbs Valley. Eagleville consists of two camps, Eagleville and Sunnyside. The Eagleville District is entirely contained within the B-17 Study Area and is roughly split between T14N R33E and T13N R33E. The Leonard Mining District abuts the Eagleville District to the west. This district was founded in the early 1870s. Shortly thereafter, the historic campsite of Eagleville was in place and inhabited intermittently for 30 years as ore production was sporadic. The town had a post office in 1889, but it was closed down 14 years later after the decline of the Rawhide District a few miles to the west of Eagleville. Claims in Eagleville yielded gold, silver, barite, and tungsten (Tingley 1998:29) but ASM could not find information on production values for the district.

Gold and silver ore was discovered in the Eagleville mine in the early 1880s, and Albert Woodruff formed the Eagleville Mining Company. The Eagleville Barite Mine was located in the 1870s as a gold property and was worked until the 1920s with some barite production occurring in the 1930s. The Highland Group consists of seven unpatented claims leased to the American Development Co. in 1929 and 1930 and produced 9,000 tons of barite. The group of three shafts and two tunnels also yielded small amounts of gold and silver (Vanderburg 1937). The Garnet claim was a tungsten claim located on the south slope of the hills that overlook Gabbs Valley but is part of the Eagleville District. Placer mining occurred in the early twentieth century at Eagleville, but little was gained. Placer prospecting continued in 1931 with very little production (Vanderburg 1936a:62).

Although the district has a dense cluster of mining features surrounding the Eagle Mine, ASM could find surprisingly little information on the district. This may be due, in part, to the small amount of production and the confusion between district boundaries in the area. The Eagleville townsite and Eagleville mine are both KBNR. According to Paher (1970:456), rock ruins are present at the Eagleville campsite and a standing wooden headframe is visible in aerial imagery. There are several shafts and prospects associated with the district that remain unrecorded. There may also be evidence of placer mining on the southern slope of the range leading in to the Alkali Flat similar to conditions at Rawhide.

Poinsettia

The northern portion of the Poinsettia District overlaps with the southern portion of the B-17 Study Area in T12N R33E and T12N R34E covering the southern portion of Fissure Ridge and the entirety of the Black Hills. Outside of the Study Area, the district spans Gabbs Valley and covers Mystery Ridge at the southern end and the Poinsettia Mercury Mine, for which the District is named. The district was originally limited to a small area around the Poinsettia mercury mine but has since been expanded to include scattered mines within Gabbs Valley (Tingley 1998:57). However, this section will only provide details regarding claims or mining-related features that occur on Black Hills and the Fissure Ridge in order to provide data that is directly pertinent to the Study Area. The Black Hills and Fissure Ridge area yielded gold and silver dating back to at least the 1950s but may have been mined as early as the 1910s. No production values are available.

Several claims were held by Peter and Mary Bartsas on the Black Hills just south of the Study Area with locations dates in the 1950s and 1960s (LR2000) in T12N R34E Sections 25, 26, and 36 including a millsite. The Black Hills were marked as a mining location on the 1957 Walker Lake, NV 1:250,000 topographic map and location dates for the Lithia claims on file with the Mineral County Recorder indicates that prospecting took place as early as 1952. The Desperado claims were located in 1975. The claims were not closed until 2002.

Most of the available data for mining in the Black Hills comes from a promotional document created by the Rawhide Mines Co. which outlined plans to consolidate the Lithia, Rita, and Desperado mines in the Black Hills as the “Desperado Properties” and mine for gold-silver ore. The document indicates that the Lithia claims were mined as early as 1911 and were formerly called the “Ringling” claims because of an association with circus people. They produced until Wartime Federal Order L-208 closed unnecessary mines (see Westgate) and was acquired and worked by a different owner after the war. The new owner constructed a mill on the site in the 1960s. The Lithia, Rita, New World, and Naugatuck claims were combined into the Desperado Project in the 1980s in order to open them collectively (Rawhide Mines, Inc. 1980). Most of these claims, however, cover the southern half of Black Hills outside of the Study Area.

Many mining features are visible on the USGS 1980 Mount Annie, NV and the USGS 1979 Ramsey Spring, NV 7.5-minute topographic quadrangles in the Black Hills on Fissure Ridge and their dates likely cluster in the 1950s through the 1970s. A small knob immediately west of Fissure Ridge in Section 16 of T12N R34E has six prospects and one adit recorded on the map. Two shafts are shown on a finger ridge of Fissure Ridge in Section 8 of T12N R34E. Additional prospects are located on the tip of Fissure Ridge in Section 5 of T12N R34E. Prospects are also visible along the eastern flank of the Black Hills and miners may have been following a vein.

One prospecting site with historic refuse has been recorded at the northern end of the Black Hills. There are undoubtedly several unrecorded prospects and a few shafts or adits that remain unrecorded within the Study Area in the Poinsettia District. However, it would be difficult to determine whether these are historic or modern given location dates and consistent work on the claims during the second half of the twentieth century.

Bravo-20 Study Area

Two mining districts (Carson Sink and Wild Horse) overlap with the B-20 Study Area but they are poorly documented with undefined periods of use.

Carson Sink

Information on the use of the Carson Sink Mining District for brine or salt mining is sparse. Tingley (1998) states that a small amount of sodium chloride (salt) was produced by solar evaporation in 1909 and shipped from Parran (Tingley 1998:20). In 1916, operations at the salt plant were described in a *Guidebook of the Western United States* as not having operated for several years but it had "formerly produced a few hundred tons of salt annually for local use at near-by settlements (Lee et al. 1916:183). In 1977, the Utah Salt Company stated that it had exploration rights or owned 144 square miles within the sink and was proposing a brine extraction facility, however it was determined that extraction and processing would be too costly and represented a bad investment.

Wild Horse

The southern portion of the Pershing Wild Horse Mining District overlaps with the B-20 Study Area. Although the district was prospected in the first decade of the twentieth century, it was not fully developed until World War I. The Wild Horse District was discovered by William Pettit in 1905 or 1906 (Tingley 1985; Vanderburg 1936b). Vanderburg states that there was a 35-ft. shaft but did not document which claim it was associated with or when it was mined (Vanderburg 1936b). Antimony was shipped in 1918 by H. E. Loufek and this was the only record of production until the Green brothers started work on the Green mine. The Long Lease mines are located outside of the Study Area but produced tungsten the 1930s, 1950s, and 1960s.

The Green Mine was run by Averill and Frank Green in the 1930s. On December 4, 1935, the Reno Evening Gazette reported that the brothers were going to start shipping ore from their property. The yield was largely silver and lead with smaller amounts of antimony. The newspaper also notes that they would have to build a road in order to truck the ore out. In 1936, Vanderburg noted that the Green brothers were the only ones working in the district at the time on their unpatented claims. The Green Mine is located in T25N R32E Sections 14 and 15. These are likely the cluster of three adits visible on the 1956 Lovelock, NV 1:62,500 topographic quadrangle (Figure 20). It was discovered during World War I, and worked from 1918 to 1920 and in the 1930s. A total of 46 tons of antimony was recovered from the mine in addition to smaller amounts of silver and lead. An adit and a large open cut were recorded in 1985 (Bonham 1985). According to Tingley, the Green Mine was the most substantial producer of the district from 1936-1937, 1952-1954, and 1962-1967 (Tingley 1985). The Green Mine was also known by the name Silver Queen. The Green Mine property consists of adits and an open cut. There is also another unnamed adit in the area most likely related to the Green Mine (Bonham 1985).

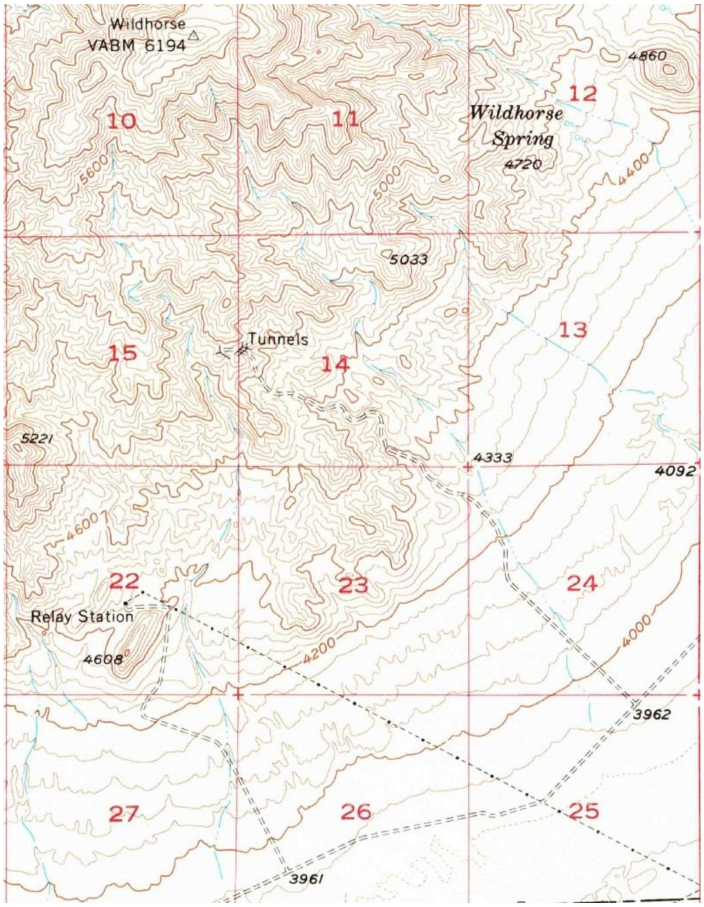

Figure 20. Adits associated with the Pershing County Wild Horse Mining District shown in Sections 14 and 15 on the 1956 Lovelock, NV 1:62,500 topographic map.

Piute Iron Deposit

The Piute Iron deposits are located at base of the West Humboldt Range and are considered part of the Wild Horse Mining District (USBM 1966; Tingley 1990a). The iron deposits were discovered in 1952 by C. William Hunley who found magnetic anomalies with a dip needle. Hunley initially staked six claims in Section 26 and two claims in Section 24 but it appears that the claims were never patented. The extent and epth of the deposits were later explored in greater detail with a magnetometer and drilled cores. The magnetic anomalies straddle T25N R32E Sections 24, 25, and 26. After the full extent of the deposit was explored, Hunley had two blocks of 18 claims each over the anomalies. The Piute Iron property was optioned to U.S. Steel in 1960 but they declined in favor of a better option near Yerington (USBM 1966). It appears that the claims were never patented and never produced any iron although the reports indicate that the extensive iron ore deposits contain a high percentage of iron (USBM 1966).

In sum, the Wild Horse District Mining District is difficult to characterize because it represents an amalgam of mining for a wide range of materials over the course of the twentieth century using a variety of mining techniques. Minerals recovered from the district include tungsten, antimony, silver, lead, iron, arsenic, and fluorspar (Tingley 1998:78-79).

Archaeological Implications for the Study Areas

Mining-related resources are likely to be plentiful in the Study Areas, especially in the DVTA and B-17 Study Areas where any given mining district is, at most, 7 mi. from its nearest neighboring district. Numerous prospecting trenches and pits as well as claim markers and rock cairns are bound to occur inside and outside of the formal district boundaries identified by Tingley (1998). Miners would have followed veins, tested outcrops, and marked potential lode locations before settling on a certain claim. In areas with significant amounts of mining, the surrounding landscape includes these more ephemeral mining markers.

Overall, surprisingly few of the mining-related cultural resources in the Study Area have been formally recorded. A cultural resources inventory limited solely to historic mining-related activities would be a laborious but valuable project. Recording the districts as well as their contributing and non-contributing components would undoubtedly facilitate management of the resources. Locations of mining properties are generally well known to looters and vandals and recording the mining sites would assist in tracking destruction to the property. In addition, recordation of the major mining districts (e.g., Rawhide, Eagleville, Wonder, and Fairview) would provide a challenge for establishing site and district boundaries as well as recording the sites as part of a historic mining district. These four districts may also include structures or roads that would require a separate Architectural Report and recordation with the Nevada Architectural Resource Assessment forms.

Three of the mining districts, namely Fairview, Rawhide, and Wonder, stand out as having substantial production numbers and undoubtedly contributed to the local and regional economy. In addition, the La Plata townsite may provide some data on demography and early political organization in Churchill County and the state of Nevada. Its importance as a mining camp is minimal but adds an interesting component to its importance as an early county seat. The townsite is a KBNR site (Pendleton et al. 1982) but could benefit from a cultural resources inventory. The remaining districts were not occupied or in use for long periods of time so cultural resources are likely relatively limited when compared to the larger districts.

Agriculture and Ranching

Following the rush to the Comstock in 1859, the Fallon area began to develop an active ranching and farming industry to grow and raise food for the mining camps (Townley 1998). In order to provide meat to the Comstock, ranchers would drive herds to towns in the mining district where butchers would slaughter the cattle and sell the meat to camp residents (Townley 1998). In addition, the transportation and communication lines (Pony Express, Telegraph, Overland Stage Company) passing through the area were relatively well-established in the 1860s, which required food, hay, and grain for horses, travelers, and station keepers. Alfalfa was introduced to Nevada in 1864 and quickly became the staple crop of the Lahontan Valley (Townley 1998). Farms and ranches supplied many the growing industries in the early stages of Nevada history with meat, milk, and grains. When mining in the Comstock declined in the 1880s, ranchers looked to California to sell their products in order to stay viable (Townley 1998). In the nineteenth century, these ranches and farms were established on existing arable land, leaving lands with no method of irrigation wide open for development if the water problem could be solved.

Irrigation in the Fallon area has always been an issue for ranchers and farmers and plans for a large-scale irrigation project began in earnest in the 1890s spurred on by flooding in the 1860s. After a flood in 1862, concerned Churchill County residents petitioned to construct a bulkhead which would divert water from the Old River (which ran north to the Carson Sink [Lower Carson Lake]) into the South Branch (which ran south into Upper Carson Lake) (Townley 1998). The diversion was the first attempt to control water flow and divert it for irrigation (Townley 1998). Forty years later, construction began on the Newlands Project which was a large-scale system of canals designed to divert water to larger areas of the Carson Desert in an attempt at reclamation of desert lands for agriculture.

The ease of travel to and through the state of Nevada in the early twentieth century as well as the investment into the Newlands project increased interest in settlement of areas that were generally considered uninhabitable. This included areas like the Carson Desert. Nevada began to form plans and develop acts that would support irrigation for crops and the search for groundwater. The October 22, 1919 Desert Reclamation Act (41 Stat. 23) allowed the Secretary of Interior to issue permits to citizens to drill for groundwater on public lands in Nevada. Ideally, the act would have stimulated agriculture in Nevada.

In 1934, President Roosevelt signed the Taylor Grazing Act in an attempt to prevent overgrazing on public lands. The Act resulted in six grazing districts being established in Nevada between 1935 and 1951 all of which contain named grazing allotments which are listed for each Study Area (RCI 2016). Ranchers still populate the region and there are currently grazing allotments in use that overlap with NAS Fallon-administered lands and the Study Areas discussed below.

Bravo-16 Study Area

The environment of the Dead Camel Mountains is not conducive to agriculture when compared with the Lahontan and Churchill valleys straddling the range to the east and west. Accordingly, there is not a long history of farming or agriculture associated with the B-16 Study Area. As part of the Newlands Project, construction of the Lahontan Dam across the Carson River to the northwest of the Study Area took place between 1911 and 1914. However, the dam, and the resulting Lahontan Reservoir, did not appear to have a significant impact on the use of the B-16 Study Area.

The history of the Study Area in the Dead Camel Mountains indicates that it was not used for farming or agriculture but was likely used for grazing by ranchers in nearby valleys. The Lahontan Grazing Allotment encompasses most of the Study Area with a small portion to the south entering into the northern part of the Horse Mountain grazing allotment. These allotments resulted from the Taylor Grazing Act but it is not clear what year the grazing allotments were named and put into use.

Two corrals are recorded on modern maps for the Study Area. The USGS 1985 Salt Cave, NV 7.5-minute topographic map shows a corral located in Section 8 of T17N R27E, just 700 ft. south of a historic road through the Dead Camel Mountains in the Study Area (see *Transportation and Utilities* section). Based on Nevada Division of Water Resources records for the project area, the BLM arranged to have a well drilled at the present location of the corral in 1967 for livestock use. The application for water rights was filed in 1981 for Red Mountain Well #2 (DWR 1981a) intended for stockwatering use with 100 cattle and calves. However, it appears that the permit was cancelled not long after filing in October 1981. In 1985, the Red Mountain Well #2 water rights were picked up by E. L. Harriman and Sons for stockwatering use (DWR 1985). The corral and well (marked as the "Casey Well" on the USGS 1985 Hooten Well, NV 7.5-minute topographic quadrangle) are located within the Study Area in Section 24 of T17N R26N. Water rights were acquired for the Casey Well by Marguerite Anderson for stockwatering in 1981 (DWR 1981b). The corral is not shown on any of the historic maps and is likely contemporary with the well. Although the Red Mountain Well and the Casey Well are located along a historic road, both of them post-date 1967.

The research of the B-16 Study Area indicates that there was no historic use of the area for agriculture or ranching apart from use as a grazing area by nearby ranches. There are modern corrals and wells in the Study Area that post-date 1967 and do not provide any significant data about the history of ranching and agriculture in the area.

The Newlands Project

While Newlands-related water conveyance structures are located across the existing B-16 and NAS Fallon Main Station lands, there are no constructed elements of the Newlands Project in the proposed Study Areas. Regardless, the Newlands project had an undeniable effect on the region's population, economy, and social structure. Background on the Newlands project is provided here in order to understand the broader implications of farming and ranching in the Study Areas. The Lahontan Reservoir, just west of the B-16 Study Area was part of the Newlands project and the northeastern reach of the Newlands project stopped just south of the B-20 Study Area. After the discovery of the Comstock Lode in 1859, agriculture in Carson Valley along the Carson River grew with the needs and demands of the thousands of miners, families, and entrepreneurs that lived and worked on the slopes of Mount Davidson. Ever since this initial boom, agriculture has managed to have some staying power in Nevada, despite fluctuating mining boomtown markets. Due to its alkaline soils and the general lack of water, the Fallon area did not develop as an agricultural center until the Newlands Project was under way beginning in 1903.

As the Nevada mining industry began to experience a major decline at the end of the nineteenth century, and agricultural efforts were hampered by a long drought during the 1880s and 1890s, Nevada politicians began looking to diversify the economy and improve the odds for agriculture through the development of large-scale irrigation projects. As early as 1888, Senator William Morris Stewart was advocating such projects in the U.S. Senate, though he ultimately proved to be unsuccessful. Francis G. Newlands, who was elected to the U.S. House of Representatives in 1892, proved to be a much more effective advocate for irrigation. During Newlands's fifth term, President Theodore Roosevelt entered office as a strong supporter of national policies that would aid in the development of agriculture in the arid American West. Newlands saw his chance and sponsored the Newlands Reclamations Act of 1902. Newlands was given the honor of having one of the first reclamation projects funded in his district (Hulse 1991:227-229).

The Truckee-Carson Project (later renamed the Newlands Project) began construction on the Derby Dam immediately after the Reclamation Service (now Bureau of Reclamation) authorized the work in 1903 (Hardesty and Buhr 2001:6). The U.S. Reclamation Service split the route of the canal into three 10-mi. segments with construction camps and staging areas located at convenient points along the way (Townley 1998:25). By 1905, the 30-mi.-long Truckee Canal was completed and was providing water to irrigate farmlands in the newly founded towns of Fallon and Fernley through an intricate system of canals, lateral canals, and drains as well as dams and reservoirs. The Truckee Canal diverted approximately half of the flow of the Truckee River from the Truckee River Basin to the Newlands irrigation system and the Carson River Basin. Between 1911 and 1913, the Lahontan Reservoir was under construction on the Carson River, which impounded waters from the Carson River and Truckee Canal. Water flows from the Reservoir to the Carson River Diversion Dam, which splits the water into a northern line ("T" Canal) and a southern line ("V" Canal).

By 1914, the towns of Fernley and Fallon had grown into fairly orderly and reasonably prosperous communities (Hulse 1991:227-119). But with time, existing irrigation systems were in desperate need of repair. In 1926, control of the Newlands Project switched from the Reclamation Service to the Truckee-Carson Irrigation District (TCID). In the 1930s, the Civilian Conservation Corps (CCC) undertook the work of enlarging and upgrading existing irrigation systems, much to the relief of farmers who had fallen on hard times (Kolvet and Ford 2006:70-71). Two CCC camps (Camp Newlands [BR-34] and Camp Carson River [BR-35]) were assigned Newlands duties and were established within or near the Fallon city limits in 1935 (Pfaff 2002:35; Townley 1998:68). The CCC camps completed much rehabilitation of existing networks, but also constructed a number of regulating features within the canals, such as checks, culverts, drops, flumes, pipe conduits, brides, canal linings, and roads, but the largest undertaking was the partial construction of Sheckler Reservoir in 1940-1942 (Pfaff 200235; Townley 1998:68). Sheckler Dam, however, was not completed until 1957 (Pfaff 2002:39). By May 1942, both CCC camps were closed.

The plan was that 400,000 acres would be irrigated by the series of canals fed by the Truckee Canal and the Carson River. In the end, it was determined that only 87,500 acres of land could be irrigated by the irrigation project. Ultimately, the Newlands Project dramatically changed the landscape of the Carson and Truckee river basins with the birth of a new agricultural center located on formerly uncultivable land, dams built up and down both rivers affecting the flow of water and the spawning of fish, and the diversion of water away from Pyramid Lake and the Pyramid Lake Indian Reservation. Many problems arose from the Newlands Project. The irrigation of the alkaline soils increased their alkalinity, and the soils had poor drainage, making many areas a swampy, alkaline mess. This problem was addressed by creating drainage systems to remove excess water. Another problem that emerged was a dispute over water storage rights at Lake Tahoe, which led to prolonged lawsuits (Hulse 1991:227-229). Other litigation revolved around the water rights to the Truckee River and Pyramid Lake. The Orr Ditch Decree settled most of these issues in 1944 (Hardesty and Buhr 2001:11).

Bravo-17 Study Area

There is a long history of agriculture and ranching in the B-17 Study Area and applications for water rights can help delineate when and where certain water sources in the Study Area were being used for stockwatering or irrigation. A study of historic (pre-1967) water right applications within the Study Area resulted in a list of 18 applications (Table 10), most of which are in the southern portion of the Study Area and date between the 1860s and 1950s. At least one of the water sources (Rawhide Hot Springs) was in use for stockwatering as early as 1864 and is associated with a nearby transportation route (see *Transportation and Communication* section). Some of the applications indicate use for mining and milling but these are limited.

The Bell Flat Well (see Table 10) application for vested rights on the well dating to 2011 indicates that the water source was in use by Warren Williams as early as 1878 for watering up to 6,000 sheep (DWR 2011). The well has already been recorded and the site form was updated in 2014. Although there is a known well in Little Bell Flat, there is no record of its construction or use in the DWR database.

The applications also provide descriptions of the improvements to the wells or springs to facilitate use. J. Ferguson and W. L. Fisk developed the Jack O'Conner Spring on Mt. Annie with a concrete wall, pipes, and galvanized tanks to provide water for 200 cattle (DWR 1940). One of the most interesting applications was filed by George Williams for water rights at Indian Springs, in which he states that "[t]he dam for impounding water is about 12 ft. high and 40 ft. long. The reservoir when full is about 100 ft. in diameter. The dam is of earth against a hand placed rock wall. This dam is said to have been built by Indians at an indefinite period, but since 1890 claimant has kept (it) in repair and has used the water impounded for watering his livestock." (DWR 1928). Ultimately, Williams stated that he watered anywhere between 2,000 to 6,000 head of sheep at the spring.

The earliest recorded water rights application on file for the B-17 Study Area is for the Bell Flat Well.

Table 10. Water Rights Applications for B-17 Study Area

Application	Owner	Township Range	Section	Year
15198*	Wittkoff, William	T12N R33E	16	1953
15196*	Norris, Emmett	T12N R33E	20	1953
24118*	Farris, Howard and H. B. Jackson	T12N R33E	20	1967
15199*	Brodie, A. L.	T12N R33E	20	1953
15201*	Shelver, E. H.	T12N R33E	21	1953
15194*	Maris, Harland	T12N R33E	22	1953
15195*	Maris, Merle	T12N R33E	22	1953
V08909	Greenfield, Ron	T12N R34E	7 (Rawhide Hot Springs)	1999 (1864)
6190 / 7489 / 7954	O'Neill, G. W.	T13N R34E	35 (Mt. Ann Spring)	1920 / 1925 /1926
8138	O'Neill, G. W.	T13N R34E	11	1927
10616	Ferguson, J., and W. L. Fisk	T13N R34E	11 (Jack O'Conner Spring)	1940
7751(*)**	Hickey, Scott	T13N R34E	Mt. Anne Springs	1926
V02184	George B. Williams Land & Livestock	T15N R34E	25 (Indian Spring)	1928 (1890)
V10070	(Warren Williams) Michael A. and Claudia Casey	T15N R34E	33 (Bell Flat Well)	2014 (1878)
7236	O'Neill, George W.	T15N R33E	30 (Barron Spring)	1924

*These applications were withdrawn or cancelled and it is not clear if the planned appropriation of water never occurred.
**Domestic and town supply for Broken Hills

George O'Neill's name is on several of the water rights applications in the B-17 Study Area dating to the 1920s. In 1920, G. W. O'Neill filed an application for appropriation of public waters for stockwatering and domestic use in Section 35 of T13N R34E (DWR 1920). According to the 1920 U.S. Census records, George O'Neill lived in (or in the vicinity of) Rawhide and described himself as a stockman (1920 Census). In the water rights application, O'Neill states that he had been piping water out of the springs and into iron tanks since 1917 and he filed renewing applications in 1925, and 1926 and added a new spring in the northeast corner of the township in 1927 (DWR 1925, 1926, 1927).

Gabbs Valley

The B-17 Study Area surrounds, but does not encompass, the Hot Springs located in Gabbs Valley (T12N R33E Section 7). The Hot Springs has a long history as a stopping station along a travel route (see *Transportation and Communication* section) and the water rights application for the (Rawhide) Hot Springs has been in use since 1864 and was used for stockwater, domestic purposes, and commercial use as a mineral bath. The water was also used to irrigate hay, meadow, and pasture (DWR 1996). In addition, a structure was recorded at the Hot Spring on the 1909 on the Hawthorne, NV 1:250,000 topographic map. A history of residents and use of the Hot Spring is recorded in Danner's (1992) *Gabbs Valley, Nevada: Its History & Legend*. The first non-native settler at the Hot Spring appears to be a man named William A. Woodruff in the 1880s (see *Emigrants* and *Transportation* sections) who later moved to Rawhide where he worked as a miner (Danner 1992). In 1910, Michael and Anna Wedell moved to the Hot Springs and began to develop the area as a potential resort. Michael Wedell sought a land patent for the Hot Springs property in 1921 under the May 20, 1862: Homestead Entry Original (12 Stat. 392). The Wedells also bottled water from the springs and sold it to residents of Rawhide. Anna Wedell continued to live at the Hot Springs after the death of her husband until 1952 and Thomas Kenyon, son of Asa Kenyon (see *Emigration, Expeditions, and non-Native settlement* section), reportedly lived at Hot Springs near Anna Wedell for several years (Danner 1992).

One township to the east (T12N R33E), the B-17 Study Area surrounds a land patent by Edward O'Shaugnessy issued in 1932 under the October 22, 1919 Desert Reclamation Act (41 Stat. 23) which allowed the Secretary of Interior to issue permits to citizens to drill for groundwater on public lands in Nevada.

Following the Taylor Grazing Act of 1934, four grazing allotments were created that overlap or intersect with the B-17 Study Area including Clan Alpine, LaBeau Flat, Phillips Well, and Pilot-Table Mountain. It is likely that these grazing allotments have been in use since at least the 1950s and may retain evidence of grazing by sheep, cattle, and horses. Given the history of sheep, cattle, and horse grazing in the Study Area, there are undoubtedly cultural resources that are associated with ranching including engineered springs, wells, and stockponds that have been constructed or modified to facilitate stockwatering. In addition, there may be barbed wire fence segments, fenceposts, corrals, and small refuse deposits associated with the temporary campsites of cowboys, vaqueros, herders, etc. At the north end of the Black Hills in Gabbs Valley, a 2009 cultural resources inventory identified a historic well location and homestead site. Based on diagnostic elements, the site was dated between 1904 and 1931 (Malinky and Rhyne 2009). Historic refuse scatters sites or components and two historic road segments are also in the vicinity (Kautz and Malinky 2009). These resources are likely related to the historic ranching economy in Gabbs Valley (see Danner 1992).

Dixie Valley Training Area Study Area

There was a substantial Paiute community living in the Stillwater, Fallon, and Carson Sink area in the late nineteenth and early twentieth century. Paiute families continued to utilize the Stillwater Range, including parts of the range that are included in the DVTA Study Area, for herding and collecting resources while they worked for local ranchers, and continued entrepreneurial work selling items in Stillwater, Fallon, or at the Walker Reservation (Fowler 1990). Some of the activity was borne out of necessity since the development of ranches in the 1870s had a drastic effect on resources through sheep, horse, and cattle grazing as well as leveling cattail growth in marshes to develop ranches and diversion of water for irrigation. According to Fowler (Fowler 1990:53): "Although they were living at Fallon, some 15 miles from Stillwater and Carson Lake and farther yet from Carson Sink, people still went to these areas to take traditional foods…(Sam Dick) also continued to take his family to the east side of the Stillwater Range for pine nuts, to the area south of Jobs Peak that was his by right." Work for the local ranches varied but also required use of the range: "Horse and hog hunting were favorite occupations as well. By the 1890s, wild horses had increased in number in the Stillwater Range and the marshes and were competing with the ranchers' cattle for summer grazing. Indian men in the area were paid a bounty on the horses, and the men sometimes kept the meat for their families. Billy Springer, Sam Dick, and others had a horse corral in Cox Canyon, on the west side of the Stillwater Range." (Fowler 1990: 48). Sam Dick also worked herding sheep for Charles Kaiser in Dixie Valley.

Dixie Valley and the surrounding ranges started to garner greater public attention in the early 1900s. As various mining districts began to grow, particularly Wonder and Fairview, ranchers and farmers looked to settle in Dixie and Fairview valleys. Although land in Dixie Valley was used for grazing in the 1870s, it was long thought to be unsuitable for agriculture due to reputed high levels of black alkali in the soil. In 1915, Dixie Valley resident, Rupert Spencer, established an 80-ft.-deep well that irrigated his orchard (REG 1915a). The Reno Evening Gazette used this opportunity to post an article titled "Take Up Some Land" that urged people to buy land in Churchill County stating: "There are still large tracts of public territory that may be taken up as a homestead or under the Desert Land Act and the young man or woman with a few hundred dollars saved up can go into nothing better than into farming" (REG 1915b). The presence of artesian wells began to draw settlers to the valley and the resulting cluster of homes became the Dixie Valley settlement.

On March 24, 1917, the Reno Evening Gazette ran an article on the front page stating that “Homesteaders Run to Dixie Valley to Settle: Report that Artesian Water is Struck Starts Big Stampede from Lovelock Valley” (REG 1917). The story was largely based on the word of a Mr. Peter A. Blanchard who stated that “an average of six automobiles a day has been seen in the valley recently” with people taking up homesteads. The article described the soil as “rich” and having the water needed for growing crops. Land patents in the Dixie Valley settlement area date between 1921 and 1975 (Table 11), most of which were patented under the authority of the May 20, 1862: Homestead Entry Original (12 Stat. 392). If the patentees were operating under the five-year rule for occupancy under the Homestead Act then the earliest patents dating to 1921 would mean that residents started settling in the area in 1915. The Dixie Valley post office was opened in 1918 and is shown on the 1930 GLO Survey map for T21N R34E in Section 24 but the post office was rescinded in 1933 (Frickstand and Thrall 1958). By 1921, newspapers cited a resident as saying that 27 families were living in the valley on homesteads with the post office and a store, both kept by J. Tyrell, and a school with 17 students. However, the 75-mi. trip between Dixie Valley and Fallon was cited by the newspaper as a hindrance to the farmers because they did not have easy access to the railroad lines for purchasing and selling goods (REG 1921, 1922).

Table 11. List of Land Patents in the Dixie Valley Settlement

Accession	Name	Date	Section	Aliquots	Comments
Township/Range T21N R35E					
809198	Barkley, Fannie	6/6/1921	8	S½	-
1227482	Churchill County School District	6/26/1962	18	E½SE¼SE¼NE¼	-
27-76-0023	Churchill County School District	1/29/1976	17	W½SW¼SW¼NW¼	-
1053118	Ellis, Leon E	2/3/1932	5	SW¼	-
			8	NW¼	-
1127294	Howard, Turley, and Merritt, Lorena May	9/22/1949	18	N½SE¼; SW¼SE¼	-
					-
			19	NW¼NE¼	-
958386	Irvine, Washington	4/28/1925	10	S½	-
968579	Johnson, William R	10/28/1925	19	E½NW¼; Lot/Trct 1; Lot/Trct 2	Shown on 1930 GLO for T21N R34E – recorded as 26CH2182
919636	Morgan, William A.	10/8/1923	5	SE¼	-
			8	NE¼	-
1053119	Norcutt, Earl R.	2/3/1932	16	SW¼	-
			21	NW¼	-
1107217	Parker, Walter S.	3/6/1940	15	SW¼	-
			22	NW¼	-
1019424	Pilson, John	9/20/1928	9	N½	-
903575	Reid, Julia,	4/18/1923	9	S½	-
934287	Smith, John C.	3/20/1924	11	E½	-

Accession	Name	Date	Section	Aliquots	Comments
873203	Spencer, Loraine J. and Travernia, Loraine J	7/19/1922	16	N½	Recorded as 26CH2177
650177	Spencer, Rubert R.	10/11/1918	17	E½	Recorded as 26CH2183 and 26CH2184
842414	Stark, Clyde B.	1/12/1922	18	E½W½; Lot/Trct 1; Lot/Trct 2; Lot/Trct 3; Lot/Trct 4	-
898916	Swanson, Axel	3/12/1923	4	S½	-
915030	Tyrrel, Jesse W. C.	8/28/1923	14	NW¼	-
			15	N½N½	-
938505	Vandeventer, Jerry	5/19/1924	20	NE¼; N½SE¼; and SW¼SE¼	-
Township/Range T21n R34e					
27-69-0044	Casey, Margaret Joyce and Lyle, George V.	10/11/1968	36	E½	-
27-75-0051*	Churchill County Board of Comm.	3/28/1975	27	NE¼SW¼SE¼SW¼	-
1055526	Curtis, W. H.	6/9/1932	24	W½; W½E½; Lot/Trct 1; Lot/Trct 2; Lot/Trct 3; and Lot/Trct 4	Shown on 1930 GLO map for the township. Also recorded as 26CH2181
27-69-0020	Hultenschmidt, Fred C.	8/7/1968	25	S½	-
1201702	Knittle, Chester Browning	11/6/1959	1	SW¼	-
1223747	Stark, Clyde B.	11/2/1961	36	W½	-
1219499	Stark, Edward H.	5/9/1961	35	E½	-
27-73-0048	Taylor, James C.	1/10/1973	35	W½	-
27-74-0005	Taylor, Katherine W.	8/20/1973	34	E½	-
Township/Range T20n R34e					
27-68-0097	Granville, Eve Estelle	11/22/1967	14	W½; W½E½	-
					-
			15	E½E½	-
			22	E½E½	-
			23	W½; W½E½	-
					-

*- This patent is located on land that is not excluded from the Class I. T21N R34E – Section 27 patent (27-75-0051) issued to the Churchill County Board of Comm in 1975 under June 14, 1926: Sale-Rec and Public Purposes (44 Stat. 741)

There are numerous water rights applications for the Dixie Valley settlement area; however, only those inside the Study Area are listed in Table 12 and have a record of dating prior to 1967. One of the interesting water rights applications includes a description of the East Dixie (labeled as Grover Point Well on modern topo) well powered by a windmill. The water was then piped to an earthen reservoir before being conveyed to a concrete stockwatering trough (DWR 1951).

In 1917, the John W. Freeman Company filed an application for rights to appropriate water from Job's Road Canyon Spring for irrigation of 100 acres and stockwatering. The spring was diverted with a small rock and earth dam in order to fill tanks for stockwatering and sent to irrigated lands through pipes, ditches, and flumes. In 1932, a certificate of appropriation was given to Charles S. Bailey to acquire water from the spring for stockwatering up to 650 cattle.

In the late 1920s, California Lands Inc. acquired several dozen ranches in the Fallon area as a result of foreclosure (RGJ 1929). Improvements to the ranches included new coats of paint and trash clean-up. As part of their purchases, the California Lands company name is listed on three of the water rights applications (see Table 12). L. E. Crehore served as an agent for California Lands, Inc. and applied for rights to use High Rock Spring for stockwatering for 1,500 head of sheep in 1927. In 1917 and 1919, John Freeman also applied for water rights in conjunction with California Lands, Inc. to use Cox Canyon Spring and Job Road Canyon Spring for stockwatering. Charles S. Bailey served as a superintendent for ranches owned by California Lands in Churchill County before he died from a broken back in 1931 (RGJ 1931).

Table 12. Water Rights Applications for DVTA Study Area

Application	Owner	Township Range	Section	Year
21298*	Ira Larson	21N 35E	7	1963
21299*	Albert Sweeden	21N 35E	7	1963
24174*	Jean Johnson	21N 35E	8 Well 3419	1967
V10206	Michael and Claudia Casey	21N 35E	16 Herman (Shaw) Well	1930 (1878)
13269	Judy Rosenlund/Clyde Stark	21N 35E	24 (Grover Point Well/East Dixie Well)	1950
21222*	Fate Lyle	21N 35E	30	1963
11817*	Fallon Ice and Cold Storage Co.	21N 34E	29	1947
13585*	Donald Mitchell	21N 34E	29	1951
16153*	Edward Stark	21N 34E	29	1955
5054*	F. F. Franke	21N 34E	30	1918
18266*	Dixie Valley Mining Corporation	21N 33E	12	1959
9593	Clifford Johnson	21N 33E	12 (Silver Hill Spring)	1932
5508	California Lands/John W. Freeman Company	21N 33E	22 (Cox Canyon Springs)	1919
8141	A. N. Norcutt & Sons/ L. E. Crehore (California Lands, Inc.)	21N 33E	29 (High Rock Spring)	1927
4516	John W. Freeman Company/ Charles S. Bailey (California Lands Inc.)	21N 33E	34 (Jobs Road Canyon Spring)	1917
11822*	Howard Turley	20N 33E	1 (Crehore Basin Spring)	1947

Application	Owner	Township Range	Section	Year
8127	Kent Land and Livestock	20N 33E	2 (Buck Brush Spring)	1927
8896	Kent Land and Livestock	21N 34E	1 (Box Canyon Spring)	1929
4517	Kent Land and Livestock	19N 34E	6 (Coyote Canyon Springs	1917
V3205	Ira H. and Nina K. Kent	18N 33E	4 (Black Knob Spring)	1979 (1905)
8897	Kent Land and Livestock	18N 33E	4 (Buck Brush Spring)	1929
V3204	Ira H. and Nina K. Kent	19N 33E	33 (Burnt Cabin Spring)	1979 (1905)
V3215	Ira H. and Nina K. Kent	19N 34E	30 (Hike Spring)	1979 (~1905)
V3209	Ira H. and Nina K. Kent	19N 33E	30 (LaPlata Spring)	1979 (1905)
5368	C.E. Kent	19N 32E	24 (Sheep Canyon Spring)	1919
V3207	Ira H. and Nina K. Kent	19N 32E	36 (Upper Mulholland Spring)	1979 (1905)
V3206	Ira H. and Nina K. Kent	19N 33E	31 (Lower Mulholand Spring)	1979 (1905)
V3208	Ira H. and Nina K. Kent	18N 33E	6 (LaPlata Spring)	1979 (1905)
V3210	Ira H. and Nina K. Kent	18N 32E	12 (FitzCorral Spring)	1979 (1905)
7882	L. H. Danberg / Myrtle Danberg	T18N R35E	21 (Peterson Springs)	1926

*These applications were withdrawn or cancelled and it is not clear if the planned appropriation of water ever occurred.

The Kent Land and Livestock Company filed several applications for water rights in the southern portion of the Stillwater Range in the 1910s and 1920s. In the 1970s, Ira and Nina Kent, most likely associated with the Kent Land and Livestock Company, applied for vested rights on several of the springs in the Stillwater Range providing information that the springs had been in use for stockwatering since 1905. The Kent family has a long history in Churchill County and there may be associations between the Livestock Company and people who are of local importance.

On the west flank of the Stillwater Range, along Lambing Canyon, there was an application for use of the High Rock Spring in 1927 which involved diverting water from the spring with a rock and earth dam to galvanized troughs through 16 ft. of pipe. The water was to be used for an estimated 300 horses or cattle. In a description of works in the application, Crehore (DWR 1937) states the manner of operations for the spring: "Spring is rocked over. Water is conducted to 4 wooden troughs and 1 galvanized iron trough through 20 ft. of 1 ½ inch pipe. Two of the wooden troughs are 10 feet long, 12 inches wide and 12 inches deep, and the other two wooden troughs are 12 inches deep, 12 inches wide at the bottom, 15 inches wide at the top and 11 feet 6 inches long. The galvanized iron trough is 10 inches deep, 12 inches wide and 16 ft. long." The map accompanying the application shows the Buck Brush Spring and the High Rock Spring in relationship to the Cirac Mine Cabin in the SW ¼ of Section 33.

Grazing allotments in the Dixie Valley Study Area developed as a result of the 1934 Taylor Grazing Act include Cow Canyon, Dixie Valley, White Cloud, Mountain Well-La Plata, and Frenchman Flat. The Clan Alpine Wild Horse Herd Management Area also overlaps with central-eastern portion of the DVTA Study Area.

L. H. and Myrtle Danberg applied for water rights to Peterson Springs in T18N R35E for stockwatering purposes in 1926 for use with an estimated 2,000 head of sheep or 500 head of cattle. The map with the application shows that the springs are located inside of the Florence Mineral Claim with the Wonder Mining District (DWR 1926).

Expected resources in the Dixie Valley Study Area would include water-related resources including spring modification features, pipeline, and troughs. For example, a historic stone wall corral and stone-lined trough located along Dixie Valley Road inside the range. These resources are more likely to occur in the Stillwater Range of the DVTA Study Area. Based on the history of Paiute families in the area, one would expect historic Native sites and features such as the corral described as being in Cox Canyon and pine nut gathering tools and caches. These resources could provide a great deal of information on subsistence and entrepreneurial activities of Paiutes given the impacts of ranching in the area.

Bravo-20 Study Area

The Carson Sink is not particularly well known for ranching or farming, although a few early settlers were able to establish agricultural fields near freshwater springs on the Sink (see *Expedition, Emigration, and Early Non-Native Settlement* section). In 1903, northern Nevada newspapers started to publish articles about plans to irrigate the Carson Sink area for agricultural use. The plan as proposed was to run a canal from the Truckee River northeast to Wadsworth and then southeast to the Carson Sink. As described, the Nevada State Journal estimated that "300,000 acres of agricultural land in the Truckee and Carson valleys will be created by this important work. The government plans to have settlers take this land in 80 or 160-acre tracts under homestead claims" (NSJ 1903). The Newlands Project reached the southern portion of the Carson Sink but did not extend as far as the newspaper suggested in 1903. Water rights applications for the B-20 Study Area were dominated by mining and milling purposes rather than stockwatering or irrigation.

There are no recorded historic water rights applications for the B-20 Study Area with the exception of Application 17408 (DWR 1957). The application was submitted by the U.S. Steel Corporation for use of a well in T24N R33E Section 12 for mining and milling purposes.

At least four grazing allotments that were established after the 1934 Taylor Grazing Act intersect with the B-20 Study Area include the Copper Kettle, White Cloud, Desert Queen, and South Rochester Allotments. However, it is not likely that there would be numerous ranching- or farming-related resources in the Study Area. The active NAS Fallon training range at the center of the proposed Study Area has been used for bombing practice since the 1950s (see *Military* section), the poor soils do not facilitate growth, and the alternating sections of patented land all contribute to the area being unsuitable for growing and ranching. In addition, the fact that the Stillwater National Wildlife Refuge and the Fallon National Wildlife Refuse were established to the south of the Study Area in the 1930s and 1940s also may have deterred ranchers from grazing in the area.

Transportation and Utility Lines

Prior to the arrival of non-Native emigrants, the Study Area was undoubtedly crisscrossed with foot paths and trails used by local Paiute tribes. In a report of his expedition, Fremont (1845) recounted how he followed existing "Indian" trails through Nevada and around the Study Area. Of course, the roads described in this section had already likely been in use by Native Americans for thousands of years prior to the arrival of fur trappers, government scouts, and emigrants. As transportation and utility lines through northern Nevada improved during the late nineteenth and early twentieth centuries, the state was promoted as romanticized Wild West with vast expanses of unoccupied desert. Promotional railroad materials and road guides sometimes used Native Americans as "tourist attractions."

Communication and transportation networks have been critical to the state of Nevada given the vast amount of unoccupied land and the harshness of the terrain that made both travel and communication difficult. However, these networks worked in concert with other industries of Nevada (Military and Mining) in a mutually beneficial relationship. Transportation lines and utility lines are discussed together in this section since they are both indicative of the development and infrastructure of the Study Areas.

Bravo-16 Study Area

The canyon and drainage floors running roughly east-west through the Dead Camel Mountains serve as natural corridors for travel between Churchill Valley (Carson River) and Lahontan Valley (Carson Lake). Documented emigrant and fur trapper routes did not pass near or through the Dead Camel mountains and instead stayed north of the Study Areas (see *Expedition, Emigration, and Early Non-Native Settlement* section). In fact, the Dead Camel Mountains are labeled on the 1869 GLO plat for T18N R26E simply as "Barren Mountains," indicating that the area had little to offer travelers.

In 1859, Captain James Hervey Simpson was tasked by the government to scout a route between Camp Floyd near Salt Lake City, Utah and Genoa in western Nevada. The route scouted by Simpson and his team was used by the Pony Express, served as the Overland Route, and became the most direct route for crossing through northern Nevada. Although these routes are always discussed in tandem, they likely converged and diverged and different points along the route depending on mode of transportation, weather, and personal preferences. For example, a segment of Simpson's Road is shown on the 1881 GLO for T16N R28E as an unnamed road crossing sections 5 and 6 within the B-16 Study Area and it also shows the "old" Pony Express road as a separate road running roughly parallel but 1-mi. south of Simpsons Road outside of the Study Area. Another segment of Simpson's Road to the east has already been recorded.

Early transportation and communication routes wound around the Dead Camel Mountains, possibly to avoid geographic obstacles. However, they must have become more commonly used during the burgeoning mining industry. The Dead Camel Mountains allegedly earned the Dead Camel appellation because one of the camels that hauled salt to the Comstock mines in the 1860s died in the range (Carlson 1974). Tingley (1990b) states that salt was mined from the Dixie Marsh as early as 1861 for extracting silver from ores although he also states that camels were not used until 1862 to haul salt between Rhodes Marsh and Virginia City. If the salt haulers used existing roads through the Dead Camel Mountains, they might have traveled along one of the canyon floors where roads were identified on the 1891 Wabuska, NV 1:250,000 topographic map. The map shows two roads that are still in use, crossing through the Dead Camel Mountains between Lahontan Valley and the Carson River in Churchill Valley. In the twentieth century, these roads undoubtedly served as an important conduit for people going after construction on the Lahontan Dam finished in 1914 resulting in the creation of the Lahontan Reservoir on the Carson River.

Utility lines in the B-16 Study Area are limited. The Historical Index for T17N R26E indicates that the transmission line that crosses the western boundary of the Study Area was constructed between 1967 and 1973. Otherwise, communication and utilities in the Study Area were associated with the installation of the Control Tracker Building in the 1950s (see *Military* section). The Control Tracker Building, Generator Building, and transmission line in the B-16 Study Area were recorded in 2012 as part of a Historic Resources Inventory (JRP 2012). The lack of extensive transportation and utilities in the Study Area is undoubtedly due to the absence of ranches, houses, or mining districts which would require this infrastructure. Although the Camp Gregory Mining District was located in the northern part of the Study Area, miners did not establish a townsite and worked in a limited area for approximately three years.

Records indicate that there should be a handful of historic roads running through the B-16 Study Area including roads associated with mining in the area dating to the 1950s (see *Mining* section) as well as one or two utilities that may qualify as historic (i.e., pre-1967). However, apart from the segment of Simpson's Road in the southeast corner of the Study Area, the cultural resources are likely not eligible for listing on the NRHP.

Bravo-17 Study Area

The 1908 Carson Sink, NV 1:250,000 topographic map shows a complicated network of historic roads providing access to mining camps, claims, and water sources in the upper elevations as well as ranches in Fairview Valley. Roads lead to Fairview, the Nevada Hills Mine, the Mizpah Mine, and the Nevada Crown Mine in the Fairview Range. There is a single road that enters into the Sand Springs Range to provide access to the Lucky Boy Spring from Fairview Valley. A single road then continues south through the valley and connects with roads from Bell Flat in Little Bell Flat, providing access to Eagleville and Monte Cristo (listed as abandoned on the 1908 Hawthorne, NV 1:250,000 map) in Gabbs Valley. Many of these roads likely date to the 1860s and earlier based on the dated inception of mining camps and ranches in Fairview Valley (see *Mining* and *Agriculture and Ranching* section).

In the 1860s, John Reese scouted a route between Wellington, in Smith Valley, and Reese River to the east (Pendleton et al. 1982). The road crossed the northern part of Gabbs Valley at the southern end of the Study Area. The Cold and Hot Springs that are surrounded by the Study Area were an important stopping point on the east-west road running providing rest for travelers and animals alike. In the 1880s, the stop at the Hot Springs was called Kepler's Station (Danner 1992) but was also identified as "Woodruffs Hot Spring" on the 1886 Parker Map of the State of Nevada. The Cold Springs, identified on the map and located just 1.2 mi. to the north that may have served as a watering hole for horses hauling freight across Gabbs Valley (Danner 1992).

Bravo-17 and Dixie Valley Training Area Study Areas Communication and Utility Lines

The Pacific Telegraph Act of 1860 was passed to develop a telegraph line between Carson City, Nevada and Salt Lake City, Utah. Construction of the line was completed by October 1861 and passed through Churchill County roughly following the route of the Pony Express which would be rendered obsolete upon completion of the telegraph line. In 1866, the U.S. Pacific Telegraph Company constructed a new telegraph line that passed north of Fallon from Fort Churchill to the town of Stillwater and did not cross the Study Area. By the 1870s, the Western Union Telegraph Company rerouted the transcontinental line north of Fallon to Trinity, Nevada. When the telegraph companies consolidated, both old lines were abandoned and offered for sale to Churchill County for use between rural communities and the county seat (Stillwater) and Virginia City. When the Churchill County Telephone and Telegraph company took over the telephone line, it is claimed that it was the first county-owned telephone lines in the country (Nevada Telecommunications Association 1998). In 1896, the telegraph lines were converted into telephone lines (CC Communications 2017) and they are currently the only county-owned telephone company. This must be the same line represented on the 1917 GLO map for R17N R35E, which shows a telephone line that runs south of, but parallel to, the Lincoln Highway near West Gate station. However, telephone service to the Dixie Valley settlement did not occur until 1968 (CC Communications 2017) but continued to provide service to the residents as recently as 1985 (WestDiv 1985) and to this day, CC Communications is the only county-owned telephone company in the country.

Mining communities were the main impetus for extending transportation and utility lines into the Study Areas. The 1917 GLO map for T17N R35E indicates that a telephone line and a powerline cross the NW ¼ of Section 6 and appears to be intended for the Wonder mining camp. The 1940 GLO map for T19N R36E shows an "old pipeline" following Horse Creek through Sections 11, 12, and 13 before turning south in Sections 10, 9, 16, 20, and 29 and terminating near Wonder that may have provided water to the camp as well. The relative "ease of life" indicated by the establishment of power lines, communication lines, and roads to the mining camps was provided as an incentive when attempting to draw miners and service providers to the camps. In addition, the establishment of the Nevada Scheelite Mine in the southern portion of the Study Area in the 1930s also created the need for utility lines and water rights to the mill site. Water rights maps indicate that they powered their mining operations including water pumps at well sites.

Dixie Valley Training Area Study Area

Dixie Valley likely did not draw many travelers with most early emigrants and expeditions through Nevada following the Humboldt River or Simpson's route through central Nevada. However, an 1866 Map of Nevada produced by the GLO shows major thoroughfares on either side of the Stillwater range that connect just south of the Carson Sink and undoubtedly developed due to mining interests in the Stillwater Range (see *Mining* section).

Jobs Toll Road

Entrepreneurs Moses Job and Emanuel Penrod realized the necessity for a maintained road through the Stillwater Range with numerous camps and mines drawing both miners and merchants in the 1860s. On December 19, 1862, the Legislative Assembly of Nevada Territory granted Moses Job the right to construct a toll road. The Act, read as follows:

> Moses Job, Emanuel Penrod, their heirs and assigns, are hereby granted the right to construct and maintain a toll road, commencing at a point near where the stage road, knows as the Simpson Route, crosses Reese River, with the privilege of collecting toll thereon for the period of twenty years, at the rates and in the manner herein provided for…" [Territory of Nevada 1863:36].

The Act also stated that construction on the toll road had to commence within six months of the Act passing and had to be completed within a year and half after construction started. Two percent of the money collected through tolls was to be used for public instruction (schools) in the Territory. The original alignment of the toll road crosses the Stillwater Range in the northwest portion of the DVTA Study Area. Jobs Toll Road is shown on the 1882 GLO Map for T21N R33E and in the SE ¼ of Section 25, a "Toll House" is visible alongside the road (Figure 21). The canyons that housed the toll road became known for their association with the road and were named "West Job Canyon" and "East Job Canyon" on their respective sides of the Stillwater Range. On modern topographic maps, a jeep trail is shown in roughly the same route as the original toll road and while there might be portions of the original toll road present, it is likely that portions have had to be realigned.

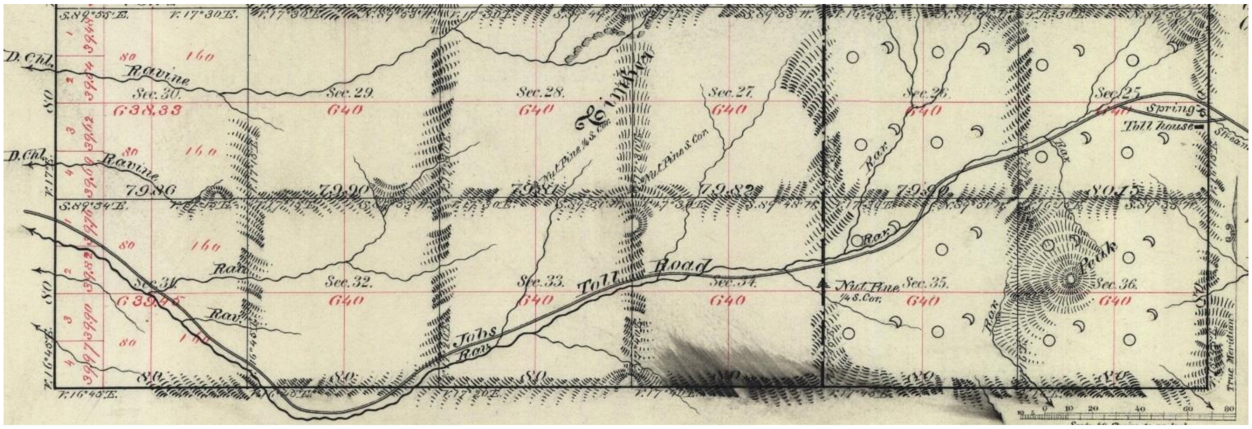

Figure 21. Jobs Toll Road and Toll House as shown on the 1882 GLO Map for T21N R33E.

The large salt marsh in the northern part of Dixie Valley also drew the attention of miners as a ready resource extracting silver from ore in the local mining industry. The 1882 GLO map for on the T21N R36E in Dixie Valley shows roads crossing the valley including a road noted as connecting the "Salt Marsh" and Winnemucca. The salt marsh is even noted on the 1866 map of the State of Nevada as the "Humboldt Salt Mine" indicating its importance to Nevada travelers as a landmark and a resource for miners at the time.

The network of historic roads that connected the mining camps in the Stillwater Range and the Clan Alpine Mountains are well-delineated on the 1908 Carson Sink, NV 1:250,000 topographic map. The map shows a centrally located main road through Dixie Valley running roughly north-south that intersects with roads that connect Dixie (listed as abandoned by that time), IXL Canyon, Sheep Canyon, and Coyote Canyon (see *Mining* section) in the Stillwater Range with Hercules, Wonder, Victor, and Horse Creek in the Clan Alpine Mountains.

The Overland Mail, Central Overland Route, and Pony Express

The pass at the southern end of the Clan Alpine Mountains and the northern end of the Monte Cristo Mountains has served as a major route for Americans from the east crossing through northern Nevada for the last 150 years (see *Expeditions, Emigration, and Early Non-Native Settlement* section). However, there is no indication that emigrants or fur traders used this pass (now U.S. 50) and instead preferred to follow the Humboldt River northwest of the Study Area prior to Simpson's scouting of a central route. Instead, the future location of SR50 served as a more direct method of crossing northern Nevada for mail couriers (Pony Express, Overland Trail, etc.). These communication and travel lines also required military supervision to protect them from interaction with local Native American tribes.

The Overland Mail Company (1851–1860) operated under contract by Absalom Woodward and George Chorpenning and was often referred to as "Chorpenning's Jackass Mail" because mules pulling light wagons were used to carry mail and freight between Salt Lake City and Sacramento. In 1854, Chorpenning temporarily moved his route to the Old Spanish Trail in southern Nevada to avoid winter snows and to reduce losses from Shoshone and Paiute raiding parties along the Fort Hall Road and the Salt Lake Cutoff (Chorpenning 1871:39-45). By the end of the decade, military encampments were being established in Nevada to guard travel on the overland roads and to control increasing conflicts between settlers and the native population. In 1858, Chorpenning and partner Howard Egan rerouted the mail service again, using the California Trail along the Humboldt River to Gravelly Ford, where it then diverged southeast through

Ruby Valley and intersected a livestock trail blazed by Egan several years earlier, following it to Salt Lake City via Camp Floyd (Chorpenning 1871:39-45; Greeley 1860:258-282; Kilts 1959).

In 1860, the Central Overland California and Pikes Peak Express Company (founded by William Russell, Alexander Majors, and William Waddell) won Chorpenning's mail contract and began hauling mail, passengers, and freight on the new Central Overland route between Salt Lake City and Sacramento (Hardesty 1979). The Central Overland route utilized a series of passes and mountain springs to cut a nearly direct east-west route across the north-south-trending mountain ranges of central Nevada. Although many more small ranges and two substantial desert areas had to be crossed with this new route, its course translated to a reduction in length over the Humboldt River route by about 280 mi., or about two weeks travel time, for those going to and from California (Hulse 1998; Mason 1976; J. Peterson 2008:2).

Soon after the Central Overland route was established, Senator William Gwin from California persuaded Russell to augment it with a new express mail delivery service to San Francisco. Dubbed the "Pony Express," this service utilized most of the Central Overland route but added stations at 10- to 15- mi. intervals for watering and relaying the "express" horses and their riders. The stations were crude, fort-like structures built of dry-laid stone or adobe, with an interior corral for animals and one or two small covered structures to shelter the station keeper, travelers, and supplies from the elements. Conditions and accommodations were less than inviting and most of the stations were equipped with gun portals and other defenses in case of Indian attack. Several stations across central Nevada were looted and burned by Shoshone or Paiute raiders seeking horses and guns, and the station occupants were either killed or left to flee to the next station on foot (Mason 1976). Destroyed stations were always quickly rebuilt, and many were still in use as stage stations long after the Pony Express stopped delivering mail and freight. Unfortunately, the Pony Express was a financial disaster and operated for only two years (1860–1861) before it was bankrupt and rendered obsolete by the first transcontinental telegraph line built along the same route.

The Pony Express trail traversed the Carson Sink, from east to west, through the Salt Wells Basin, across Simpson Pass between the Bunejug Mountains and Cocoon Mountains, across Bass Flat north of the White Throne Mountains, and through the Dead Camel Mountains and Desert Mountains via Sam Spring Wash. The route now courses just beyond the south end of Range B-16. The Carson Sink Station, once located just over a mile east of the south end of Range B-16, was built in 1860 and at that time consisted of "a frame house inside an adobe inclosure" (Burton 1862). Although the Pony Express was short-lived, the riders and stations utilized a path through the Stillwater range that remained in use as a highway and auto stops.

U.S. Highway 50—The Lincoln Highway

In 1913, The Lincoln Highway (State Route [SR] 2; U.S. 50) became the nation's first transcontinental thoroughfare and would ultimately become the first concrete-paved interstate road system in America. Conceived and promoted by automobile entrepreneur Carl G. Fisher and dedicated to President Abraham Lincoln, its route originated in New York City and terminated in San Francisco, spanning 13 states and more than 3,000 mi. (Hokanson 1988:20). The Lincoln Highway took advantage of existing roads by following unimproved wagon trails throughout much of the Midwest and West (Hokanson 1988:58).

In 1917, the Nevada Highway Department was established and adopted the Nevada portion of the Lincoln Highway as SR 2 (Patterson et al. 1969:172). The highway department had limited funds and spent its first years attempting to improve the very worst segments of SR 2, much of which was little more than a rutted, dusty track through the sagebrush (Nevada Highway Commission 1918). Inspired by the "Good Roads" movement, the Lincoln Highway brought economic prosperity to hundreds of cities, towns, and "crossroads" communities along its length, becoming affectionately known as "Main Street across America" (Hokanson 1988). Furthermore, its associated economic growth spurred the subsequent development of additional coast-to-coast highways including the National Old Trails Highway, the Victory Highway, and the competing Midland Trail.

An approximately 5.5-mi. segment of the Lincoln Highway crosses the DVTA Study Area, effectively dividing the B-17 and DVTA Study Areas. There are two additional, but discontinuous, segments along U.S. 50 to the west which measure approximately 5.5 mi. and 2 mi. and cross Labou Flat and Fairview Valley before terminating at the intersection with NV-839. These segments pass by an area known as Frenchman (or Bermond) Station (Figure 22). The 1910 (R. 1922) Carson Sink map shows Bermond (Frenchman) Station located along the main road providing an appropriate resting point for travelers before they attempted to cross the fourmile flat, eightmile flat, and some of the most difficult portions of the road to the west (Figure 23). Into the 1910s and 1920s, the difficulty of crossing the Carson Desert between Frenchman's Station and Fallon in an automobile was offered just as much as an attraction as a hazard warning. A book celebrating the centennial of the Lincoln Highway (Butko 2013:242) describes what the Frenchman's Station would have been like, stating that Dixie Valley:

> …is where travelers once found gas, food, lodging, and a telephone at Frenchman's Station or Bermond's Ranch, just a dozen miles from Westgate. (In 1914) Effie Gladding wrote, "We passed Frenchman's Flat, where there was a little restaurant and where a Frenchman came out to pass the time of day." By 1924, the LHA guide was boasting, "This was originally a freighter's station, but M. Bermond (the 'Frenchman') the proprietor, has built and fitted up splendid rooms, and will serve such a meal as you might expect on Fifth Ave. in New York." No longer will you find such elegance: The Fallon Naval Air Station purchased the surrounding flats for its target range and demolished the old roadhouse.

Figure 22. Frenchman's Station. "Frenchman's Station, Churchill County, Nevada." *http://quod.lib.umich.edu/l/linchigh/x-lhc0819/lhc0819. 1922. University of Michigan Library Digital Collections. Accessed: March 31, 2017.*

By the 1920s, the Lincoln Highway was designated State Route 2/U.S. 50. Some parts of the highway were quickly completed, but the entire route wasn't finished until 1937 when the last section in Nebraska was done (Franzwa and Petersen 2003). The eventual demise of the Lincoln Highway as a major coast-to-coast route occurred, in part, as a result of the movement in the mid-1920s toward a numbered, federal highway system. Named roads were ignored in the planning of the numbered highway system, and the Lincoln Highway was broken up into a series of different numbers throughout the U.S. In Nevada, the highway would be known as U.S. 50. With this change, and the removal of all highway markers along the road referring to the Lincoln Highway, public interest in the road dropped, and its use dwindled once Interstate 80 became the main east-west route for cross-country travelers.

The peak of interest in, and use of, the Lincoln Highway between 1913 and 1926 (NAS Fallon 2011) provides an interesting glimpse into creating a highway through the Nevada desert during the early twentieth century. This time period also reflects the Period of Significance on NAS Fallon (NAS Fallon 2011). The 1918 *Complete Official Road Guide of the Lincoln Highway* provided travelers with road conditions and amenities along given sections of the highway. In the guide, the Lincoln Highway section between Austin and Fallon was characterized as "many miles of hard road, some good and some fair gravel; a number of washes and two alkali flats. (Lincoln Highway Association 1916:140). The road between Fallon and Wadsworth was characterized as having "some chuck holes…some fine gravel." The guide also features advertisements for the Overland Hotel and the Fallon Garage which characterizes Fallon as "the entrance to the desert from the west; the end of the desert from the east" (Lincoln Highway Association 1918:141). The guide also highlights Grimes Ranch as a stop along the Lincoln Highway that includes "meals, lodging, drinking water, radiator water, telephone, gas (Lincoln Highway Association 1918:141).

Figure 23. "Fallon Sink between Fallon and Frenchman's Station, Churchill County, Nevada." *http://quod.lib.umich.edu/l/linchigh/x-lhc0724/lhc0724. N. D. University of Michigan Library Digital Collections. Accessed: March 31, 2017.*

However, the area east of Fallon was known as the most treacherous part of the Lincoln Highway (Franzwa and Petersen 2004). The loose silty loam in the Fallon Sink caused difficulties for drivers who complained of the deep ruts and flat tires. The Lincoln Highway Association, subsidized by state and government funds, provided funds to improve the portion of the Highway running through "Frenchman's Flat." In 1922, it was reported in the journal Highway Engineer and Contractor (1922:35) that:

> The dream of years – an improved highway across the notorious "Fallon Sink" in Churchill County, Nevada – has been realized. On June 3, the Nevada State Highway Department and the U.S. Bureau of Public Roads formally accepted as completed the 10-mile section between Salt Wells and Sand Springs. This section, which is improved with a crushed-rock and gravel surface 20 ft. wide, with 18 ft. turn-outs every 2000 ft., on a grade from 2 to 4 ft. above the sink level, was opened to traffic on June 4. Improvement of this section was made possible through the generous financial aid of the Lincoln Highway Association, which in 1919 signed a contract with the Nevada State Highway Department agreeing to pay $45,500 toward the improvement of the section between Grimes ranch and Sand Springs. There remains yet to be completed the 6-mile section between Salt Wells and Grimes ranch which the department expects to complete during the present year. The worst section has been completed, however, and the last great terror of the traveler across the state over the Lincoln highway has been removed.

Ultimately, in 1924, the 5-mi. stretch from Grimes Ranch to Fallon was also improved (Franzwa and Petersen 2004:39). By this time, the Grimes Ranch was no longer a stopping point along the Lincoln Highway having been abandoned after Mr. Grimes' demise (Franzwa and Peterson 2004). In 1925, the Lincoln Highway between Wendover, Utah, to San Francisco became U.S. Hwy 50 and is today infamous for being "The Loneliest Highway in America."

There were additional modifications to the road surface and the road alignment through Fallon over the course of the twentieth century. Improvements were made to the road surface including oiling the packed gravel surface and paving the road surface with asphalt or Portland Cement. Two early iterations of the Lincoln Highway alignment traverse the current NAS Fallon footprint. Between 1913 and 1918, the Highway alignment zig-zagged across the station to Fallon on Berney, Harmon, Union, Testolin, Wildes, and Harrigan roads. In 1918, the alignment was simplified to follow Berney Road, at the southern edge of the station, 4 mi. straight to Harrigan Road (Smith and Michel 2013:60) (note that this section is referred to as the 1924 Lincoln Highway in Franzwa and Peterson 2004, it will be called 1918 alignment for the purposes of this report). However, when runway 13-31L was extended by 4,000 ft. at NAS Fallon in 1959-1960, the boundaries for the station crossed Lincoln Highway (Berney Road, Harmon Road, and Union Lane), obliterating much of the earlier and later alignments. Accordingly, U.S. 50 had to be rerouted around the north and eastern boundaries of NAS Fallon to accommodate the full length of the runway as it exists today (NAS Fallon 2011).

Portions of the Lincoln Highway with the DVTA Study Area have already been recorded as D-129. There are undoubtedly refuse scatters by the side of most of the historic roads in the area, especially the Lincoln Highway. In fact, three discrete concentrations of cans were recorded alongside the Study Area that follows the highway and they were recorded.

Bravo-20 Study Area

Transportation and utility-related resources are relatively limited in the B-20 Study Area due to the nature of the soils as well as the paucity of mining and/or ranching and agriculture resources in the Carson Sink.

Central Pacific Railroad/Southern Pacific Railroad

Although the Central Pacific Railroad (CPRR) does not pass through the Study Area, the proximity of the railroad has had an impact on its use and utility. In 1861, despite considerable opposition from toll road interests, stage line operators, and freight companies, the Territorial Legislature of Nevada granted the CPRR a franchise to build along the Truckee River to the Big Bend (Wadsworth) and on to the eastern boundary of the state (Myrick 1962:12). Eight years later, only 20 years after emigrants trekked across Nevada with oxen and wagons, Nevada was bisected by a transcontinental railway connecting California to New York. The unique checkerboard effect of land management for the boundaries of the B-20 Study Area (see Figure 2d) were created by ascribing alternating township sections for land patents per the 1862 "Act to aid in the construction of a railroad and telegraph line from the Missouri river to the Pacific Ocean and to secure to the government the use of the same for postal, military, and other purposes" signed into law by President Lincoln. The Act granted public land to the railroad in a 200-ft. right-of-way on either side of the tracks in addition to "five alternate sections per mile" within 10 mi. of the track (Pacific Railroad Act of 1862 (12 Stat. 489). Construction of the CPRR began in Sacramento in 1863 but, owing to difficulties crossing the Sierra Nevada, did not reach Truckee until the spring of 1867. By the fall of 1868, the railroad was completed across Nevada, reaching its famous junction with the westbound Union Pacific in 1869 in Promontory, Utah.

The CPRR grade followed the north bank of the Truckee to the depot (and roundhouse) at Wadsworth and continued to Fernley, where it then took a northeast direction across the Forty Mile Desert to Lovelock. The section of track passing connecting Wadsworth to Oreana, west of the B-20 Study Area was officially opened in the summer of 1868 with Wadsworth, Toy (Brown's), and Oreana opening in relatively quick succession on July 22, August 21, and September 20, respectively (Myrick 1962). The Southern Pacific Railroad (Central Pacific) passed just west of the Study Area weaving between the Hot Springs Mountains and the West Humboldt Range. Between the two was the White Plains Huxley Station and Parran which included an old salt plant, water tank, and pump station (Lee et al. 1916). Two-thirds of the 4,000 workers grading and laying track for the CPRR were Overseas Chinese but they would have spent little time in the area given that railroad construction along this stretch was occurring at a breakneck pace (Myrick 1962). The Huxley station included a 2,750-ft.-deep well that was installed by the CPRR but did not yield quality water. It also included an "old kiln" that was used for processing shells to extract lime (Guide to the West Part B).

In 1899, the Southern Pacific Railroad (SPRR) gained control of CPRR stock and immediately made plans for changes along the railroad route to reduce its overly high operating costs (Myrick 1962:29). Between 1902 and 1908, 221 mi. of the CPRR/SPRR's 433 mi. from Sparks to Utah were rebuilt and the old lines were abandoned. Railroads dominated transportation across Nevada until automobiles entered common use in the early part of the twentieth century.

In 1916, the Department of the Interior published a *Guidebook of the Western United* States based on what travelers would see from the window of the railroad car. Embedded in the section on Huxley Station, the Department of Interior followed an image of the Carson Desert at Parran, Nevada, which looks over the Carson Sink area, with a photograph of a Paiute Camp. Both photographs were provided by Southern Pacific Co. (Figures 24 and 25).

Roads

On modern topographic quadrangles, no roads are shown crossing the Carson Sink. However, roads traverse the lower Carson Sink on the 1882 GLO maps of the Study Area. The major roads through the Lahontan Valley around the Carson Sink that appear to have the longest continuous use run parallel to the mountain ranges on either side of the valley. On the east side of the sink, the road is marked as the "Road to Star

City" on the 1882 map. Two roads also ventured on to the southern part of the Sink to provide access to Stinson's and Springer's house as discussed previously (see *Expeditions and Emigration* section).

These roads are not shown on the 1908 Carson Sink, NV 1:250,000 map and may have been abandoned if land ownership on the sink was challenged. The addition of the railroad just to the west of the B-20 Study Area may have also altered transportation patterns in the immediate area. The main roads that appear to cross the Study Area in the early 1900s appear to connect mining camps in the Stillwater Range (White Cloud Canyon and Fondaway Canyon) to larger town hubs (Lovelock and Winnemucca). One road runs parallel to the Stillwater range and connects the town of Stillwater to Winnemucca. North of the Carson Sink, two roads diverge from the Stillwater-Winnemucca road and run east-west to a single converging into a single road the crosses the West Humboldt Range to Lovelock. The 1931 Lovelock, NV 1:250,000 map shows that a road that splits from this main route follows the eastern flank of the West Humboldt Range, into a canyon, and terminates at Wildhorse Spring.

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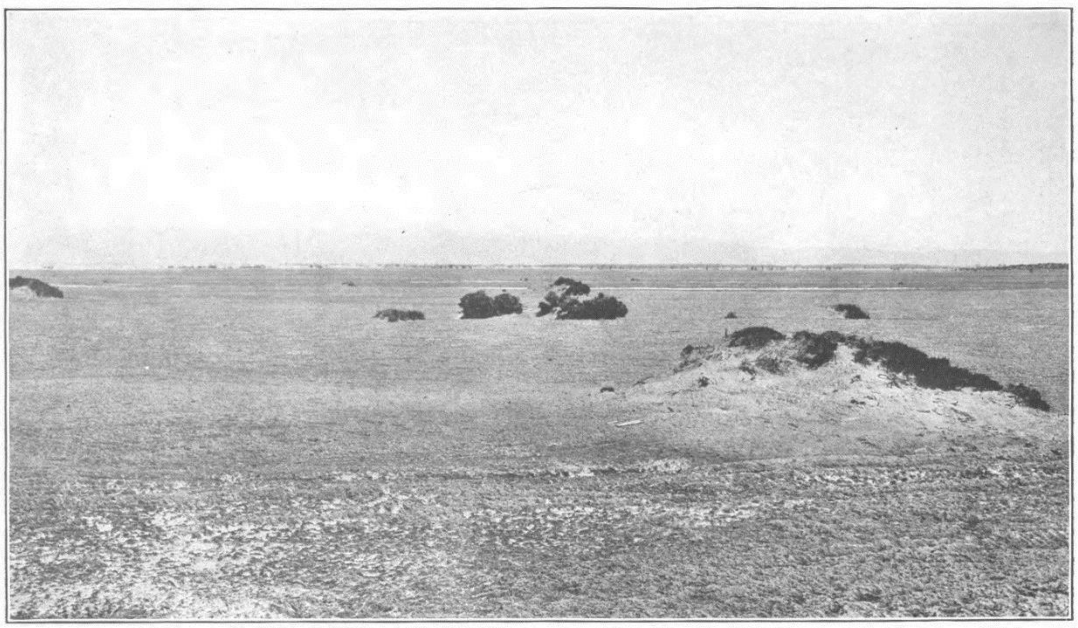

CARSON DESERT AT PARRAN, NEV., THE "SINK" OF CARSON AND HUMBOLDT RIVERS.

Photograph furnished by Southern Pacific Co.

Figure 24. Promotional image of Carson Sink from a Guidebook of the Western United States (Lee et al. 1916).

U. S. GEOLOGICAL SURVEY BULLETIN 612 PLATE XXXIX

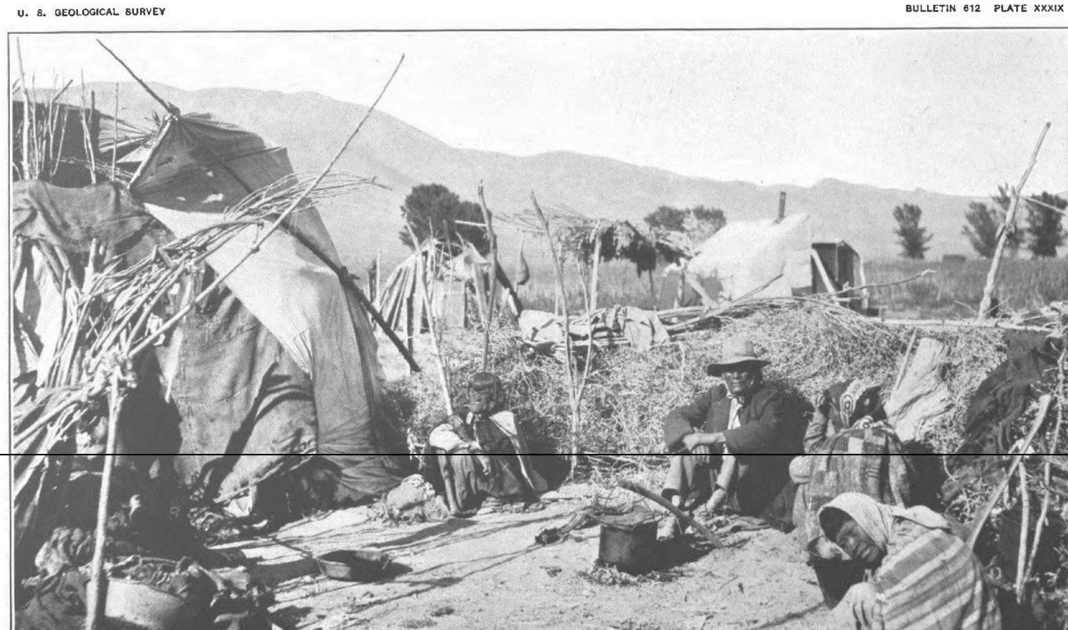

Figure 25. Promotional image of Paiute Camp from a Guidebook of the Western United States (Lee et al. 1916).

Air Routes and Communications

Two airway beacons are shown on the 1931 and 1935 Lovelock, NV 1:250,000 topographic maps north of Carson Sink. One of the beacons is located in the NE ¼ of Section 29 in T25N R33E and is within the proposed Study Area and is in a northeast/southwest line with other beacons crossing south of Buffalo Mountain into Antelope Valley. These beacons are on the course of the San Francisco to Salt Lake City leg of the U.S. transcontinental air mail route and are considered eligible for listing on the NRHP (Smith and Michel 2013). Maps from the 1950s and 1960s show a transmission line connecting the relay station/communication station on the western edge of the Carson Sink to two airway beacons to the northeast. The radio communication facility located in Section 13 of T24N R31E is marked as a “Tel. Relay Station” on the 1957 Reno, NV 1:250,000 topographic map and is undoubtedly associated communication although it is not clear if it served in a civilian or military capacity. The USGS 1969 Lone Rock NW, NV 7.5-minute topographic quadrangle shows a transmission line connecting the relay station to the airway beacon in the Study Area (NE ¼ of Section 29 T25N R33E). The USGS 1956 Lovelock, NV 1:62,500 map shows a branch that diverges to the northwest into the West Humboldt range to a labeled relay station in Section 22 of T25N R32E. Just 90 ft. downslope from the radio tower location within the Study Area, a historic refuse scatter dating to the 1930s was recorded in advance of a cable installation in 1991 (Stornetta 1991).

Military (Post-World War II)

Nevada has a long history of U.S. military presence dating to the mid-nineteenth century including the expeditions of Major John C. Fremont and in 1843 and Captain James H. Simpson in 1859 (see *Expeditions and Emigration* section). Fort Churchill, located just 12 mi. west of the B-16 Study Area, was constructed by the U.S. military to protect travel and communication routes in the 1860s. However, there is no documented record of military forts, camps, skirmishes, massacres, or movements through the Study Area between the 1840s and the 1930s. Any association between the military and the Study Areas would have been transitory in nature and, as such, there are unlikely to be cultural resources related to military use of the area prior to the 1940s. All three Ranges and surrounding Study Areas have been in use by NAS Fallon as supplementary practice areas. Therefore, the presence of military-related resources in the Study Areas would likely date during or after World War II and pertain directly to the resources and operations of the NAS Fallon.

This section relies heavily on the review of military history summarized in the NAS Fallon *Survey and Evaluation Report* (NAS Fallon 2011) and the NAS Fallon history and Cold War Context provided in the Historic Resources Inventory prepared by JRP Historical Consulting Services (JRP) for structures near the B-16 range (JRP 2012). Nevada Military history from 1946-1989 is known primarily for Cold War weapons research, development, and testing; although threat detection and pilot training were also of high importance (NAS Fallon 2011). Nevada drew interest as a possible location for military installation during World War

II. Historian Michael J. Brodhead (1989:271) claims that this was due to Nevada's "inland location, good flying weather, and vast tracts of federally owned, relatively unpopulated desert." In addition, the move may have also been precipitated by the active mining economy and Nevada miners providing needed metals for the war effort including tungsten for use in armor-piercing shells in the Korean War (Elliott 1988) as well as copper and magnesium for World War II (Coray 1992).

Naval Air Station Fallon

The Fallon Naval Auxiliary Air Station (NAAS) was established by the Army Air Forces (predecessor to the modern Air Force) in 1942 in response to fears that Japan would attack military airfields in California. In response to this hostility, Nevada was uniquely positioned to serve as a location for pilot training and nuclear weapons research and development. Large, relatively remote tracts of land were acquired from miners and ranchers for military use. It was abandoned by the Air Force in 1943 following naval victories in the Pacific, but, shortly thereafter, the Navy took over the site to train Navy pilots assigned to aircraft carriers (Brodhead 1989). The Station was temporarily closed between the end of World War II and the beginning of the Korean War rendering it inactive between 1946 and 1950. In 1950 and 1951, the Fallon base was leased to the Navy and became an official Auxiliary Landing Field (ALF) associated with NAS Alameda and trained both Marine and Navy pilots (Smith and Michel 2013). With the increase in people and specialized training, the base required additional housing, facilities, and other infrastructure. An assessment of structures on the NAAS dating to the Cold War were constructed with "impenetrable" concrete walls built to "withstand a nuclear attack" (Reid Planning 2007).

Construction work in the 1950s involved the renovation of some original buildings and a significant expansion in the size of the built environment at NAAS Fallon, including the addition of Training Ranges B-16, 17, and 19. Additionally, the use of jet aircraft required that a larger series of runways be built at the station. In fact, a 10,000-ft. runway was extended to 14,000 ft. between 1957 and 1959, a task which required the re-routing of U.S. 50. At the time of its construction, this was the largest Navy runway in the U.S. (Smith and Michel 2013). In 1967, the Electronic Weapons Range (EWR) was opened in Dixie Valley; it is still in use today. With the threat of war in Southeast Asia growing and the Russian navy expanding, training exercises increased dramatically during the late 1960s and early 1970s. NAAS Fallon was upgraded to a major command in 1972, and the base continued to expand into the 1980s. Since 1972, the NAS is focused on final training of Navy pilots before they are deployed to aircraft carriers. The B-20 bombing range was expanded in 1982 with the addition of 19,431 acres and again in 1986 with the addition of 21,576 acres. By 1987, the Navy had acquired most of the privately held property in Dixie Valley (Smith and Michel 2013).

Nellis Air Force Base, well-known for aboveground nuclear weapons testing in the early- to mid-1950s, was also a training ground for fighter pilots in the late 1940s. Experimental and strategic reconnaissance aircraft were tested throughout much of the mid- to late twentieth century at Area 51, but has become heavily embroiled in controversy over government secrecy issues. In the 1960s, testing of nuclear weapons was moved underground to eliminate the threat of radioactive fallout, and resulted in the operation of the Nevada Test Site. NAS Fallon, however, has primarily been responsible for training fighter/bomber pilots for naval aircraft as well as electronic warfare training. However, as many other stations throughout the U.S. had similar training regimes, NAS Fallon is not unique until the Strike University program was developed in 1984 and its Cold War military is considered not significant before then, aside from the Air Force's SAGE operations (NAS Fallon 2011:102).

During the 1990s, remaining World War II-era buildings at NAS Fallon were evaluated as part of the 1993 Cultural Resources Management Plan (Woodward-Clyde Consultants 1993); one aircraft beacon (designated Building 95) was deemed potentially eligible for the NRHP. An inventory and evaluation of Cold War-era buildings at the Main Station was conducted by the Navy in 1998 (JRP Historical Consulting 1998). Potential military-related resources for each of the Study Areas are discussed in greater detail below.

Bravo-16 Study Area

The B-16 Range in the Lahontan Valley between Carson Lake and the Dead Camel Mountains has been used for air-to-ground bombing since the 1950s. In 1960, the Navy constructed a Control Tracker Building and associated structures and features on a right-of-way granted by the BLM just west of the B-16 Range (JRP 2012). The Control Tracker Building is within the Study Area and was designed to face spotting towers to the west. The transmission line running to the building (N16376) was completed after 1960 although the Master Title Plat (MTP) for Section 10 says that the date of action for the transmission line was 8/5/1977. The Control Tracker Building, Generator Building, and transmission line in the B-16 Study Area were recorded in 2012 as part of a Historic Resources Inventory (JRP 2012). Although the building was utilized for its intended use from the date of construction to the late 1970s, the building was out of use for a period in the late 1970s and early 1980s. The building was then converted to conduct Helicopter Visit, Board, Search and Seizure (HVBSS) training in the early 1980s (JRP 2012).
Dummy, or inert, bombs are the only materials used in bombing practice conducted on the B-16 range. However, it appears that bomb fragments are not confined within the B-16 boundary. In a 1998 EIS, the authors state that sweeps outside of the range boundaries indicated that there were areas of ordnance located off-range (NAS Fallon 1998).

In the B-16 Study Area, there are likely to be military-related cultural resources. However, the military-related material that would be characterized as historic would involve a relatively small window between the 1950s, when the B-16 range began use for bombing, and 1967, which would mark the year between historic and modern resources. It is more likely that military-related features and refuse encountered in the vicinity of the Control Tracker Building would be a byproduct of its use for HVBSS training from the 1980s to present. Military-related features (foxholes, dugouts, shooting blinds) might be expected in the area. It is most likely that most military-related materials would be encountered as isolated materials possibly including isolated clusters of shells, ammunition boxes, and/or fragments of dummy or inert ordnance.

It would also be unlikely that any of these materials would be eligible for the NRHP. In their assessment of the Control Tracker Building against NRHP eligibility criteria, JRP found the building and associated structures are likely not eligible for the NRHP when placed within the historic context of the Cold War because the building and ancillary structures are not particularly unique in its design or activity. As such, surrounding historic features are associated with the Control Tracker Building, so it’s likely that they would also be considered not eligible for listing in the NRHP.

Bravo-17 Study Area

Navy operations in the 1950s required broader ranges and more facilities and the administration began to look for places to expand operations (Smith and Michel 2013). Fairview Valley, approximately 30 mi. east of Fallon via and south of U.S. 50, was selected as that location. In the ICRMP, Smith and Michel (2013:16) state that Training Range B-17 is “the most heavily used training range within the FRTC” and has “sustained bombing for 50+ years.” The extent of the current B-17 Study Area extends primarily within the valley bottom, with large targets used for bombing runs and practice. The proposed expansion withdrawal will extend the range further south and east, encompassing the Fairview Mountain, Sinkavata Hills, and partially into northern Gabbs Valley. Cultural resource projects were conducted in the expansion Study Area for off-target bombing strikes. As such, expected resources may include spent and jettisoned ammunition and weapon (bomb) fragments.

Dixie Valley Training Area Study Area

The current Dixie Valley Electronic Warfare Range encompasses 79,444 acres. American military may have passed through or near Dixie Valley during Nevada’s early expedition phase. The naming of West Gate, Middle Gate, and East Gate along U.S. 50 is attributed to Captain James Hervey Simpson (Carlson 1974) who was in charge of leading an expedition of members from the U.S. Army’s Topographical

Engineers in 1859. The engineers were charged with locating a route from Camp Floyd (near Salt Lake City, Utah) to Genoa, Nevada. This route through Dixie/Fairview Valley as well as Middle Gate and Westgate are labeled on DeGroots 1863 map of Nevada. Given the presence of the overland route (see *Transportation and Utilities* section) through the DVTA Study Area, it is likely that the U.S. Army who was directed to protect the mail and keep travel routes open for white emigrants had some association with the area but it was likely limited.

In February 1973, Captain William Muncie, the commander of the Fallon Naval Air Station announced that the Dixie Valley area "would be used for electronic warfare practice" (REG 1973). During the ensuing years, the lands were acquired for NAS Fallon through withdrawn lands and purchases from private landowners in the Dixie Valley Settlement area. The existing Dixie Valley Electronic Warfare Range extends from north of U.S. 50 to the Dixie Valley Settlement Area, a distance of roughly 30 mi. (Smith and Michel 2013). These lands were purchased in order to conduct supersonic training, given that residents of Dixie Valley had complained about the noise from planes flying overhead. Given that most of the military activity associated with Dixie Valley dates to the last three decades, it is unlikely that any pre-1967 military-related cultural resources would be located in this range.

Bravo-20 Study Area

The B-20 Range was created through the National Emergency War Powers Act in April 1944 and the land withdrawal from the BLM occurred soon after (Nolte and Associates et al. 1980). Since the 1940s, the B-20 Range has been closed to the public and used by NAAS for bombing practice. The Range and surrounding Study Area covers a massive playa bed landscape with little to no vegetation except for Lone Rock, a solitary rock formation in the center of the playa, which was considered a "favorite target" for air-to-ground bombing practice in the past (Smith and Michel 2013:17). In 1982, an ecological research team visited the B-20 Range in preparation for an expansion of the Range surrounding Lone Rock. The ecologists described the conditions on the Range during their visit in an article titled "Of Mice, Missiles, and Men" (Vreeland et al. 1982). They found the landscape littered with shrapnel, live bombs, unignited napalm, rounds of unexploded ammunition, shredded parachutes for flares, and "obsolete military vehicles used as supplemental targets" (Vreeland et al. 1982:48). The authors also state that their military escort explained to them that "a gunner late in returning to base would often jettison unspent ammunition over the area rather than fire it" (Vreeland et al. 1982:48). Pictures from their visit corroborate their descriptions (Figures 26 and 27). The B-20 bombing range was expanded in 1982 with the addition of 19,431 acres and again in 1986 with the addition of 21,576 acres (Smith and Michel 2013).

Obsolete military vehicles, twisted grotesquely by the force of the bombings, were used as supplemental targets.

Figure 26. Vreeland (1982) photograph of destroyed vehicles in B-20 in 1982.

Bomb fragments litter the sparsely vegetated landscape in the vicinity of Lone Rock.

Figure 27. Vreeland (1982) photograph of bomb fragments in B-20 in 1982.

Even if clean-up efforts took place in the years since the article was published, there is likely to be residual debris and historic military-related resources mixed with modern elements. In a 1998 EIS concerning the B-20 range, the authors state that the Range “contains a mock submarine, strafing banners, bull’s-eyes, a lighted helicopter pad, run-in lighting, spotting towers, and electronic scoring” (NAS Fallon 1998:Section 3.5.3). A description in the 2013 ICRMP includes a statement that both “exploded and unexploded ordnance from past aerial warfare training” are located in the area (Smith and Michel 2013). Authors of the 1998 EIS state that ordnance sweeps indicated that all of the ordnance is contained within the B-20 boundaries; however, it is highly likely that isolated military detritus, including items jettisoned from planes are located on the landscape surrounding the B-20 range. It is also possible that isolated elements are in secondary deposits through flooding, sheeting, or aeolian processes.

RESEARCH THEMES FOR HISTORIC CULTURAL RESOURCES

The Study Areas contain an array of historic cultural resources that have the potential to provide data on the following research themes: Expeditions, Emigration, and Early Non-Native Settlement; Agriculture and Ranching; Mining; Transportation and Utility Lines; and Post-World War II Military Activity.

Expeditions, Emigration, and Early Non-Native Settlement

The earliest recorded, non-Native expedition routes by Peter Skene-Ogden in 1828-1829 and John C. Fremont and Joseph Walker in 1845 crossed near, but not through the proposed Study Areas. Ogden stayed well north of the B-20 area, while Walker’s crew (a split-off from Fremont’s party) passed west of the B-20 area as they traveled south through Lahontan Valley. In 1859, Captain James Hervey Simpson was tasked by the government to scout a route between Camp Floyd near Salt Lake City, Utah and Genoa in western Nevada. The route scouted by Simpson and his team was used by the Pony Express, served as the Overland Route, and became the most direct route for crossing through northern Nevada. This crossing passes through the DVTA Study Area and immediately south of the B-16 Study Area. Portions of this route later became U.S. 50. This thoroughfare induced people, like Asa Kenyon, to settle along the route and provide resources and accommodations to travelers. The settlements of Ragtown and St. Clair emerged in the late nineteenth century north of the B-16 Study Area and the town of Fallon grew up and expanded in their wake. This period of expedition, emigration, and non-native settlement also ushered in a period of tense encounters between non-native and Native Americans and a change in the socioeconomic environment. The influx of non-Native people had significant impacts on the Native community due to challenges over land and resources. With the exception of the Overland Route, documented activities related to expeditions, emigration, and early non-Native settlement did not take place within the Study Areas, and, as such, resources related to these activities are not expected. Apart from transportation routes, sites related to these activities are often ephemeral and/or subject to looting and other forms of vandalism due to public interest.

NRHP Eligibility

Sites related to the period of non-Native and Native American contact are likely to be eligible for listing in the NRHP under Criterion A for their role in the region’s settlement period. Sites that are specifically associated with persons of major importance in national or regional history may be eligible for inclusion in the NRHP under Criterion B. Sites might be NHRP eligible under Criterion C for their distinctive architectural characteristics or as the embodiment of a type or style that is not well documented in history. Properties meeting Criteria A, B, or C must retain sufficient integrity to convey their significance; for example, most or all their original design/layout must be intact or at least recognizable, along with a variety of buildings and features that illustrate the activities conducted at the property. Sites dating to the mid-nineteenth century that contain information on the expedition, emigration, and settlement period from either a Native or non-Native perspective are likely to be eligible for NRHP Criterion D for their capacity to yield important historical data by addressing scientific or historical research issues that cannot be addressed with archival information.

Data Needs for Expeditions, Emigration, and early non-native Settlement

In order to provide information relevant to this theme, a site would have to exhibit diagnostic artifacts, intact artifact deposits, and/or features with horizontal and vertical integrity clearly associated with expeditions, emigration, or early non-native settlement. Standing structures, foundations, or other remnants of settlement activity along with historic archives, documents, and maps can be used to identify locations, names of facilities, and other details. In addition, sites would have to yield remains dateable to the mid-nineteenth century when these activities were taking place in the Study Areas. Any sites that indicate the presence of Native and non-Native Americans in proximity to one another simultaneously could provide valuable data on early interactions in Nevada. This would include Native American sites that incorporate mass-manufactured goods. Refuse deposits specifically associated with Expeditions and Emigration are likely to be extremely rare and probably already picked over for unique artifacts. Early non-Native Settlement refuse may still be relatively intact, depending on its location or distance from that settlement. Refuse from Expeditions and Emigration is likely to be surficial in nature, with minimal stratified subsurface deposits. As such, NRHP-eligible refuse deposits clearly associated with this theme must be in primary depositional context, and contain early identifiable material remains that can accurately date the site within the theme, or provide data relevant to specific underrepresented ethnic or gender communities, social stratification, or demographic profiles. Early non-Native Settlement refuse deposits must also be in primary context, but are more likely to contain abundant and varied refuse that can provide a more nuanced view toward ethnic or gender communities, social stratification, and/or demographic profiles, as well as the potential for intact, stratified subsurface cultural deposits that may provide additional data not represented on the surface. Surficial refuse that lacks variety, or is small and heavily scattered, or surface/subsurface deposits in a secondary depositional context are unlikely to provide data that can address these areas of interest and are therefore generally considered not eligible for inclusion in the NRHP.

Agriculture and Ranching

Ranchers and farmers began to settle in the Fallon area as early as the 1860s to provide resources to miners in the Comstock. Mining was occurring in the Stillwater Range and the Sinkavata Hills but may have not created a very high demand for farmers and ranchers at the time. The development of ranches in the 1870s had a drastic effect on resources through sheep, horse, and cattle grazing as well as leveling cattail growth in marshes to develop ranches and diversion of water for irrigation. As a result, the local Paiute community may have had no choice but to work for wages on and around the ranches and farms and continue entrepreneurial work selling items in Stillwater, Fallon, or at the Walker Reservation (Fowler 1990).

The Newlands Reclamation Act of 1902 represents the federal effort to bring water back to the Carson Desert starting with the construction of the Derby Dam in 1903 (Hardesty and Buhr 2001:6). By 1905, the 30-mi.-long Truckee Canal was completed and was providing water to irrigate farmlands in the newly founded towns of Fallon and Fernley. This coincided with the height of mining activity in the Study Areas in the early twentieth century. Ranchers living in and around the Study Areas have also used the lands for grazing by acquiring water rights for springs to water herds of sheep, cattle, or horses. In addition, many of the farmers and ranchers may have been simultaneously involved with mining and other ventures in order to diversify their income and weather economic recessions. Ranching- and farming-related resources may provide information on how ranchers and farmers developed unique local and regional adaptive strategies due to climate, available resources, altitude, and proximity to commercial centers, among many other factors.

NRHP Evaluation

Historic ranches or ranch landscapes may be eligible for listing in the NRHP under Criterion A for their role in a region's settlement and economic development. It is also possible that ranch properties could be eligible under NRHP Criterion B, for their direct association with a person or persons prominent in national, regional, or local history. Complexes of ranch buildings and structures, alone or along with features of a rural ranch landscape (e.g., corrals, irrigation systems) may be NHRP-eligible under Criterion C for their distinctive architectural characteristics or as the embodiment of a type or style that is not well documented in history. Properties meeting Criteria A, B, or C must retain sufficient integrity to convey their significance; for example, most or all of their original design/layout must be intact or at least recognizable, along with a variety of buildings and features that illustrate the activities conducted at the property. To be eligible under NRHP Criterion D, ranch complexes must have the capacity to yield important historical data by addressing scientific or historical research issues that cannot be addressed with archival information.

Data Needs for Agriculture and Ranching

In order to provide information relevant to the theme a site would have to have an association with the theme, diagnostic artifacts, intact artifact deposits, and/or features with horizontal and vertical integrity. Homestead sites, with ancillary structures such as line camps and/or cold storage units would offer a great deal of contextual information about the ranching and farming industry and would increase the likelihood of associating the site with a known person or family. Archival research of water rights applications can provide information on modifications to springs, creeks, and streams and how the landscape was utilized by ranchers and farmers. Corrals for holding herds or old fence lines may also be located in the Study Area and might reflect a variety of construction types over time. NRHP-eligible refuse scatters or deposits clearly associated with this theme must be in primary depositional context, and contain abundant, unique, or a variety of distinctive materials associated with specific activities (or activity areas) that can accurately date the site to a specific (preferably narrow) age range contemporary with the theme, or provide data relevant to specific underrepresented ethnic or gender communities, social stratification, or demographic profiles, or exhibit (or have potential for) stratified subsurface deposits that may contain additional data not represented on the surface. In addition to diagnostic mass-manufactured goods, other diagnostic items such as projectile points, ceramics, and beads may help associate Native Americans with the ranching and agriculture industry. Surficial refuse that lacks variety, or is small and heavily scattered, or surface/subsurface deposits in a secondary depositional context are unlikely to provide data that can address these areas of interest and are therefore generally considered not eligible for inclusion in the NRHP.

Mining

A total of 19 defined mining districts overlap with the Study Areas and span nearly 150 years of mining in Nevada. They represent the mining of a multitude of materials from gold to salt and a variety of mining techniques. The mining camps of Wonder, Fairview, and Rawhide have drawn a great deal of interest because of their classic boom-bust storylines, length of occupation, significant gold-silver ore production, and stories of colorful characters. However, there is an interesting array of mining sites that represent the seasonal efforts of a few individuals that may be otherwise overlooked.

Studies of historic mining sites have generally been conducted within the scope of two major research domains: mining technology and mining communities (Hardesty 1988, 1990; Hardesty and Little 2000). Several different mining styles are present across the Study Areas ranging from corporate mining to small-scale independent mining. The importance of subsistence mining economies are often underrepresented in the historical record because it can be difficult to identify evidence of Depression-era mining, or that of other temporary booms, except through archaeological study (e.g., Smith 2006). These sites have the potential to provide information on domestic, and recreational spaces, which can provide data regarding the internal culture of a homestead or work camp. Segregation of activity areas offers insight into household priorities or the structural hierarchy of a milling or mining company. Considering alterations to the landscape and how people moved through the landscape with the process or goals of a certain activity in mind aids in understanding how people used the landscape to their advantage or modified the landscape to suit their purposes.

Recordation of the mining districts can provide information on the impact of the various districts on the local and regional economy. The mining districts also appear to represent a wide variety of mining styles including local people who are supplementing their income with seasonal work at the mines and miners who came from other counties to take advantage of booms as they occur. In addition, the archaeology of mining camps and districts can provide a strong corrective element to historical accounts. Reporting on mine production and mining camp booms was notoriously exaggerated and embellished in order to draw the interest of investors, lessees, and commercial ventures to mining claims.

NRHP Evaluation

Individual mining sites or districts of mining properties may be eligible for inclusion in the NRHP under Criterion A for their association with the development of gold, silver, and other mineral extraction/processing in the Great Basin during the nineteenth or twentieth centuries. It is possible that the Wonder, Rawhide, and/or Fairview Mining Districts may be eligible under this criterion because of their contribution to the local and regional economy. Furthermore, mining methods and mining camp life in the western U.S. between 1890 and World War II have been under-documented in the historical record due to several factors, not least of which has been a preference among historians and writers for the earlier, more flamboyant "boom" phases such as the California Gold Rush and the Comstock era (Hardesty 1988:6-8). Only recently has the importance of subsistence mining economies, such as those that developed during the economic depressions of the 1890s and the 1930s, become apparent in history. Unfortunately, phases of redevelopment and reuse within historic mining districts typically left few intact remains, even at large sites. Consequently, many mines, mining camps, and mining districts will lack sufficient integrity to convey historic significance under Criterion A. Mines or mining districts specifically associated with persons of major importance in national or regional history may be eligible for inclusion in the NRHP under Criterion B. Those that contain buildings or other intact features that exhibit unique or distinctive types or styles of construction, engineering, or mining/milling technologies may meet Criterion C. Again, such features must have sufficient physical and visual integrity that their structural or technological importance is recognizable and of potential interest to the public. Finally, mining sites or districts that contain key data required to address scientific or historical research questions may be eligible for listing in the NRHP under Criterion D. Such properties have potential to address research domains associated with mining technology and/or mining communities (Hardesty 1988, 1990; Hardesty and Little 2000).

Data Needs for Mining

In order to provide information relevant to the theme a site would have to have an association with the theme, diagnostic artifacts, intact artifact deposits, and/or features with horizontal and vertical integrity. Property types associated with mining technology are generally the mines themselves (shafts, adits, drifts), along with waste piles (tailings), earthworks and waterworks (roads, ditches, cut banks, terraces), underground workings, extraction equipment and structures (hoists, rails, headframes, ore chutes, conveyors, tramways), and processing features such as arrastras, Chile mills, ball mills, stamp mills, ore chutes/loaders, and amalgamation or cyanide plants. Property types associated with mining communities are essentially camp sites or townsites, including public and residential structural remains, domestic landscape features, and artifact deposits (Hardesty 1988; Hardesty and Little 2000). Archival date regarding methods of production, amount produced, individuals involved at the site, and hierarchical structure can assist in the development of research questions. NRHP-eligible refuse scatters or deposits clearly associated with Mining must be in primary depositional context, and contain abundant, unique, or a variety of distinctive materials associated with specific activities (or activity areas) that can accurately date the site to a specific (preferably narrow) age range contemporary with the theme, or provide data relevant to specific underrepresented ethnic or gender communities, social stratification, or demographic profiles, or exhibit (or have potential for) stratified subsurface deposits that may contain additional data not represented on the surface. Specific areas designated as town dumps for mining complexes may be useful in addressing such areas of interest, as can smaller, self-reliant mining operations, though the data from each is likely to be different in terms of size, scale, and presence of varied materials. Surficial refuse that lacks variety, or is small and heavily scattered, or surface/subsurface deposits in a secondary depositional context are unlikely to provide data that can address these areas of interest and are therefore generally considered not eligible for inclusion in the NRHP.

Transportation and Utility Lines

Communication and transportation networks have been critical to the state of Nevada given the vast amount of unoccupied land and the harshness of the terrain that made both travel and communication difficult. These networks have also supported and bolstered the major industries of Nevada (military, mining, agriculture, and ranching). Transportation lines and utility lines serve as an indication of the development and infrastructure of ranches, settlements, and mining camps. Prior to the arrival of non-Native emigrants, the Study Area was undoubtedly crisscrossed with foot paths and trails used by local Paiute tribes, some of which became major routes for non-Native travelers, emigrants, and expedition leaders. In 1859, trails forged by Capt. James H. Simpson on his journey from Camp Floyd to Genoa and back crossed to the north and south of Carson Lake, respectively. Simpson's route, or adjacent alignments, was used by the Pony Express and later, telegraph and telephone lines paralleled this route. Stations, ranches, and larger settlements eventually grew up along many of these routes as well, including places like Ragtown, Redman Station, St. Clair, and Wild Cat. Although many of these roads were eventually subsumed, they were significant in the development of transportation routes through the Carson Desert and ultimately influenced the selection of the route of the historic Lincoln Highway in the early twentieth century.

The extent to which a road was constructed or maintained and includes supporting structures such as retaining walls, earthworks, and/or culverts could indicate a time or money investment. The Lincoln Highway is a significant transcontinental roadway that crosses through the DVTA Study Area. The period of significance for the road is defined as its main period of use between 1913 and 1926 (NAS Fallon 2011: 91). In addition to access to water, the availability of transportation and utility lines made a significant contribution to making central Nevada accessible and habitable.

NRHP Evaluation

Transportation routes and/or utilities may be recommended as eligible for the NRHP if they can be shown to have a strong association with events important in history or notable individuals (Criteria A and B), or if their construction incorporates distinctive engineering and/or construction characteristics or techniques, (Criterion C). Lastly, a transportation route in the project area may be recommended as eligible if the route has the potential to yield important information related to our understanding of local, regional, or national transportation networks (Criterion D). Very few constructed roads (or railroads) embody archaeological data or other historical information that are not immediately apparent (Fryman and Kim 2008). However, there are many sites and features associated with a road or transportation system that do have the potential to yield important data not available in the historical record. Like all historic resources, however, historic significance must be accompanied by sufficient physical and visual integrity so that the structural or technological importance of properties is recognizable and is of potential interest to the public. Integrity considerations are particularly applicable to historic roads simply because most roads continue to be used, changed, and altered over time. While their location (route) remains essentially the same, appearance, alignment, and other integrity factors have often been compromised to the degree that a road or railway grade is no longer recognizable as historic (Buck et al. 2002:65; Fryman and Call 2011:3-19). Some of the transportation routes and utilities in the Study Areas are associated with mining camps and districts and may have to be considered as contributing or non-contributing elements to the eligibility of an associated mining district for listing on the NRHP.

Data Needs for Transportation and Utility Lines

In order to provide information relevant to the theme, a site would have to have an association with the theme, diagnostic artifacts, intact artifact deposits, and/or features with horizontal and vertical integrity. Transportation and utility lines are relatively well documented in historic documents, including maps and aerial photographs. Road systems may include waymarkers (e.g., tree blazes, mail trees or rocks, inscribed rocks), roadside gravesites and campsites, and various types of waystation sites (e.g., toll stations, stage and freight stops) (Fryman and Call 2011:3-19). The construction of early highway systems, such as U.S. 50, also include temporary construction camps as well as habitation sites at roadside stations and communities. Evidence of utilities would include utility poles, insulators, access roads, and potentially refuse scatters or deposits if they contain evidence of utilities-associated cultural materials, such as work, repair, or camp sites. Refuse scatters/deposits associated with utilities are likely to be rare and small in scale. As such, they are unlikely to contain much diverse data that could address questions of interest. Similarly, they are unlikely to have such intensive use as to generate abundant deposits of varied material or create intact, stratified, subsurface cultural deposits. Refuse is far more common near transportation corridors and can be associated with either its initial construction and use or later maintenance and continued use. As such, once the period of significance for either the transportation corridor or utility line is determined, the refuse must fit within that time period to be considered associated. To be NRHP-eligible, then, associated refuse must be in primary depositional context, and contain abundant, unique, or a variety of distinctive materials associated with specific activities (or activity areas, such as work/construction camps, etc.), or provide data relevant to specific underrepresented ethnic or gender communities, social stratification, or demographic profiles, or exhibit (or have potential for) stratified subsurface deposits that may contain additional data not represented on the surface. Surficial refuse that lacks variety, or is small and heavily scattered, or surface/subsurface deposits in a secondary depositional context are unlikely to provide data that can address these areas of interest and are therefore generally considered not eligible for inclusion in the NRHP.

Military (Post-World War II)

During the 1950s, the U.S. began to develop a strategy to combat a growing political and military threat from the Soviets. In order to prepare for both attack and defense, the U.S. acquired or modified military bases to suit the new form of aggression. In response to this hostility, Nevada was uniquely positioned to serve as a location for pilot training and nuclear weapons research and development. Nevada Military history from 1946-1989 is known primarily for Cold War weapons research/development/testing, though threat detection and pilot training were also of high importance (NAS Fallon 2011). NAS Fallon has primarily been responsible for training fighter/bomber pilots for naval aircraft as well as electronic warfare training. The Study Areas were used exclusively for training and practice, therefore research themes would have to be directed primarily to warfare equipment, techniques, and tactics unique to the Cold War period. During the Cold War, the American military had to adapt their warfare strategies and military facilities to respond to nuclear and missile attacks (Reid Planning 2007). In addition, the training was dominated by air-to-ground maneuvers so common marks of ground tactical training such as foxholes and shooting blinds are unlikely.

NRHP Evaluation

Military-related resources may be recommended as eligible for the NRHP if they can be shown to have a strong association with events important in history, such as the Cold War, or notable individuals (Criteria A and B), or if their construction incorporates distinctive engineering and/or construction characteristics or techniques (Criterion C). Lastly, the site may be recommended as eligible if the resource has the ability to yield important information related to our understanding of technological developments, warfare techniques, or the regional and local economy (Criterion D).

Data Needs for Post-World War II Military

In order to provide information relevant to the theme, a site would have to yield diagnostic artifacts, intact artifact deposits, and/or features with horizontal and vertical integrity clearly associated with the post-World War II era. Resources that date within the Cold War era (1946-1989) may include equipment, ordnance, structures, or refuse deposits that can be reliably dated to the timeframe. Archival research may be able to identify locations of dumps or waste deposits, but these are likely to be located on or near the main installation. Historical refuse deposits associated with post-World War II Military use are expected to be rare. Occasional items such as ammunition cartridges, ammunition boxes, or other refuse is unlikely to be considered significant or found in abundance. Similarly, unless a dump is found that contains stratified intact cultural deposits clearly associated with Military use, it is assumed that most Military-related refuse scatters will be considered ineligible for the NRHP.

7. SUMMARY, MANAGEMENT RECOMMENDATIONS, AND CONCLUSIONS

SUMMARY

This document provided an overview of the cultural resource reports and known and potential cultural resources located within the expansive NAS Fallon proposed land expansion withdrawal project covering approximately 680,000 acres in western Nevada on lands currently managed by the BLM Carson City District-Stillwater Field Office, BLM Winnemucca District-Humboldt River Field Office, BOR Mid-Pacific Region, FWS Stillwater National Wildlife Refuge, and non-federal lands. Records and reports forming the data within this report were collected from the various repositories above, as well as the Nevada SHPO, NSM, NAS Fallon, and other published resources. This compilation was created with the intent to provide the reader with an overview and synthesis of the type, variability, and range of projects conducted as well as the resources present and potentially present within the Study Areas.

The prehistoric era here is divided into five chronological periods. The Pre-Archaic period (11,500-7500 B.P.) is characterized by very different environmental conditions compared to today and the first peoples in the area were highly mobile and site functions appear similarly general and unspecialized. With the shift to warming and drying temperatures during the middle Holocene, the Early Archaic period (7500-3500 B.P.) is poorly represented, suggestive of abandonment of the Carson Desert. While generally true, there is evidence of short occupations that pickup towards the latter end, after 5000 B.P. The Middle Archaic period (3500-1500 B.P.) generally is considered a boom period associated with improved climatic conditions. Village sites become more common, obsidian ranges and perhaps trade/exchange expand, and many more landscapes were utilized. With the shift to the bow-and-arrow in the Late Archaic period (1500-650 B.P.), individual hunting became more common along with explosive rises in projectile point densities. Additional changes in group structure, technology, and resource procurement (including pinyon exploitation) identify this period as very dynamic. The final prehistoric period, the Late Prehistoric (650 B.P. to contact), represents additional changes and perhaps population replacement by Numic groups.

By the time of contact with Euroamerican groups, the ethnohistoric inhabitants were of Northern Paiute ancestry, living near Carson Lake and along the slough. The Toedökadö (Cattail-eaters) practiced a seasonally semi-nomadic lifeway centered on the marshes and wetlands of the Carson Desert, taking resources as they ripen and become abundant (Fowler 2002). As Euroamerican settlement increasingly marginalized the Toedökadö, many moved closer to these establishments for food and work opportunities.

The earliest historic era (Euroamerican) uses of the area was primarily as reconnaissance and identification of passage ways to west coast (1820s-1850s). This shifted once valuable ores were discovered and extracted for profit. As mining districts formed and miners increased in number, additional support services sprang up as needed, including larger support towns with stores and post offices, ranches and farms were settled and some developed to help feed the populations, and communications and transportation networks were established. As warranted by world events in the twentieth century, military training and weapons testing became important in the low-population density areas of the Study Areas.

To evaluate cultural remains associated with prehistoric, ethnohistoric, or historic era resources, this document also identified key research themes and data needs. Prehistoric research themes include chronology, settlement and subsistence patterns, toolstone procurement and use, and rock art studies. Additional themes may be warranted as necessary. Historic era research themes include emigration, mining, agriculture and ranching, transportation and communication, and military. Discussions of each theme and site type were provided with data needs to address the National Register criteria for eligibility evaluations.

MANAGEMENT RECOMMENDATIONS

This document provides a synthesis of the type, variability, and range of resources within the NAS Fallon proposed Study Areas. Cultural resources on withdrawn lands will be managed by NAS Fallon, but results of compliance projects pertaining to cultural resources on these lands must also be reviewed by the original federal land-owner, such as BLM, BOR, or FWS. Section 106 of the National Historic Preservation Act (NHPA), as amended, requires the federal agency to consider the effects of federal undertakings on historic properties (those cultural resources listed or eligible for listing in the NRHP) on its managed lands. This Class I overview of the Study Areas identifies the majority of known resources and previous studies as well as environmental and cultural backgrounds and research themes necessary for identifying and evaluating cultural resources to aid in future management of the withdrawn lands. This document, however, should not be used as a sole source for background information and location or findings of previous studies in any given area, but does provide an informed overview that should be followed up by researchers following normal literature review standards, procedures, and conventions.

Data Gaps

As part of this Class I overview, ASM has identified several areas where improvements can be made in site documentation, data management, and suggested areas for additional cultural resource studies that are currently lacking modern intensive inventory for the identification and evaluation of cultural resources. These recommendations may help to improve the quality of data and research potential of the cultural resource managers and other cultural resource management firms.

Site Documentation

As described in Chapter 4, ASM reclassified all known recorded archaeological sites into defined site types for consistency and to allow for cross comparisons. Future site documentation would be advised to follow these, or similar, site type definitions to further the process of creating comparable site information. Similarly, and in keeping with the BLM guidelines and standards (2012), site documentation should include clearly described and enumerated flaked and ground stone tools or other formed artifacts, features, and other recorded site characteristics. Diagnostic artifacts (prehistoric and historic) should be clearly photographed or illustrated and include pertinent measurements for each artifact type (e.g., length, width, thickness, basal width, neck width, axial length, etc. for projectile points). Early site records are often vague in their site and constituent descriptions and should be updated to current archaeological standards, especially unique sites such as rock art, caves/rockshelters, habitations, or those with potential for standing structures such as mines, mills, and mining camps before they succumb to natural processes, illicit artifact collection, or vandalism.

Data Management

As part of this synthesis, ASM completed detailed reviews of previous studies and resources in the Study Areas. This included adding data to blank or incomplete data fields in BLM databases as well as digitization of inventories and cultural resource boundaries in GIS. While this process was necessary primarily for early studies (pre-2000s), it should be followed through on all other properties and studies going forward. This will continue to improve agency databases for use in comparison, research, and resource management purposes.

Additional Studies

Large expanses within the Study Areas have not undergone intensive archaeological inventory, and while complete coverage of the entire 680,000-acre Study Area may not be feasible, targeted studies or samples may prove highly effective in identifying high sensitivity areas. Similarly, many early surveys were not conducted to current intensive inventory and recordation standards. It is BLM policy to review and evaluate previous cultural resource inventories "…more than 20 years old to determine their adequacy for contemporary identification purposes in locating and evaluating historic properties…" (BLM-NVSHPO 2014:17). Resurvey of previously inventoried areas may be warranted to account for differences in methodology as well as changes to the land that may have obscured or revealed old and new resources. As noted in Chapter 4, a number of "known but not recorded" sites exist in the Study Areas. These sites are primarily mining related sites such as mills, mine complexes, and mining camps. These sites should be thoroughly recorded, given they have already been assigned BLM agency site numbers and have potential to contain standing or recently collapsed structures, buildings, or foundations. The Study Area encompasses portions of numerous mining districts with little detail on their cultural resource elements or geographic expansion.

Other specific areas that are lacking inventory include the Sand Springs Mountains, lower elevations in Dixie and Fairview valleys, the Clan Alpine Mountains, Monte Cristo Mountains, the mountains between Gabbs and Fairview Valley (Sinkavata Hills), Stillwater Mountains, as well as the Carson Desert and the Dead Camel Mountains (but see Estes and Mahoney 2017). Large portions of these areas have undergone minimal inventory or were inventoried more than 20 years ago. Shorelines, dunes, and relict gravel bars are of critical importance for prehistoric resources in the Carson Sink and have yielded Pre-Archaic occupations, as well as buried late Holocene age components with numerous structures, storage pits, and burials. Upland investigation is also critical to understand how and when pinyon groves were first utilized and how the uplands fit into the overall settlement-subsistence regime. This is primarily important in the wooded mountains of the Stillwater, Clan Alpine, and Fairview Mountains.

Additional studies of the Study Areas will help to further refine the findings in this overview and allow for a more complete understanding of the cultural resources present in the Study Area, providing a useful tool for cultural resource managers as they attempt to balance historic preservation with the ground and aerial training and weapons testing needs of NAS Fallon.

CONCLUSIONS

The proposed NAS Fallon Study Areas have generally undergone minimal, targeted cultural resource studies, mostly completed for compliance with Section 106 of NHPA. Large swaths of land within the proposed Study Areas have not undergone any cultural resource studies and therefore we know little of the prehistoric and historic uses of those specific areas. However, review of the studies completed to date provides a good broad overview of land use patterns, chronology, and intensity of prehistoric and historic use. This overview has provided an account of what is known and where, and what areas lack such detail. The historic context herein provides research themes for future studies when recording and evaluating cultural resources for their potential for inclusion in the NRHP. Therefore, this document should be used as a baseline of the current state of knowledge for NAS Fallon land and cultural resource managers to use when considering impacts of federal undertakings on cultural resources and historic properties.

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Final:
Class I Cultural Resources Overview for 92,315-Acres Associated with the Fallon Range Training Complex Modernization Environmental Impact Study

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BLM Report Number CRR 1-2786.1

Final I September 2018

Prepared for:

Naval Air Station Fallon
4755 Pasture Road
Fallon, Nevada 89496

Prepared by:

Mark B. Estes, M.A., RPA
Shannon S. Mahoney, Ph.D., RPA

ASM affiliates

433 West Plumb Lane
Reno, Nevada 89509
(775) 324-6789

ASM Project Number 29150

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ASM Affiliates, Inc.
433 West Plumb Lane
Reno, Nevada 89509

September 2018
PN 29150

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0. ADMINISTRATIVE SUMMARY

This document presents the results of a Class I Cultural Resources Overview and Research Design in support of the Fallon Range Training Complex (FRTC) proposed land expansion withdrawal Environmental Impact Statement (EIS). The Study Areas described in this report were identified by the Navy as additional areas needing review to match the proposed withdrawals for the alternatives. The Study Areas described herein cover approximately 92,315 acres within Churchill, Mineral, and Nye counties, Nevada. This report provides a summary of the recorded cultural resources as well as cultural resource studies conducted within the Study Areas. Data gaps have been identified where data management or additional cultural resource studies are needed. Based on the review of the known resources and inventories, as well as detailed historic research into the Study Areas, historic contexts are presented for both the prehistoric and historical record. The information within each context was used to develop specific research themes and data needs useful in future cultural resource eligibility evaluations for inclusion in the National Register of Historic Places. The goals of this report are to provide a baseline study of the cultural context for the FRTC Modernization EIS that can be used to assist management of historic properties on the proposed expansion and to facilitate continued compliance with Section 106 of the National Historic Preservation Act of 1966 (as amended). Research was completed under subcontract to ManTech International Corporation under Task Order N6247317F4489 in support of development of the FRTC Modernization EIS through Naval Facilities Engineering Command Southwest (Contract N62742-14-D-1863) and is held to the conditions of ASM's Nevada Bureau of Land Management Cultural Use Permit No. N77810.

This report serves as an addition to a previous report prepared for the FRTC Modernization EIS which covered approximately 680,000 acres of federal and non-federal lands proposed for withdrawal (see Estes et al. 2017). The lands covered in this report were identified by FRTC for additional proposed expansion and are located immediately adjacent to the lands previously reviewed. Together, these two reports encompass all the proposed withdrawal areas in the EIS.

1. INTRODUCTION AND PROJECT DESCRIPTION

Naval Air Station (NAS) Fallon and the Fallon Range Training Complex (FRTC) are located approximately 65 miles (mi.) east of Reno, Nevada, and encompass approximately 230,000 acres of land and 14,100 square nautical miles of airspace in western Nevada. Their primary mission is to support Navy and Marine Corps tactical training through realistic strike and integrated air warfare training while providing services and equipment to various Navy and Marine operating forces across the U.S. and around the world. The FRTC lands include both closed Navy-administered and lands withdrawn from, and jointly administered by, the Bureau of Land Management (BLM) Carson City District Office (CCDO). Despite the addition of over 120,000 acres in 1999, the FRTC training ranges have changed little since the 1960s. Increased need for expanded bombing ranges for training and public safety, mountainous regions for surface training, and air space for aerial training exercises prompted the FRTC to propose a modernization effort that requires preparation of an Environmental Impact Statement (EIS) and all supportive documentation required therein.

The proposed FRTC modernization project involves a withdrawal expansion of public lands from all forms of appropriation under public land laws, including mining laws, mineral leasing laws, and geothermal leasing laws, subject to valid existing rights. Lands proposed to be withdrawn discussed in this report include federal (BLM CCDO) and non-federal lands (private) for use by the Department of Defense (DOD) NAS Fallon and the FRTC to expand the footprints of the Dixie Valley Training Area (DVTA) and training range Bravo-17 (B-17), and to meet FRTC requirements for military use to support pre-deployment combat training for U.S. naval aviation and Naval Special Warfare forces.

The lands proposed for withdrawal are referred to as Study Areas in this report. Table 1.1 lists the total acreage of each Study Area as well as the current land managers of the acres proposed to be withdrawn. Table 1.2 identifies the legal descriptions of the Study Areas. The Study Areas cover 92,315 acres in western Nevada, spanning portions of Churchill, Mineral, and Nye counties (Figure 1.1). Overviews of each Study Area are shown in Figures 1.2 and 1.3.

Table 1-1 Study Area Acreage, Location, and Current Land Manager

Land Manager	Acres	County
DVTA Study Area	**16,337.2**	
Federal (BLM)	16,337.2	Churchill
B-17 Study Area	**75,977.8**	
Federal (BLM)	75,013.2	Churchill, Nye, Mineral
Non-federal (Private)	984.6	Mineral
TOTAL	**92,315.0**	

Table 1-2 Class I Study Area Legal Descriptions

Township	Range	Section	Location	Land Manager
DVTA Study Area (16,337.2 acres – BLM)				
18N	33E	3	Entire section	BLM (CCDO)
19N	32E	13	Entire section	BLM (CCDO)
19N	33E	20	NW NE and SE 1/4’s	BLM (CCDO)
		21	Entire section	BLM (CCDO)

Township	Range	Section	Location	Land Manager
		22	Entire section	BLM (CCDO)
		23	Entire section	BLM (CCDO)
		24	Entire section	BLM (CCDO)
		25	Entire section	BLM (CCDO)
		26	Entire section	BLM (CCDO)
		27	Entire section	BLM (CCDO)
		28	E 1/2	BLM (CCDO)
		34	Entire section	BLM (CCDO)
		35	Entire section	BLM (CCDO)
19N	35E	12	S 1/2 of SW 1/4 of SW 1/4	BLM (CCDO)
		13	Entire section	BLM (CCDO)
19N	36E	19	E 1/2	BLM (CCDO)
20N	33E	1	SE 1/4	BLM (CCDO)
		7	Entire section	BLM (CCDO)
		8	Entire section	BLM (CCDO)
		9	SW NW and SE 1/4’s	BLM (CCDO)
		10	S 1/2	BLM (CCDO)
		11	SW NE and SE 1/4’s	BLM (CCDO)
		12	Entire section	BLM (CCDO)
20N	33.5E	1	S 1/2	BLM (CCDO)
		12	Entire section	BLM (CCDO)
20N	34E	6	S 1/2	BLM (CCDO)
		7	Entire section	BLM (CCDO)
20N	35E	2	Entire section	BLM (CCDO)
		11	Entire section	BLM (CCDO)
		14	Entire section	BLM (CCDO)
		23	Entire section	BLM (CCDO)
B-17 Study Area (75,013.2 acres – BLM and 984.6 acres – Private)				
11N	34E	1	Entire section	BLM (CCDO)
		2	Entire section	BLM (CCDO)
		3	Entire section	BLM (CCDO)
		4	SW, NW, and SE 1/4’s of SW 1/4 W 1/2 of NW 1/4 S 1/2 of SE 1/4	BLM (CCDO)
		4	NE 1/4 of SW 1/4 E 1/2 of NW 1/4 NE 1/4 N 1/2 of SE 1/4	Private
		5	Entire section	BLM (CCDO)
		6	E 1/2	BLM (CCDO)

Township	Range	Section	Location	Land Manager
		9	Entire section	BLM (CCDO)
		10	Entire section	BLM (CCDO)
		11	Entire section	BLM (CCDO)
		12	Entire section	BLM (CCDO)
		13	N 1/2	BLM (CCDO)
		14	N ½	BLM (CCDO)
		15	N ½	BLM (CCDO)
		16	N 1/2	BLM (CCDO)
11N	35E	4	W 1/2	BLM (CCDO)
		5	Entire section	BLM (CCDO)
		6	Entire section	BLM (CCDO)
		7	Entire section	BLM (CCDO)
		8	W 1/2	BLM (CCDO)
12N	34E	1	Entire section	BLM (CCDO)
		11	Entire section	BLM (CCDO)
		12	Entire section	BLM (CCDO)
		13	Entire section	BLM (CCDO)
		14	Entire section	BLM (CCDO)
		15	Entire section	BLM (CCDO)
		19	Entire section	BLM (CCDO)
		20	Entire section	BLM (CCDO)
		21	Entire section	BLM (CCDO)
		22	Entire section	BLM (CCDO)
		23	Entire section	BLM (CCDO)
		24	Entire section	BLM (CCDO)
		25	Entire section	BLM (CCDO)
		26	Entire section	BLM (CCDO)
		27	Entire section	BLM (CCDO)
		28	S 1/2 of SW 1/4 SW, NW, and NE 1/4 of NW 1/4 NE 1/4 E 1/2 of SE 1/4	BLM (CCDO)
		28	N 1/2 of SW 1/4 SE 1/4 of NW 1/4 W 1/2 of SE 1/4	Private
		29	SW, NW, and NE 1/4's SW, NW, and SE 1/4's of SE 1/4	BLM (CCDO)
		29	NE 1/4 of SE 1/4	Private
		30	Entire section	BLM (CCDO)
		31	E 1/2	BLM (CCDO)
		32	Entire section	BLM (CCDO)

Township	Range	Section	Location	Land Manager
		33	NW 1/4 E 1/2 of NE 1/4	BLM (CCDO)
		33	SW 1/4 W 1/2 of NE 1/4 SE 1/4	Private
		34	Entire section	BLM (CCDO)
		35	Entire section	BLM (CCDO)
		36	Entire section	BLM (CCDO)
12N	35E	1	Entire section	BLM (CCDO)
		2	Entire section	BLM (CCDO)
		3	Entire section	BLM (CCDO)
		4	Entire section	BLM (CCDO)
		5	Entire section	BLM (CCDO)
		6	Entire section	BLM (CCDO)
		7	Entire section	BLM (CCDO)
		8	Entire section	BLM (CCDO)
		9	Entire section	BLM (CCDO)
		10	Entire section	BLM (CCDO)
		11	Entire section	BLM (CCDO)
		12	Entire section	BLM (CCDO)
		13	W 1/2	BLM (CCDO)
		14	Entire section	BLM (CCDO)
		15	Entire section	BLM (CCDO)
		16	Entire section	BLM (CCDO)
		17	Entire section	BLM (CCDO)
		18	Entire section	BLM (CCDO)
		19	Entire section	BLM (CCDO)
		20	Entire section	BLM (CCDO)
		21	Entire section	BLM (CCDO)
		22	Entire section	BLM (CCDO)
		23	Entire section	BLM (CCDO)
		26	N 1/2	BLM (CCDO)
		27	Entire section	BLM (CCDO)
		28	Entire section	BLM (CCDO)
		29	Entire section	BLM (CCDO)
		30	Entire section	BLM (CCDO)
		31	Entire section	BLM (CCDO)
		32	Entire section	BLM (CCDO)
		33	Entire section	BLM (CCDO)

Township	Range	Section	Location	Land Manager
		34	N 1/2	BLM (CCDO)
12N	36E	6	W 1/2	BLM (CCDO)
13N	35E	1	Entire section	BLM (CCDO)
		2	Entire section	BLM (CCDO)
		3	Entire section	BLM (CCDO)
		4	E ½	BLM (CCDO)
		9	SW NE and SE 1/4’s	BLM (CCDO)
		10	Entire section	BLM (CCDO)
		11	Entire section	BLM (CCDO)
		12	Entire section	BLM (CCDO)
		13	Entire section	BLM (CCDO)
		14	Entire section	BLM (CCDO)
		15	Entire section	BLM (CCDO)
		16	Entire section	BLM (CCDO)
		21	Entire section	BLM (CCDO)
		22	Entire section	BLM (CCDO)
		23	Entire section	BLM (CCDO)
		24	Entire section	BLM (CCDO)
		25	Entire section	BLM (CCDO)
		26	Entire section	BLM (CCDO)
		27	Entire section	BLM (CCDO)
		28	Entire section	BLM (CCDO)
		29	Entire section	BLM (CCDO)
		31	Entire section	BLM (CCDO)
		32	Entire section	BLM (CCDO)
		33	Entire section	BLM (CCDO)
		34	Entire section	BLM (CCDO)
		35	Entire section	BLM (CCDO)
		36	Entire section	BLM (CCDO)
13N	36E	6	W 1/2	BLM (CCDO)
		7	Entire section	BLM (CCDO)
		18	Entire section	BLM (CCDO)
		19	Entire section	BLM (CCDO)
		30	Entire section	BLM (CCDO)
		31	W 1/2	BLM (CCDO)
14N	35E	2	W 1/2	BLM (CCDO)
		3	Entire section	BLM (CCDO)
		4	E 1/2	BLM (CCDO)

Township	Range	Section	Location	Land Manager
		9	Portions of NE and SE 1/4's	BLM (CCDO)
		10	Entire section	BLM (CCDO)
		11	Entire section	BLM (CCDO)
		13	W 1/2	BLM (CCDO)
		14	Entire section	BLM (CCDO)
		15	Entire section	BLM (CCDO)
		16	Portions of SW NW and SE 1/4's Entire NE 1/4	BLM (CCDO)
		21	Portions of NE and SE 1/4's	BLM (CCDO)
		22	Entire section	BLM (CCDO)
		23	Entire section	BLM (CCDO)
		24	Entire section	BLM (CCDO)
		25	Entire section	BLM (CCDO)
		26	Entire section	BLM (CCDO)
		27	Entire section	BLM (CCDO)
		28	E 1/2 of E 1/2	BLM (CCDO)
		33	E 1/2 of E 1/2	BLM (CCDO)
		34	Entire section	BLM (CCDO)
		35	Entire section	BLM (CCDO)
		36	Entire section	BLM (CCDO)
14N	36E	31	W 1/2	BLM (CCDO)
15N	35E	28	SE 1/4	BLM (CCDO)
		33	E 1/2	BLM (CCDO)
		34	Entire section	BLM (CCDO)

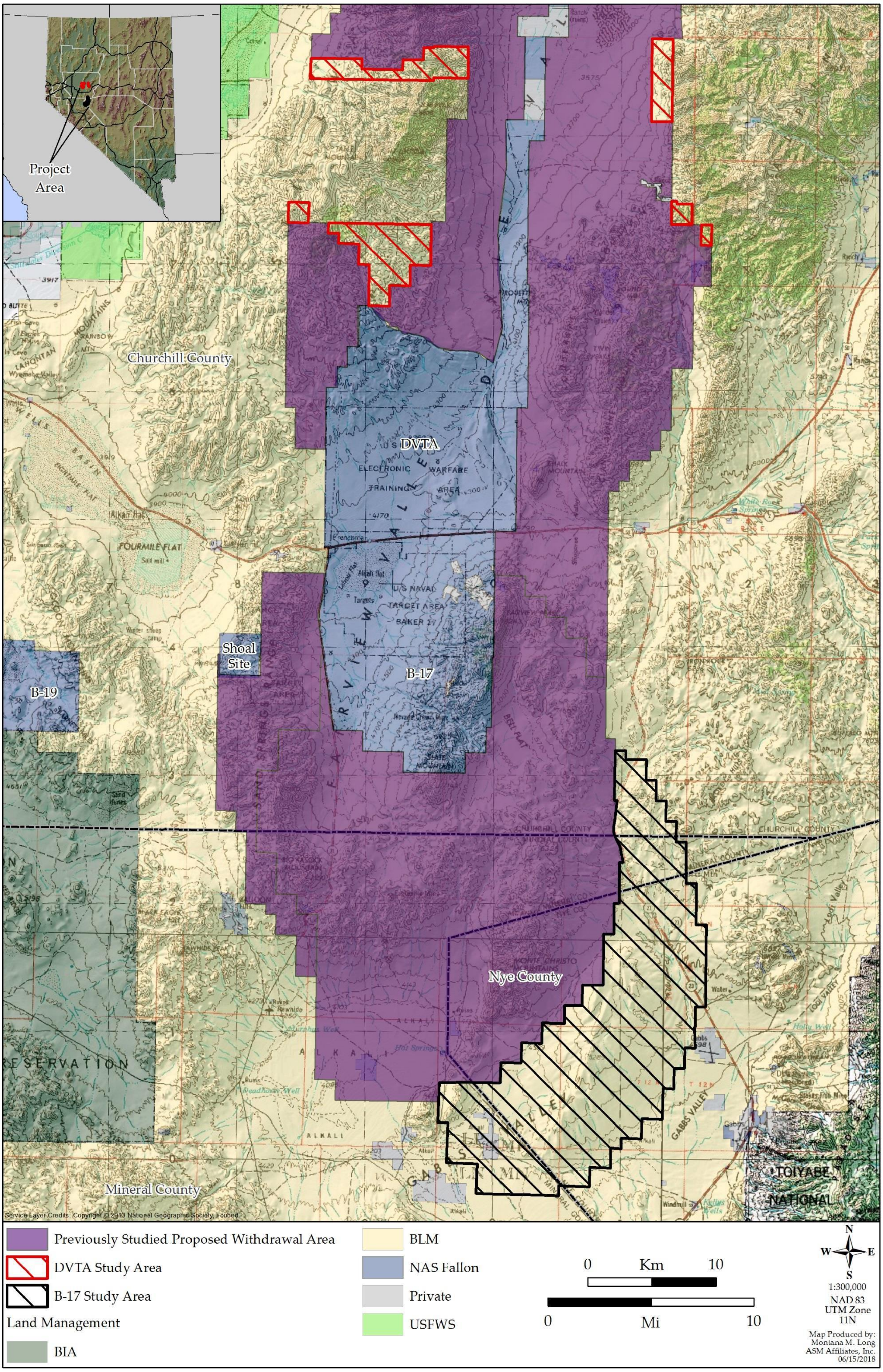

Figure 1-11 Project overview.

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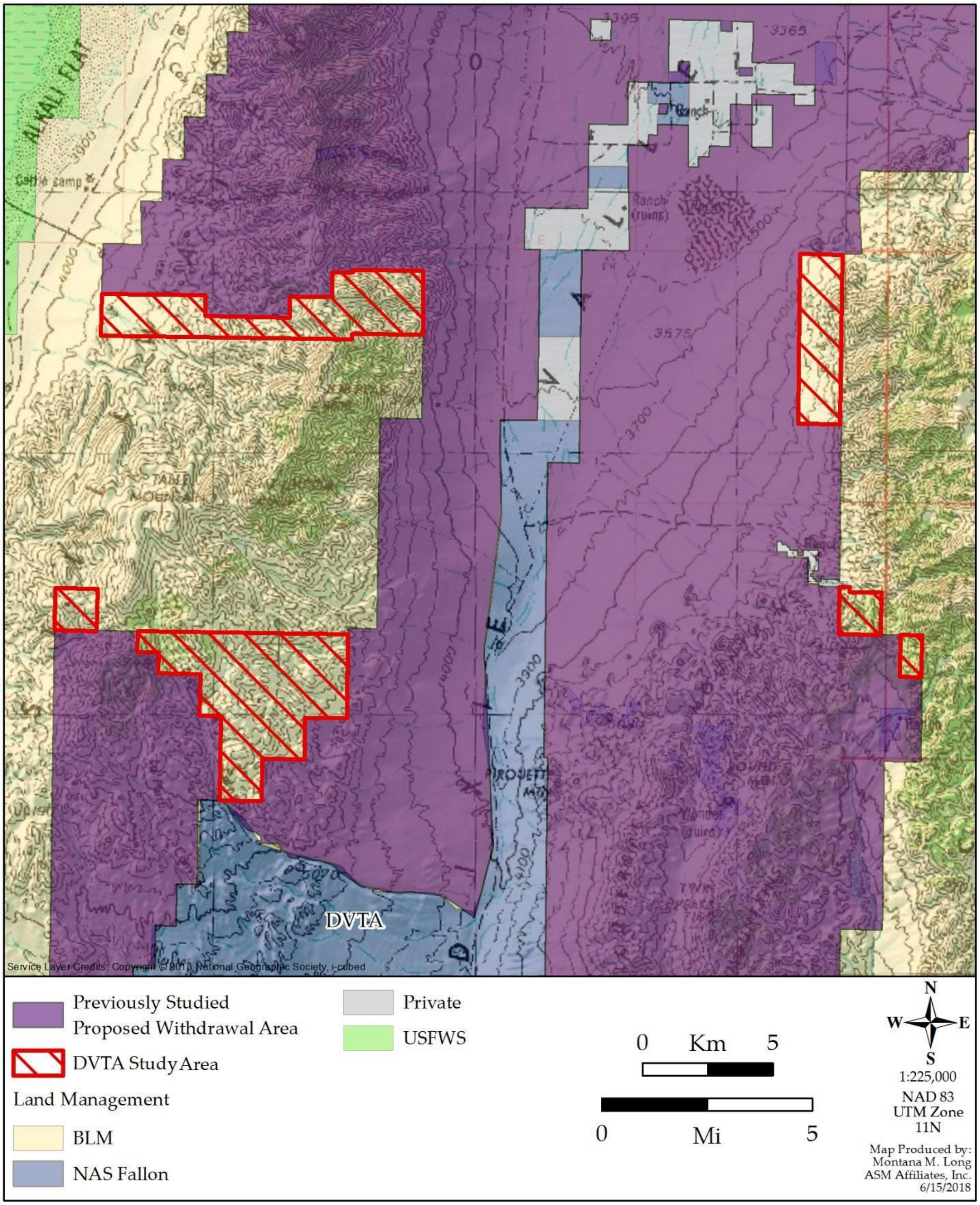

Figure 1-2 DVTA Study Area overview.

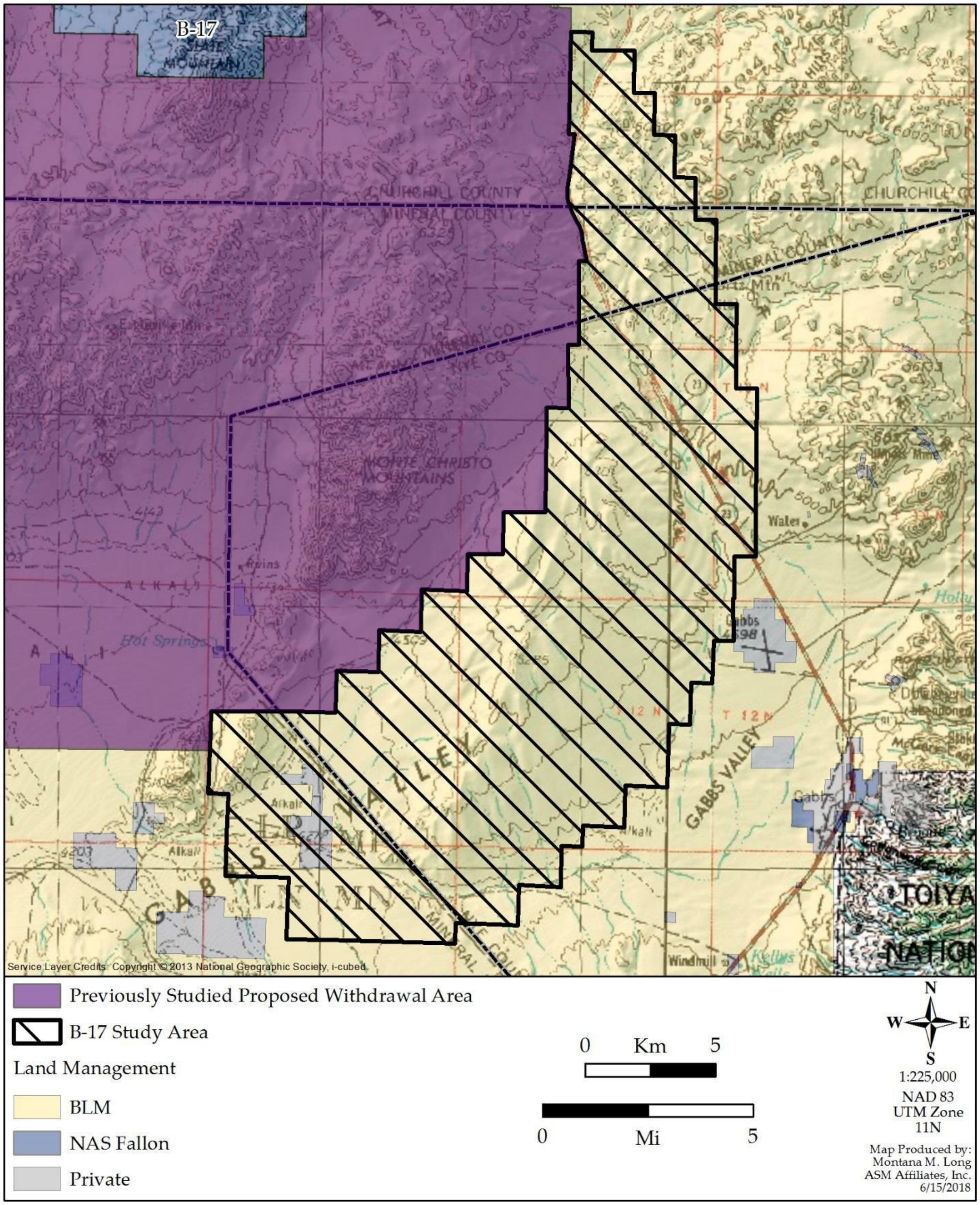

Figure 1-3 B-17 Study Area overview.

This document provides a summary of the information gleaned from record searches of the 92,315 acres proposed for withdrawal from BLM and private management for FRTC training range expansion and tactical exercises involving Naval Special Warfare training, air-to-surface, and surface fires training operations. It is a support document for the FRTC Modernization EIS that identifies the current state of cultural resource investigations within the Study Areas. It serves as a convenient summary of where cultural resource investigations have taken place, their findings, locations of historic properties, and identifies data gaps. This document should be used as a baseline of the current state of knowledge for NAS Fallon land and cultural resource managers to use when considering impacts of federal undertakings on cultural resources and historic properties.

Following this introduction and project description, Chapter 2 presents an environmental context covering much of western Nevada, including specific data concerning valleys and mountain ranges in the Study Areas. Chapter 3 details the methodology ASM used to tabulate cultural resources and cultural resource inventories within the Study Area. Results of the record search and literature review are presented in Chapter 4. This includes summaries of previously recorded archaeological resources, as well as potential cultural resources that appear on historic maps and may still be present within the Study Area. Tables of resource types and completed resource projects are also presented. Following the results of this review, Chapter 5 provides a summary of the prehistoric cultural background and historic context with associated research themes. Similarly, Chapter 6 details the historic cultural background and historic context with associated research themes. The specific research themes are developed with data needs that will be useful to evaluate cultural resources for their ability to address the criteria for determining eligibility for listing in the National Register of Historic Places (NRHP) as outlined in 36 CFR 60.4. Finally, Chapter 7 provides a summary of the findings of this record search and review along with management recommendations for cultural resource managers.

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2. ENVIRONMENTAL SETTING

This chapter provides an overview of the environmental settings of Gabbs Valley, Dixie Valley, and the Stillwater and Clan Alpine Mountain Ranges—each contain portions within the Study Areas. More extended treatises on the environments and culture history of the Carson Desert can be found in Zeanah et al. (1995) and Kelly (2001). A brief overview of the natural setting of the project area is necessary to help place evaluation results within a basic environmental setting. The following narrative discusses the contemporary environment, geology, contemporary climate and hydrology, modern vegetation, and modern fauna.

CONTEMPORARY ENVIRONMENT

Geography and Physiography

The existing DVTA withdrawal and Navy-owned lands total 79,444 acres in Dixie Valley, north of U.S. 50. This training range is confined within the valley, bordered to the east by the Clan Alpine Mountains and the Louderback Mountains and to the west by the Stillwater Range. These mountain ranges rise to 3,040 meters (m) above sea level (9,966 feet [ft.]) at Mount Augusta (Clan Alpine Mountains) and 2,679 m (8,785 ft.) at Job Peak (Stillwater Range). The DVTA Study Area (16,337.2 acres) includes lands north of U.S. 50 in Dixie Valley, the Stillwater Range, and Clan Alpine Mountains. The Study Areas in the Stillwater Range occur north and south of Table Mountain. The southern Stillwater Range is composed of Pliocene-aged sedimentary and basaltic/andesitic formations, whereas the central portion is composed of Upper Triassic shales, sandstones, and siltstones, Oligocene granites, basalts, andesites, as well as limestone and felsite (Willden and Speed 1974:Plate 1). The Study Areas on the east side of Dixie Valley include portions in the Clan Alpine Mountains and in Dixie Valley. The Clan Alpine Mountains are formed primarily of Miocene rhyodacites. The Study Areas include portions south of Horse Creek and north of Ranch Creek Canyon. The Study Area in Dixie Valley proper is situated along the western foothills of the Clan Alpine Mountains, between Dummy and Grover Canyons. Numerous springs bubble in the Stillwater Range with canyons that drain into the Carson Sink and Dixie Valley. Pinyon-juniper woodland is common in the Stillwater Range and Clan Alpine Mountains that gives way to sagebrush steppe on the upper fans and more saline-tolerant shrubs (greasewood, shadscale, saltbush, ricegrass, etc.) lower on the fans and into the valley floor.

The existing training range B-17 withdrawal encompasses 52,830 acres in the southern portion of the Dixie Valley/Fairview Valley basin (south of U.S. 50) roughly 35 mi. southeast of Main Station. The playa at Labou Flat accounts for the northwest portion of the range, but alluvial fans, ridges, and peaks of the Fairview Range make up the remainder. Elevations range from about 1,270 m (4,165 ft.) at Labou Flat to 2,250 m (7,380 ft.) at an unnamed peak in the Fairview Range. Surfaces just above the elevation of the barren Labou Flat playa support Bailey's greasewood and associated shrubs, while lands above 1,600 m (5,250 ft.) transition to big sagebrush cover. Areas above 2,000 m (6,560 ft.) in the Fairview Range support pinyon-juniper woodland. The Study Area (75,977.8 acres) is located primarily southeast of the existing withdrawal, and encompasses portions of the Broken Hills and much of the northeastern arm of Gabbs Valley, spanning both sides of State Route (SR) 361 as well as a small portion of Fissure Ridge and the Black Hills. Elevations range from 1280-1840 m (4200-6037 ft.).

Climate and Hydrology

The climate in the central Great Basin is relatively arid. It is characterized as having "wide diurnal temperature swings, low humidity, and sunshine prevail(s) throughout the year" (Far Western and JRP 2007:18). Precipitation varies between the valley floor and mountains and occurs more frequently in the winter. Data from the Western Regional Climate Center (WRCC 2014) indicate temperatures in Fallon, Nevada, over the past century averaged 51.3 degrees Fahrenheit (F). The average high temperature in July is 92.2° F and average low temperature in January is 18.1° F. Rainfall averages 5 inches (in.) yearly and snowfall averages 5.7 in. Permanent water is available primarily from the Carson River, as well as various springs scattered throughout mountainous areas.

Flora

Contemporary drylands and marshes in the project area support a wide variety of plant and animal life. The arid desert basin is mostly dominated by little greasewood (*Sarcobatus baileyi*), shadscale (*Atriplex confertifolia*), and four-wing sagebrush (*A. canescens*). Pickleweed (*Salicornia* spp.), quail brush (*Atriplex lentiformis*), samphire (*Salicornia europaea*), budsage (*Artemisia spinecens*), winterfat (*Ceratoides lanata*), and wolfberry (*Lycium cooperi*) also occur in lesser frequencies but are also adapted to alkaline playa soils. Rabbitbrush (*Chrysothamnus nauseosus*), horsebrush (*Tetradymia canescens*, *T. spinosa*), dalea (*Dalea polydenia*), and Indian ricegrass (*Oryzopsis hymenoides*) grow in more sandy areas where dunes have formed and stabilized. In the wetlands, vegetation favoring freshwater and alkaline conditions are present. Tall and hardy plants such as American bulrush (*Scirpus americanus*), hardstem bulrush (*S. acutus*), alkali bulrush (*S. maritimus*), cattails (*Typha domingensis*, *T. latifolia*, *T. angustifolia*), and an assortment of rushes (*Eleocharsis* spp., *Juncus* spp.) can be found in local freshwater marshes (Far Western and JRP 2007; Fowler 2002). Alkaline wetlands host desert saltgrass (*Distichlis stricta*, *D. spicata*), pickleweed, and iodinebush (*Allenrolfea occidentalis*). Grasses, such as Great Basin wildrye (*Elymus cinereus*), wheatgrass (*Agropyron* spp.), lovegrass (*Eragrostis* spp.), and Indian ricegrass (*Oryzopsis hymenoides*) also are common in areas where groundwater levels are high or standing water is present (Fowler 2002). Fewer plants grow on playa surfaces, mostly pickleweed and greasewood (*Sarcobatus baileyi*); tamarisk (*Tamarix* spp.) and western samphire (*Salicornia rubra*) are also present (Kelly 2001; Grayson 1993). Higher on the fans and foothills (above 1,500 m [5,000 ft.]) moisture increases and salinity decreases, allowing big sagebrush (*Artemisia tridentate*) to dominate landscapes, mixed with small sagebrush (*A. arbuscular*) and needlegrass (*Stipa* spp.) (Far Western and JRP 2007). In the higher mountain ranges (typically above 1,830 m [6,000 ft.]), such as in the Stillwater, Clan Alpine, and Fairview ranges, pinyon-juniper woodland is present, consisting of single-leaf pinyon (*Pinus monophylla*) and Utah juniper (*Juniperus occidentalis* var. *utahensis*).

Fauna

Many fauna occupy habitats across the project area. Large mammals native to the area are bighorn sheep (*Ovis canadensis*), mule deer (*Odocoileus hemionus*), coyote (*Canis latrans*), and the desert kit fox (*Vulpes macrotis*). Horses (*Equus caballus*) and burros (*E. asinus*) were introduced during historic times and now roam in feral herds. Small mammals include the badger (*Taxidea taxus*), striped skunk (*Mephitis mephitis*), porcupine (*Erethizon dorsatum*), black-tail jackrabbit (*Lepus californicus*), yellow-bellied marmot (*Marmoto flaviventris*), white-tailed antelope squirrel (*Ammospermophilus leucurus*), pocket gopher (*Thomomys* spp.), meadow vole (*Microtus* spp.), grasshopper mouse (*Onychomys* spp.), kangaroo rat (*Dipodomys* spp.), and desert woodrat (*Neotoma lepidia*), among others (Fowler 2002). Common reptiles include the western fence lizard (*Sceloporus occidentalis*), sagebrush lizard (*S. graciosus*), side-blotched lizard (*Uta stansburiana*), and Great Basin whiptail (*Cnemidophorus tigris*), and many snakes such as the striped whipsnake (*Masticophis taeniatus*), Great Basin gopher snake (*Pituophis melanoleucus*), kingsnake (*Lampropeltis getulus*), western garter (*Thamnophis elegans*), and Great Basin rattlesnake (*Crotalus viridis*).

In addition to many of the taxa already listed, marsh habitats support a wide range of waterfowl and fish. Over 160 species of water birds migrate to the shallow lakes and wetlands in the region. The most common are mallards (*Anas platyrhycos*), pintails (*A. acuta*), cinnamon teal (*A. cyanoptera*), redhead (*Aythya americana*), canvasback (*Aythya valisineria*), and coots (*Fulica americana*) (Kelly 2001). Other birds that inhabit the area include the mourning dove (*Zenaida macroura*), robin (*Turdus migratorius*), western meadowlark (*Sturnella neglecta*), northern flicker (*Colaptes auratus*), horned lark (*Eremophila alpestris*), northern oriole (*Icterus galbula*), great horned owl (*Bubo virginianus*), and short-eared owl (*Asio* *flammeus*). Fish, such as the Tahoe sucker (*Catostomus tahoensis*), Lahontan redside shiner (*Richardsomius egregius*), speckled dace (*Rhinichthys osculus robustus*), and tui chub (*Gila bicolor*) are also abundant. Freshwater mussels (*Anodonta* spp.) occupy slough habitats where muddy bottoms are present.

PALEOENVIRONMENT

During the terminal Pleistocene, around 16,000 years before present (B.P.), the Carson Desert was submerged under pluvial Lake Lahontan following a climatic shift that caused northern glaciers to melt. The water level of Lake Lahontan rose to an elevation of ca. 1,330-1,335 m (4,364-4,380 ft.) by about 13,500-13,000 B.P. (Kelly 2001; Nials 1999), and lake margins spread as far north as the Nevada/Idaho border and south to Walker Lake (Far Western and JRP 2007). Shortly thereafter, during the warm Bølling-Allerød interstadial (12,100-11,000 B.P.), Lake Lahontan began to desiccate. Sometime between 12,500 and 12,000 B.P. the lake level dropped more than 100 m, temporarily stabilizing as a single lake around 11,300-11,200 B.P. (Kelly 2001) or possibly as three or four smaller lakes (Davis 1985) with the Carson Sink at about 1,190 m (3,904 ft.) (Goebel et al. 2011). Immediately following this warm period, a dramatic return-to-cold temperature event (Younger Dryas, roughly 11,000-10,000 B.P.) resulted in a lake rebound forming a shoreline at about 1,203 m (3,947 ft.) and perhaps rising higher to 1,230 m (4,035 ft.) by the end of the Younger Dryas (Adams et al. 2008; Goebel et al. 2011). Beginning in the Holocene, Lake Lahontan began declining again in stages from about 11,000 B.P. to 6900 B.P. (Benson et al. 1992; Fiero 1986; Kelly 2001). By 9500 B.P., Carson Lake may have been reduced to a series of low lakes and marshlands (Davis 1985; Far Western and JRP 2007), but Kelly (2001:33) claims that by 6900 B.P. the Carson Desert was still covered by water to some unknown extent and depth based on the presence of Mazama tephra found within lacustrine deposits. Adams and colleagues (2008) suggest Lake Lahontan was around 1,193-1,200 m (3,914-3,937 ft.) during this time.

In contrast, Wigand and Mehringer (1985) have argued that the period between 8300 and 7200 B.P. exhibited relative environmental stability, in which soils developed from aeolian sediments that had been accumulating since the initial, terminal Pleistocene recession of Lake Lahontan (Far Western and JRP 2007); this is unlikely to have occurred during major shifts in lake levels. Sometime during this series of recessive and infilling events, caves and overhangs developed at Grimes Point due to repeated wave action that eventually cut into the jutting landform at the west end of the Stillwater Range (Kelly 2001). Whatever the actual sequence and timing of post-Pleistocene lake fluctuations, there is little doubt that the environment of the Carson Desert during the Early Holocene was quite different than it is today. Though warmer and drier than preceding times, conditions were on average cooler and wetter than at present. Artemisia steppe vegetation remained dominant in the area until at least 6900 B.P., implying the persistence of a relatively moist climate (Zeanah et al. 1995).

The gradual warming trend continued into the middle Holocene, and from about 7,000 to 4,500 or 4,000 years ago, the Great Basin grew increasingly arid. The severity of aridity during this interval is the subject of ongoing debate, but it now seems to find support in a variety of evidence, from the presence of higher bristlecone tree lines in the White Mountains (LaMarche 1973), lake stands below modern levels in Pyramid Lake, Walker Lake, and Lake Tahoe (Lindstrom 1990), and the arrival of pinyon in the central Great Basin near Gatecliff Shelter (Thompson and Hattori 1983). Precipitation was highest during summer and lowest in winter, perhaps creating seasonal plant and animal abundances that were considerably different than those of modern times. While the Walker River may have been rerouted north into the Carson River drainage during this time, potentially increasing the inflow into the Carson Desert, Morrison and Davis (1984) indicate the lake level was at least as low as it is today from 6500-3500 B.P.

Between 4000 and 2000 B.P, mesic conditions returned and a winter-based precipitation pattern emerged; snowpack from the Sierra Nevada Mountains provided water to the wetlands and lakes in the Carson Desert, and increased runoff from a re-routed Walker River might have sent additional water into the area from 2800 B.P. to 2000 B.P. (Benson and Thompson 1987). This may have helped wetland habitats to stabilize, mature, and generate a greater abundance of plant and animal life. Warmer, drier conditions followed from

2000 to 1000 B.P. as a spring/summer precipitation mode returned to support a habitat of grasses and desert scrub. Archaeological sites dating to this period in the Stillwater Marsh imply that a wetland environment dominated the Carson Sink area (Zeanah et al. 1995), and that clay dunes ceased forming as a result of increased aridity and stabilized lake levels (Kelly 2001). At this time, pinyon may have finally arrived in the Stillwater Range east of the Carson Desert, perhaps around 1500 to 1200 B.P.

Morrison (1964, 1991) and others (Adams 2003; Currey 1988; Raven and Elston 1989; Rhode et al. 2000; Zeanah et al. 1995) have identified and discussed a series of Holocene-age recessions and lake cycles in the Carson Desert. Lacustrine changes in the Carson Desert involved fluctuations of South (Upper) and North (Lower) Carson Lake. Morrison (1964) identified five distinct but shallow Holocene highstands in South Carson Lake, referred to as the "Fallon Lakes." From oldest to youngest, these highstands (Fallon Lakes 1-5) varied in elevation from highest to lowest and, according to Adams (2003:296), are currently "expressed as a series of roughly concentric shore features and deposits that rim the Carson Desert between about 1204 m and 1186 m." Adams (2003) suggests that below about 1,195 m, lakes in the Carson Desert were divided into two separate bodies, one in the broad Carson Sink to the north and one in Carson Lake to the south. Any Holocene highstands at elevations between 1,195 and 1,204 m would have joined the two lakes into one large body that would have covered much of the B-20 Study Area. Research by Adams (2003) implies that at least two Holocene highstands reached elevations of 1,198 m and 1,204 m, the former perhaps ca. 1500-1300 B.P., and the latter about 900-650 B.P.

Conditions dried out again during an event called the "Medieval Climatic Anomaly" (MCA), which occurred between 1150 and 600 B.P.; winter precipitation was more common, and lake levels increased after having dropped for at least 1,400 years. This may have been a result of increased stream flow from the Carson River. However, there is evidence of several fluctuations between severe but brief droughts and short mesic intervals between ca. 1000 B.P. and 600 B.P. (Adam 1967; Lindstrom 1990; Stine 1990, 1994). Periods of extreme aridity would have likely transformed wetland habitats in the Carson Desert into pockets of arid zones with even greater sodicity in the soil. After 300 B.P., the climate in the Carson Desert again became wetter, with essentially modern conditions prevailing over the last 50 to 100 years.

Discussion

From the above paleoenvironmental overview we identify several main points that could affect the distribution and timing of archaeological resources within the Study Areas. First, if the Carson Desert was indeed still under water by 6900 B.P. (perhaps up to 1,193-1,200 m above sea level [masl]), we should not expect to find intact and unaltered sites of that age or older lower than that elevation. Second, due to the increased aridity of the middle Holocene and reduced lake levels, as indicated by Morrison and Davis (1984), Early Archaic archaeological signatures (post-6900 B.P.) are expected to be rare, and when present should be lower in elevation. Third, if pinyon really was a late arrival in the area, it seems that the full ethnohistoric Toedökadö (Toidikadi, or "cattail eaters") subsistence pattern, which involved the procurement of pinyon in the Stillwater Range, could not have emerged prior to about 1500 B.P. This may have implications for the kinds of archaeological sites and constituents that occur in desert environments, if residential base camps on the valley floor were not necessarily situated in proximity to pinyon groves prior to that time. Fourth, the general lack of permanent water in certain areas will affect the type of archaeological resources located in these settings. As opposed to the residential pattern present within a desert environment, these areas are likely to contain more task-specific site types with a more narrow focus on the extraction of a particular resource.

3. METHODOLOGY

ASM received final shapefile boundaries for the FRTC Modernization EIS from ManTech International Corporation (ManTech) on December 14, 2017. Because the Nevada BLM cultural resource reporting standard mandates use of the Universal Transverse Mercator (UTM) North American Datum 83 (NAD83) projection (BLM Nevada 2012: Appendix C), client-provided data in other projections was reprojected to UTM NAD83 for this report. Any discrepancies in acreage reported here compared to the EIS are likely due to subtle differences between the projections carried out over the Study Areas' large distances. These shapefiles were used as a reference to conduct the record search at various cultural resource repositories. Per the Naval Facilities Engineering Command (NAVFAC) Task Order N6247317F4489 Scope of Work, this record search encompassed the lands exclusively within the Study Area and did not include a 1-mi. buffer around the project area. After receiving and reprojecting the Study Area boundaries, a Nevada Cultural Resources Information System (NVCRIS) data cut was submitted to the Nevada State Historic Preservation Officer (SHPO). The returned data provided a baseline for the number and types of cultural resources and cultural resource inventories previously conducted within the Study Area. However, NVCRIS results rarely contain complete information in a given area and are most useful as a "first pass" to get a very general sense of findings in the area. To complement this dataset, ASM accessed cultural resource data files at the BLM CCDO. The CCDO manages all of the public lands within the Study Area and the office was visited from January 8-19, 2018, to obtain all pertinent and available cultural resource and project report documents. ASM was provided a list of resources and inventories present within the BLM Geographic Information System (GIS) database. In addition to the digital lists, ASM reviewed the hard copies of United States Geological Survey (USGS) Quadrangle maps on which early BLM CCDO cultural resource managers depicted known cultural resources and completed inventory projects. This method helped to verify the results of the digital database lists. Upon reviewing all these datasets, ASM compiled a more complete listing of known cultural resources and inventories within the Study Areas.

In addition to review of BLM and NVCRIS records, ASM also reviewed the Nevada State Register and the NRHP for listed historic properties. Finally, ASM consulted library and online resources for historic land survey maps and patent data, mining data, national Historic American Engineering Records, Historic American Buildings Survey Records, topographic maps, photographs, and other pertinent historical documents to complete the record search and literature review.

The combined data on cultural resource inventories, archaeological sites, historic sites, buildings, structures, historic transportation routes, and the like are provided in Chapter 4.

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4. RECORD SEARCH RESULTS

CULTURAL RESOURCE REPORTS/STUDIES

As a result of the record searches at the various institutions and agencies listed above, ASM identified 42 cultural resource reports within or adjacent to the Study Areas, including Class II and III inventories, Class I resource overviews, and cultural resource sensitivity assessments (Table 4.1). All but four of these reports are older than 10 years, indicating that their findings may be in need of update.

Dixie Valley Training Area Study Area

The proposed DVTA Study Area is divided into six discontiguous areas on both sides of Dixie Valley, in the Stillwater Range and the Clan Alpine Mountains. A total of six cultural resource reports overlap or abut these Study Areas, with three occurring on the west side and three on the east side. Report CRR3-2434 is a large cultural resource overview compiled in 2007 for a grazing permit that covers a large area of the western Stillwater Range and Carson Desert, but did not include any Class III inventory. Similarly, report NIR-0267 was a Class II inventory to assess damage to the Horse Creek Ranch area (previously fully surveyed via a Class III report, TR-0026) caused by a unit of the Nevada Army National Guard as they camped and trained there for a week in July of 2011. Roads were damaged, firing positions were excavated, vegetation was trampled/destroyed, and a small fire was started in the drainage, in addition to leaving brass ammunition cartridges; however, no cultural resources or historic properties were found or damaged. Finally, TR-0026 is a Class III report of the Horse Creek Ranch property conducted in 1998 by NAS Fallon, though it is often mistaken as surveyed under BLM Report CRR3-2653. While it was surveyed to Class III standards, the area does not overlap the current proposed DVTA Study Area. Rather, it abuts the northern boundary in T19N R35E Section 12.

Two Class III inventory projects have been conducted in the western areas and were completed in the mid-1980s (CRR3-0567) and in 2011 (NASF NIR-0254). Linear and block inventories were conducted in the Stillwater Range as part of Robert Kelly’s Ph.D. dissertation research on mobility strategies and sedentism in the Carson Desert and Stillwater Range. The areas he examined within the DVTA Study Area were largely negative of cultural materials. In 2011, numerous small geothermal probe locations were inventoried in the Stillwater Mountains and Dixie Valley, of which one is located in the DVTA Study Area. All were negative of cultural resources.

The last Class III project conducted in the proposed DVTA Study Area was completed on the eastern side of Dixie Valley, along the foothills of the Clan Alpine Mountains near Dummy Canyon. In the 1980s, archaeologists from the University of Nevada, Reno, conducted an inventory for the proposed NAS Fallon Supersonic Operations Area to identify poorly known areas with high potential for damage to be caused by sonic booms. Areas along the western flank of the Clan Alpine Mountains were selected, but only one isolated flake was found within the current proposed DVTA Study Area.

Together, the three previous Class III inventories conducted within the proposed DVTA Study Area totals approximately 82 acres. This accounts for only one-half of one percent (0.5%) of the total area within the DVTA Study Area (16,337.2 acres).

Table 4-1 Cultural Resource Reports in the Proposed Study Areas

BLM Report No. (CRR-)[1]	Other Report No.	Year	Title	Author(s)
DVTA Study Area				
3-0567(P)	1-83	1985	Carson-Stillwater Archaeological Project, Phase I Report of Activities: 1985, 1986, Dissertation, etc.	Kelly, Robert L.
3-1224(P)	-	1988	Archaeological Investigation in Dummy Canyon, Paiute Canyon, and Sage Hen Canyon, Churchill County, NV	Renee Cranston and Donald L. Hardesty
3-2434[2]	-	2007	A Cultural Resource Summary for the White Cloud Allotment Term Grazing Permit Renewal	Lane, Elizabeth
	NASF TR-0026[2]	1998	A Class III Cultural Resource Survey for Horse Creek Riparian Improvements, Churchill County, Nevada	Creger, C. Cliff
-	NASF NIR-0254	2011	Cultural Resources Survey Report for the Geothermal Program Office's Exploration within the Fallon Range Training Complex, Churchill County, Nevada	Ford, Owen
-	NASF NIR-0267	2011	National Guard Damage to Horse Creek	Bower, Robin
B-17 7 Study Area				
3-0035(P)	18-8	1975	Al Aquitaine Co.; Geothermal Lease and Prospects	Dansie, Amy
3-0168(N)	12-343	-	Al Aquitaine Geothermal Exploration NOI, Gabbs Valley	Hatoff, Brian W.
3-0200(N)	-	1978	JDR 5135 Gabbs Creek Fence	Hatoff, Brian W.
3-0330(N)	12-150	1979	Archaeological Reconnaissance at proposed drill location and access road in Gabbs Valley for Al Aquitaine Expl. Limited	Rusco, Mary
3-0356(P)	12-192	1979	SCS Soil Test Pits, Gabbs Valley Area	Hatoff, Brian W.
3-0367(N)	NDOT-058-79P	1979	Gabbs M&T, EA 70905	Bath, Ron & Peter Matranga
3-0368(N)	12-150	1980	Addendum - Archaeological Reconnaissance at proposed drill location and access road in Gabbs Valley for Al Aquitaine Expl. Limited	Brown, Bonita
3-0379(N)	18-209	1980	BLM-SCS Soil Test Pits, Monte Christo Mountains, Gabbs Valley, and Lodi Valley Areas	Ratzlaff, Cris A.
3-0481(N)	NDOT-074-79C	1979	SR 23 Right-of-Way Survey, EA 70905	Bath, Ron & Peter Matranga
3-0485(N)	-	1980	SR 23 Right of Way Survey E.A. #70905 RS-316(1)	Matranga, Peter
3-0592(P)	12-178	1979	Gabbs M&T, EA 70905	Steinbery, Larry & Kurt Wallof
3-0661(N)	11-78	1981	South Bell Highway Well. JDR 6188	Mabe, John H.
3-0694(N)	-	1982	North Pilot Mountain Boundary Fence	Moeller, Phillip
3-0752(N)	-	1982	District V Betterment, MP 0.00-15.69, WO 20730	Matranga, Peter
3-1034(P)	18-255	1985	An Intensive Archaeological Survey of 17 Electronic Warfare Threat Simulator Sites, Off-Road Access, and Transmission Line Corridor	Zeier, Charles D.
3-1095(N)	-	1987	Broken Hills Stockwater Storage No.3, JDR No. 6462	Mabe, John H.
3-1148(P)		1987	An Intensive Archaeological Survey of Proposed Electronic Warfare Range Communications Line Improvements, Tacts Sites, and Repeater Site: Naval Air Station Fallon	Juell, Ken E., and Robert G. Elston
3-1205(N)	-	1988	Mackay School of Mines Seismic Lab	Pope, Charles P.
3-1273(N)	-	1989	Jack O'Connor Pipeline Extension No. 2 JDR No. 6521	Mabe, John H.
3-1504(P)	1-378	1992	Noranda 1992 Drill Holes NOI	Mecham, Prill
3-1637(N)	-	1994	Gabbs Valley Water Haul Site No. 5 (546678)	Raffetto, Peter
3-1639(N)	-	1993	Gabbs Valley Water Haul Site No. 7 (546678)	Raffetto, Peter
3-1640(N)	-	1993	Gabbs Valley Water Haul Site No. 8 (546678)	Raffetto, Peter

BLM Report No. (CRR-)[1]	Other Report No.	Year	Title	Author(s)
3-1734(N)	-	1995	Archaeological Investigations at the Cobble Cuesta Drill Site, Gabbs Valley, Nye County, Nevada	Matranga, Peter
3-1957(P)	CR6-2161	2000	A Cultural Resources Survey for the Fallon Range Training Complex Requirements, Naval Air Station Fallon, at Various Locations in Churchill, Lander, Mineral and Nye Counties, Nevada	Bowyer, Gary C. et al.
3-2022(N)	-	2000	Isern Oil Nevada, Cobble Cuesta Drill Pad Locations	Matranga, Peter
3-2160(N)	-	2003	Vegas to Reno OHV Race	Hull, Fran
3-2172(N)	-	2003	Petrified Wood Sale in the Broken Hills	Waski, Margaret
3-2263(N)	-	2005	Petro World Nevada Corporation (PetroWorld), Gabbs Valley Oil and Gas Geophysical Exploration Project	Matranga, Peter
3-2263-1(N)	-	2005	Access Roads, Gabbs Valley Unit N-78845X, Nye County, Nevada	Matranga, Peter
3-2276(N)	-	2005	PetroWorld Nevada Corporation, Gabbs Valley Oil and Gas Geophysical Exploration Project. Access Road and Drill Site	Matranga, Peter
3-2276-1(N)		2006	PetroWorld Nevada Corporation, Gabbs Valley oil and Gas Geophysical Project. Access Road and Drill Site (relocation)	Matranga, Peter
3-2379	-	2007	Cultural Resources Sensitivity Assessment for the Gabbs Valley and Rock Hill Geothermal Exploration Projects, Mineral, Nye, Esmeralda Counties, Nevada	Berg, Adam
3-2464-1(P)		2013	A Class III Cultural Resources Inventory for Approximately 2.5 Miles of Road Repair and Monitoring of Ground Disturbing Activities Associated with the Ormat Technologies, Inc. Gabbs and Deadhorse Wells Geothermal Exploration Project, Mineral and Nye Counties, Nevada	Cannon, Tara, and Ed J. Stoner
3-2566	-	2012	A Cultural Resource Summary for the Pilot Table Mountain Allotment Term Grazing Permit Renewal	McCabe, Susan
-	NASF TR-0049	1999	A Class III Cultural Resource Survey for Electronic Warfare Sites in Gabbs Valley, Mineral and Nye Counties, Nevada	Creger, C. Cliff

[1](N), negative BLM report (no cultural resources identified); (P) positive BLM report (cultural resources identified).

[2]Does not overlap with the proposed Study Area, but is adjacent.

Bravo-17 Study Area

The proposed B-17 Study Area is situated entirely within Gabbs Valley and the Broken Hills, crossing into Churchill, Mineral, and Nye counties. This expansion area is divided by SR 361, a roughly north-south state highway that connects U.S. 50 (northern end), east of Fairview Valley, and U.S. 95 (southern end), east of Hawthorne in Soda Spring Valley. This region mostly encompasses low mountains, foothills, emergent alluvial fans, and some valley bottom locations. A total of 36 cultural resource reports have been previously completed in this Study Area. The two non-Class III reports include a cultural resources sensitivity assessment for Gabbs Valley, and a Class I cultural resources overview a term grazing permit renewal. Many of the projects are linear in nature and include inventories for geothermal leases, highway right-of-way betterments, fences, access roads, pipelines, and off-highway vehicle trails. Block surveys include those for geothermal drill sites, soil test pits, material sales, water haul locations, and Navy electronic warfare locations. Only seven of these reports yielded positive findings and recorded cultural resources (sites or isolates). Eleven of these reports were conducted in the 2000s; the rest were in the 1970s, 1980s, and 1990s.

The 34 previous Class III inventories conducted within the B-17 Study Area comprise a total of approximately 992 acres. While encompassing a slightly larger proportion of the total area than that of DVTA, this aggregate represents a mere 1.3 percent of the total area in the B-17 Study Area (75,997.8 acres).

CULTURAL RESOURCES

Archaeological Resources

The archaeological site record dataset for the Study Areas spans 40 years and includes mostly undefined and inconsistent site type designations. In an effort to provide a consistent dataset and allow cross-comparison of sites with similar constituents and components, ASM consolidated and retyped all previously recorded archaeological resources using a standard system based on surface attributes (Estes et al. 2017). While only a few previously recorded archaeological sites and site types are known in the FRTC Study Areas, all the previously established ASM site types are provided below. These site types are not intended to encompass all potential sites. New types may need to be added as additional Class III research is conducted.

Prehistoric Site Types

Simple Flaked Stone sites contain debitage only, no tools. Accordingly, most have limited artifact assemblages and probably represent single episodes of flaked stone reduction/discard.

Complex Flaked Stone sites generally constitute a mix of debitage and flaked stone tools, varying in size from a few artifacts to several thousand. Some have multiple activity loci and/or discrete artifact concentrations, but the presence of these was not a precondition for classification.

Basic Habitation sites contain flaked stone tools, debitage, and ground stone tools or ceramics. As with Complex Flaked Stone sites, Basic Habitations can range from small to large assemblages and may have one or more artifact concentrations/depositional loci.

Complex Habitation sites are similar to Basic Habitation sites but contain one or more domestic features (e.g., hearth, rock ring house foundation, pinyon cache) or a discrete midden. Most of these sites are of considerable size, but there are some that consist of a single feature, a few flaked stone tools, some debitage, and one to few pieces of ground stone.

Lithic Quarry sites are centered on or adjacent to a lithic source and contain artifacts representing lithic testing and quarrying (e.g., cores, assayed cobbles, crude bifaces, large debitage). These sites tend to be of limited size, often focused on a small outcrop of poor-to-high quality stone or a particular cobble deposit within alluvial sediments, but they can also include extensive ridges or outcrops where raw material was procured and processed.

Cave/Rockshelter sites are those situated primarily within a cave or rockshelter where subsurface deposits are likely. Any number and type of artifacts/features may be present, but they lack rock art.

Rock Art sites may contain petroglyphs (pecked or incised art), pictographs (painted art), or any other type of rock art. Rock art sites may or may not be associated with artifacts or features and can occur on cliff faces, boulders, or inside cave/rockshelters.

Rock Alignment sites may consist of geoglyphs (rock alignment art), intaglios (rock removal art), stacked rock walls, hunting blinds, or other prehistoric groupings of rock in some form or alignment. These are often, but not necessarily, associated with artifacts.

Historic Site Types

Refuse Scatter sites are small and/or scattered deposits of historic artifacts lacking associated features. Debris at these sites tends to be of a domestic nature, consisting of food containers, broken household goods, small hardware, and the like. Refuse scatters can originate from mining camps, work camps, ranches, residences, or military activities, but generally represent an informal deposit or successional deposit of one or two items over a dispersed area. They are considered Unassociated if they cannot be identified with a particular historic theme.

Refuse Deposit sites are concentrations of historic artifacts lacking associated features. Debris at these sites tends to be of a domestic nature, consisting of food containers, broken household goods, small hardware, and the like. Refuse deposits can originate from mining camps, work camps, ranches, residences, or military activities, but generally represent one or more events involving the intentional discard of debris generated elsewhere. They are considered Unassociated if they cannot be identified with a particular historic theme.

Road sites may include a variety of construction types such as wagon routes with deep ruts, simple and unimproved two-track paths, bladed cut and fill roads, graveled and oiled improved roads, and even paved highways. Unimproved sites tend to have few to no engineered or otherwise related features, facilities, or support constructions (e.g., berms, retaining walls, culverts), but may have associated refuse deposits generated by roadside camping events or a series of isolated artifacts representing many episodes of road-toss discard. Improved roads are more likely to contain engineered support features.

Historic Camp sites represent short-term camps made by travelers (domestic or early military), ranchers, ditch/road workers, or miners. Such sites normally contain food containers, broken household goods (e.g., dishware, utensils, cookware) and abandoned personal items, but should also show evidence of meal preparation (fire pits) and/or overnight stays (e.g., tent pads, stacked rock windbreaks, cleared sleeping areas).

Homestead sites are those that include intact buildings, ruins, or foundations. Associated features may include wells, fences, roads, privies, and may or may not include refuse scatters or deposits with food/beverage containers as well as other household items, such as personal items, grooming, adornment, or other artifacts indicative of habitation.

Mineral Claim sites are frequently identified by the presence of one or more claim markers denoted by the presence of rock cairns and/or wooden posts with attached (or buried) pocket tobacco tin (or other container) to hold claim papers. They may be found alone (generally recorded as isolated elements) or in conjunction with prospects and occasionally have associated refuse suggesting temporary on-site use.

Prospect or Prospecting Complex sites may be represented on the landscape by one or more hand-dug or mechanically excavated pits (or trenches) denoting testing/exploration for mineral deposits or shallow veins. They were used to locate all types of minerals in both lode and placer deposits. Prospects commonly occur in small groups of two to five in conjunction with a mineral claim and often with associated refuse suggesting temporary on-site camping by the prospectors. There are, however, many isolated single pits, trenches, or scrapes without even a claim marker to confirm their identity. A large group of prospects is referred to as a “prospecting complex.”

Mine or Mine Complex (inhabited or uninhabited) sites are defined by one or more adits, tunnels, or vertical shafts indicating development of a mineral deposit beyond the prospecting phase. Many mine sites also contain associated refuse, either industrial (remains of mining equipment) or domestic refuse suggestive of temporary on-site camping. Mine “complex” indicates the presence of five or more shafts and/or adits in a relatively concentrated location. Inhabited mines/mine complexes contain one or more habitation features (such as standing or collapsed structures, ruins, foundations, cabins, tent flats, etc.) with associated domestic refuse, whereas uninhabited mines/mine complexes lack such features.

Mill sites are ore-milling facility locations where ore was processed and assayed and its waste disposed of (tailings). Mill remnants may consist of foundations, structure pads, and tailings piles as well as intact or remnant stamp or ball mill fragments. Domestic refuse may also be present.

Mining Camp sites are larger habitations (townsites) that supported a large mine complex or mine group. It may be denoted by multiple habitation features (such as standing or collapsed structures, ruins, foundations, cabins, tent flats, etc.) and the former presence (indicated by historic records) of one or more commercial or public establishments (e.g., blacksmith shop, saloon, hotel) or even a post office. Typically, these are located apart from, but nearby, such mine complexes.

Trapping sites occur in rocky alcoves, overhangs, and small shelters. Typically, all that remains is a wire-wrapped rock (deadfall or anchor) used to pin or prevent the prey from escaping. These sites likely also contained metal leg traps and bait, sometimes identified by string hanging from the shelters. Brush or rock piles are also common, potentially used to hide the trap.

Rock Alignment sites are historic-age dry-laid alignments of rock for unknown purpose.

Ranching includes those sites associated with ranching activities, and may include ranch complexes, corrals, wells drilled for livestock watering, fences, and associated refuse.

Grave sites are those areas clearly demarcated as places of a human burial. They may include headstones, fences, or other memorials.

Summary

A total of 13 archaeological sites have previously been recorded in the Study Areas. This includes two sites in the DVTA Study Area (both prehistoric) and 11 sites within the B-17 Study Area (nine prehistoric and two historic). Two of these 13 sites are more accurately characterized as isolated finds, as they consist of single artifacts.

The proposed DVTA Study Area contains one previously recorded site and one isolated find. A Simple Flake Stone assemblage consisting of white-gray and red chert "chippage," situated in a small, flat basin overlooks a drainage. It was recorded by Kelly (1980), no artifacts were collected, and it was recommended ineligible for NRHP inclusion. The isolated find is a solitary secondary rhyolite flake found on a ridge above an alluvial fan, west of the steep slope of the Clan Alpine Mountains (Cranston 1987). As an isolate, it is categorically exempt from NRHP inclusion.

The 11 sites within the proposed B-17 Study Area comprise nine prehistoric and two historic assemblages. The prehistoric sites consist of three Simple Flaked Stone assemblages, one Complex Flaked Stone assemblage that includes debitage, and a single projectile point described as either a Desert Side-notched or an Elko type, two Lithic Quarries (one of red and yellow cryptocrystalline silicate [CCS] and one of opalite), two Complex Habitation assemblages, and one isolated find (single flake). The Complex Habitation site forms note the inclusion of debitage, manos, and hearthstones, and may have depth potential. The two historic sites in the B-17 Study Area include a maintained dirt road and a grave. The road dates from at least the early 1880s and includes multiple associated features (including many road segments, two refuse dumps, a berm, and a ditch), and artifacts dating from the 1930s-present (ceramic plates, glass, cans, and miscellaneous artifacts). The grave consists of a marble marker base from which the headstone has been removed and that is encompassed within a metal fence enclosure.

Five of the B-17 sites have been recommended by their recorders as ineligible for inclusion in the NRHP, with four remaining unevaluated, one that was entirely collected (and would likely have been ineligible based on its components), and one that is exempt from the NRHP as it is an isolate. It is interesting that one of the Complex Habitation sites was left unevaluated while the other was recommended not eligible. The presence of flaked and ground stone tools and "hearthstones" suggests both maintenance and tool production, as well as vegetal resource procurement and processing, and possibly short term encampments. Their location on dunes is highly suggestive that they have buried deposits that may yet be intact.

Little can be determined chronologically from the prehistoric sites. Only one yielded a projectile point, and that point could not be fully identified to a type, perhaps dating either to the Middle Archaic or Late Prehistoric period. However, two additional sites with "hearthstones" hint at the possibility of buried hearth features in dune sands and some potential for future research to more accurately define prehistoric use periods. The few historic-era sites provide evidence spanning the past 140 years.

Known but Not Recorded Resources

A review of the previously recorded sites on file at the BLM CCDO identified one Carson City District Agency Site number assigned to a mining camp that was never fully recorded on an Intermountain Antiquities Computer System (IMACS) recording form. This site originally appears in Pendleton et al. (1982:Table 4) and was detailed by Alvin McLane, but the site description consists of quoted text about the workings from Mordy and McCaughey (1968). It is unclear if this location was physically located and minimally recorded or simply described based on historic records. No IMACS records exist for this site and neither has it been evaluated for its NRHP eligibility. As such, this resource is referred to as a "known but not recorded" (KBNR) site.

A lone KBNR site is present within the proposed B-17 Study Area. It appears to describe the mining camp and associated mining works. According to the site description the mine was founded in 1913, and the camp soon grew into a booming camp. The last resident of the mine passed away in 1956, and only a few standing shacks remain in this location. It is unknown if standing historic architectural resources are still present at this location. However, according to aerial imagery, there appears to be a shack and possible headframe as well as other miscellaneous structures or features. The age of these resources cannot be determined based on this imagery.

Architectural Resources

No previously recorded architectural resources are present within the proposed DVTA or B-17 Study Areas.

Traditional Cultural Properties

No known potential Traditional Cultural Properties (TCPs) or formally recorded and NRHP-nominated TCPs are present within the DVTA or B-17 Study Areas. However, the Stillwater Range is very culturally significant to the Fallon area Northern Paiute (Toedökadö). The mountains provided important subsistence (animal hunting/trapping and plant procurement) and medicinal resources (Fowler 2002). Further, the Range plays a role in the Fallon area Northern Paiute traditional origins and serves as a mythological place. A great battle was fought between Wolf and Toedökadö peoples from these mountains (referred to as the "Pine Nut Mountains") (Loud and Harrington 1929). The proposed B-17 Study Areas in the Stillwater Range surround Job Peak (Fox Peak) to the north and south, a place of primary importance to the Toedökadö. It serves as the center of creation, where two white outcrop peaks once stood, representing the Father and the Mother who dispersed their four children to start different human populations (Fowler 2002:39). Therefore, while no specific TCP locations are within the proposed DVTA or B-17 Study Areas, the whole of the Stillwater Range is extremely important to the Northern Paiute, and Job Peak is just outside the proposed boundaries.

HISTORICAL SURVEY PLAT AND TOPOGRAPHIC MAPS

Historic-era GLO survey plats and associated notes can serve as great sources of information for potential cultural resources as well as provide their approximate locations and ages. Commonly depicted cultural features on historic plats can include named and unnamed roads, wagon routes, trails, railroad lines, utility lines, structures/buildings, ranches and associated outbuildings and fences, mining features, townsites/mining camps, and even Native American resources, such as trails, corrals, and villages. Similarly, they can be of use in determining water levels in lakes, previous river alignments, and other natural features since modified by modern construction.

ASM conducted a search of GLO and BLM protraction survey plats online using the BLM's Public Land Records website. Unfortunately, not all townships were surveyed by the GLO, and available survey plats often focus on townships with existing transportation corridors, mining districts, and areas that had been settled by ranchers or farmers. Barren valleys and mountainous regions were often never fully surveyed or mapped by the GLO. Given the mountainous terrain of the DVTA Study Areas, there were only nine survey plats identified and available for review. The only cultural resources shown on the plats identified for the B-17 Study Area in Gabbs Valley delineate roads between mining and transportation hubs. The results of the GLO and BLM survey plats as well as Master Title Plats (MTPs) are presented separately for the DVTA and B-17 Study Areas below.

Dixie Valley Training Area Study Area

The earliest available GLO survey plat for the DVTA Study Areas is from 1931, which may be indicative of the overall lack of activity in this area and the rugged terrain. Even the most recent historic BLM maps from 1962 are all protraction diagrams intended to describe unsurveyed lands. Even so, the protraction diagrams can still be used for research because landmarks or known resources are often marked on the maps. An old pipeline is the only cultural feature within the DVTA Study Areas.

Similarly, other historical maps covering the DVTA Study Areas, including those from the USGS, were examined for historic features (such as roads, buildings, structures, etc.). The early historic maps are generally small-scale overview maps that provide fewer details and resolution for the Study Areas than later 1:24,000-scale maps created in the late 1960s and early 1970s. Although the 1:24,000-scale maps are less than 50 years old, they were used to verify the presence, or absence, of cultural resources discussed in historic documents. The maps below are listed by mountain range because the DVTA Study Area is discontinuous and spread across both the Stillwater and Clan Alpine mountain ranges.

Stillwater Range

- 1882 Part of Western Nevada, Atlas Sheet No. 48(C), 1:253,4401908 Carson Sink, Nev. 1:250,000 USGS topographic quadrangle
- 1910 Carson Sink, Nev. 1:250,000 USGS topographic quadrangle
- 1957 Reno, NV 1:250,000 USGS topographic quadrangle
- 1959 Reno, NV 1:250,000 USGS topographic quadrangle
- 1960 Reno, NV 1:250,000 USGS topographic quadrangle
- 1972 Job Peak, NV 1:24,000 USGS topographic quadrangle
- 1969 Table Mountain, NV 1:24,000 USGS topographic quadrangle
- 1972 IXL Canyon, NV 1:24,000 USGS topographic quadrangle
- 1972 Pirouette Mountain, NV 1:24,000 USGS topographic quadrangle
- 1972 La Plata Canyon, NV 1:24,000 USGS topographic quadrangle

The 1882 map of the Carson Desert and surrounding areas (drawn by G. M. Wheeler during his 1876 expedition) provides some interesting details of western Nevada in the late nineteenth century. Georeferencing this map does not make it align perfectly with modern maps, but it appears that a roughly north-south "Indian Trail" is present within or near the northern and southern parcels of the proposed DVTA Study Area in the Stillwater Range. The trail seems to begin on the north end near Long Canyon and travels south A small portion of the DVTA Study Area may include portions of this Indian Trail.

The 1908 and 1910 Carson Sink, NV, maps both show one road that barely crosses into the northwest corner of the Stillwater Range western foothills. The road ends at this location and spurs off a major road that passes along the eastern edge of the Carson Lake Basin. The road terminates at the mouth of a drainage, but there is no indication of a spring, structure, or mine in this location. This road may be the same road as on the 1969 Table Mountain quadrangle that splits into several "Jeep Trails" (referred to here as four-wheel drive or 4WD trails) at Long and Pete canyons.

The 1969 Table Mountain, NV, topographic quadrangle shows three 4WD trails that follow the Pete Canyon, Long Canyon, and Poco Canyon floors on the western flank of the Stillwater Range. The 4WD trail that follows Pete Canyon enters the DVTA Study Area and splits into two trails in the center of the Section. The road to the north follows Pete Canyon before splitting again to follow Pete Canyon and Government Trail Canyon. Both of these trails lead up to the range summit and turn into a pack trail that crosses Job Peak outside the Study Area. The trail that heads to Long Canyon terminates just south of the parcel boundary. In addition, a fenceline segment that runs roughly east-west is visible just south of these two trails, but it is not clear what the fence delineates. The trail that follows Poco Canyon splits into two separate trails near the center of the Withdrawal parcel. The trail that heads southeast terminates at the head of Poco Canyon near a spring and a small structure near the end of the trail. The trail that heads northeast outside the parcel boundary crosses the peak of the range before turning southeast, terminating near a mine shaft and spring in Big Box Canyon in Section 12 within the parcel boundary.

The other maps listed above are either reissues, dated shortly after the original map was released (i.e., 1910 Carson Sink, and the 1959 and 1960 Reno), with no new information within the Study Areas, or do not identify any other features within the DVTA Study Area (Stillwater Range).

Clan Alpine Mountains

- 1882 Part of Western Nevada, Atlas Sheet No. 48(C), 1:253,440
- 1908 Carson Sink, Nev. 1:250,000 USGS topographic quadrangle
- 1910 Carson Sink, Nev. 1:250,000 USGS topographic quadrangle
- 1957 Reno, NV 1:250,000 USGS topographic quadrangle
- 1959 Reno, NV 1:250,000 USGS topographic quadrangle
- 1960 Reno, NV 1:250,000 USGS topographic quadrangle
- 1955 Millett, NV 1:250,000 USGS topographic map
- 1959 Millet, NV 1:250,000 USGS topographic map
- 1966 Clan Alpine Ranch, NV 1:62500 USGS topographic map
- 1969 Camp Creek Canyon 1:24,000 USGS topographic quadrangle.
- 1972 Dixie Valley, NV 1:24,000 USGS topographic quadrangle
- 1972 Dixie Valley SE, NV 1:24000 USGS topographic quadrangle

Review of these maps indicates that few historic-era features are shown within the Clan Alpine Mountain portion of the proposed DVTA Study Area. The only possibility of a historic-era resource within the northern parcel is a fenceline. It is not clear what the fence delineates, although it may be related to grazing. It should also be noted that this map is not yet 50 years old. None of the other historical maps shows any indication of roads, mining features, or ranching activity within the Study Area.

Another possible historic-era resource is a road leading up to a structure at the mouth of Horse Creek, where the Horse Creek Ranch is today. Although the Ranch is located outside the parcel, its use undoubtedly impacted the surrounding landscape. One map shows an unimproved road following Horse Creek as well as a 4WD trail that splits from the road before heading south. Both of these roads are inside of the Study Area and likely have historic origins given the presence of an early twentieth century ranch so close to the creek. Nevertheless, this road is not present on earlier maps including the 1955 Millet, NV, and the 1966 Clan Alpine Ranch 1:62,500 map. Other than these possibly historic trails, none of the maps indicate the presence of historical cultural features within the DVTA Study Area (Clan Alpine Mountain).

Bravo-17 Study Area

The B-17 Study Area spans 10 townships from Broken Hills south to Gabbs Valley. GLO and BLM protraction maps covering this area span nearly a century, with dates from as early as 1884 and as recently and 1965.

Only two distinct roads and one house are noted on the seven individual map plots. The first road dates to at least 1884 and connects Downeyville with the Rawhide Hot Spring and cold springs just outside the Study Area. This road crosses through two townships in the Study Area. The second road also dates to around 1884 and leads to a house in a meadow in Gabbs Valley. Modern maps and aerial imagery indicate that this house and road were misplotted on the 1884 GLO; in actuality they are located within the B-17 Study Area.

In addition, numerous other historical maps are available that include portions of the proposed B-17 Study Area. As was the case with the DVTA Study Area, the large-scale, 1:24,000 maps are less than 50 years old but offer greater detail for identifying potential cultural resources. In general, maps later than 1969 were used to verify the presence, or absence, of cultural resources discussed in historic documents. The referenced maps include:

- 1882 Part of Western Nevada, Atlas Sheet No. 48(C), 1:253,440
- 1907 Tonopah, NV. 1:250,000 USGS topographic quadrangle
- 1908 Tonopah, NV. 1:250,000 USGS topographic quadrangle
- 1908 Carson Sink, NV. 1:250,000 USGS topographic quadrangle
- 1910 Carson Sink, NV. 1:250,000 USGS topographic quadrangle
- 1909 Hawthorne, NV. 1:250,000 USGS topographic quadrangle
- 1911 Hawthorne, NV. 1:250,000 USGS topographic quadrangle
- 1915 Hawthorne, NV. 1:250,000 USGS topographic quadrangle
- 1948 Paradise Peak, NV. 1:62,500 (15 Minute Series) USGS topographic quadrangle
- 1950 Paradise Peak, NV. 1:62,500 (15 Minute Series) USGS topographic quadrangle
- 1948 Walker Lake, NV. 1:250,000 USGS topographic quadrangle
- 1957 Walker Lake, NV. 1:250,000 USGS topographic quadrangle
- 1962 Walker Lake, NV. 1:250,000 USGS topographic quadrangle
- 1964 Walker Lake, NV. 1:250,000 USGS topographic quadrangle
- 1955 Millett, NV 1:250,000 USGS topographic quadrangle
- 1959 Millett, NV 1:250,000 USGS topographic quadrangle
- 1956 Tonopah, NV. 1:250,000 USGS topographic quadrangle
- 1959 Tonopah, NV. 1:250,000 USGS topographic quadrangle
- 1962 Tonopah, NV. 1:250,000 USGS topographic quadrangle
- 1957 Reno, NV 1:250,000 USGS topographic quadrangle
- 1959 Reno, NV 1:250,000 USGS topographic quadrangle
- 1960 Reno, NV 1:250,000 USGS topographic quadrangle
- 1969 Quartz Mountain, NV. 1:24,000 USGS topographic quadrangle
- 1972 Bell Mountain, NV 1:24,000 USGS topographic quadrangle
- 1972 Broken Hills, NV 1:24,000 USGS topographic quadrangle
- 1979 Ramsey Spring, NV 1:24,000 USGS topographic quadrangle
- 1979 Mount Annie SE, NV. 1:24,000 USGS topographic quadrangle
- 1980 Mount Annie, NV. 1:24,000 USGS topographic quadrangle

- 1980 Mount Annie NE, NV. 1:24,000 USGS topographic quadrangle

Wheeler's 1882 map of western Nevada includes portions of the northern B-17 Study Area and appears to show an unlabeled trail running from Bell Flat across the Sinkavata Hills and into what is now the Broken Hills in a northwest-southeast direction through the northern Study Area, perhaps aligning with the modern road that also connects Bell Flat with SR 361 in Gabbs Wash. It is unclear if this represents an "Indian Trail" or not, but two named springs appear near the trail and on opposite ends of the B-17 Study Area: "Tis sa poh" spring on the west end, probably in Bell Flat and "Tih ba bah" spring on the east end, apparently in the Broken Hills. Modern maps do not show springs near either mapped location.

The earliest topographic maps of the B-17 Study Area include the Hawthorne, Carson Sink, and Tonopah 1:250,000 USGS topographic maps ranging between 1907 and 1915. The maps show the major transportation routes through Gabbs Valley similar to the late-nineteenth-century GLO survey plats. The 1907 Tonopah map includes three roads in the B-17 Study Area: one north-south oriented that is labeled "To Rawhide" to the north (east of, but roughly in the same location as, the modern SR 361), and two east-west roads that intercept the Rawhide road, the southern of which is labeled "To Walker Lake" and continues east to Downeyville. The 1908 Carson Sink Map shows one road (roughly oriented north-south) in the northern portion of the B-17 Study Area that roughly follows the modern path of SR 361 and notes "To Goldyke" to the southeast. It is the continuation of the north-south Rawhide road from the Tonopah map. The 1909 Hawthorne map identifies two east-west roads in the central B-17 Study Area; both are likely continuations of the roads on the Tonopah map (Walker Lake road)— the northern road on the Hawthorne map is labeled "To Lodi." These roads merge and continue west toward the cold springs west of the Monte Cristo Mountains. Further south and west are two roughly northwest-southeast roads that merge east of Warrens Well (split by the B-17 Study Area). The northern spur notes "To Lodi" to the east and the other heads further south toward Fingerrock Wash. These roads merge, then at Warrens Well turn north toward the Hot and Cold Springs in T12N R34E. These roads are discussed in greater detail in the Transportation and Utilities section of the Historical Context and Research chapter.

There is a 33-year gap between 1915 and 1948 for which there are no historic topographic maps of the B-17 Study Area. The 1948 Paradise Peak 15-minute series map is far more precise in its location of mapped features than those from the nineteenth and early twentieth centuries. Only a small portion of the eastern end of the B-17 Study Area is present on this map. Starting at the northern end of the map are three roads. The primary road in this area is the original alignment of Nevada Highway 23 (Hwy 23) that travels roughly northwest- southeast, passing by the Gabbs Airport and through Gabbs. A secondary road roughly parallels Hwy 23 to the east and is noted to head toward Quartz Mountain 4.3 mi. north. A two-track road spur diverges from this secondary road and heads east into the Broken Hills. Two additional two-track roads start near and cross through the B-17 Study Area: one starts at Hwy 23 and heads northeast toward the Victory Tungsten Mine, and the other starts at the secondary road and heads east toward the hills and unnamed mineshafts and prospects south of the Victory Tungsten mine. The southern end of the B-17 Withdrawal on this map indicates a roughly east-west two-track road that passes south of Gabbs Airport and heads east toward Downeyville. This is likely the southern road on the 1907 Tonopah and 1909 Hawthorne maps. At the southern end of T11N R35E Section 13 is a well.

The next set of maps (1955/1959 Millet, 1957/1959/1960 Reno, and 1957/1962/1964 Walker Lake) are small-scale maps (1:250,000) with little detail other than highways and some mine locations. The 1955 Millet quadrangle includes only a small portion of the northeast end of the B-17 Withdrawal. The historic features on this map are limited to Hwy 23 (a secondary, all-weather, hard surface road) in the very southwestern corner of the map, and a roughly east-west two-track road near the Mineral/Nye County line and leading toward the Quartz Mountain site (which is just outside the B-17 Study Area). The 1957 Reno quadrangle shows the northwestern portion of B-17 Withdrawal and includes four roads: the old Hwy 23 alignment that runs roughly north-south, two small segments of east-west roads (fair or dry weather, unimproved surface), and a trail heading southwest from Hwy 23 off the map. One of the unimproved roads crosses both sides of Hwy 23 and is the same as that plotted on the 1955 Millet quadrangle. The other is about 1 mi. further south and only extends west from Hwy 23. The two roads merge at the Kaiser Mine, which is outside the current B-17 Study Area, but is within the proposed B-17 withdrawal (see Estes et al. 2017). The 1957 Walker Lake quadrangle shows an extension of the trail noted on the 1957 Reno quad, but appears here as an unimproved road that crosses in and out of the B-17 Study Area on the west end as it travels southwest. It splits into two roads, with one unimproved road heading west across the gap between the Monte Cristo Mountains and Fissure Ridge toward Ruins and the cold springs (all of which are outside the B-17 Study Area), and the other unimproved road continues southwest toward the location of Warrens Well on previous maps (southern end of Fissure Ridge and the Black Hills). A north-south trending light duty improved road passes west of Fissure Ridge from the hot and cold springs through the B-17 Study Area toward the location of Warrens Well. At this location there is one unimproved road that heads east, then splits into two northwest-southeast roads (similar to those from the 1909 Hawthorne map). Another unimproved road travels roughly east-west across the center portion of the B-17 Study Area, but does not seem to connect to any other roads. Finally, two trails weave in and out of the southern B-17 Study Area on this map. A corral is noted near Derringers Well on the 1964 Walker Lake quadrangle.

The final historic-era map reviewed is the 1969 Quartz Mountain, NV, topographic quadrangle. This map covers the very northeastern portion of the B-17 Study Area. Five roads and a "Jeep Trail" are noted within the withdrawal. From the north end, an improved east-west road leads from Hwy 23 (west) toward the Quartz Mountain mines (outside the B-17 Study Area). The "Jeep Trail" roughly parallels this improved road to the south and connects with it outside the withdrawal boundaries. An unimproved two-track leads northwest from Hwy 23 southwest toward the Lodi Hills. It is intersected by another unimproved two-track that starts at the Quartz Mountain mines and travels southwest toward Hwy 23. A fourth unimproved road spurs off the Lodi Hills road east of the intersection with the Quartz Mountain road. Finally, Hwy 23 barely passes through the Study Area at the southern end of the map. In addition to these roads, there are 64 prospect locations on the fans west of Quartz Mountain.

A series of modern USGS topographic quadrangles was also reviewed (see list above), but either do not show any additional features or only contain more recent features.

5. PREHISTORIC CONTEXT AND RESEARCH THEMES

This chapter provides an overview of prehistoric culture history that covers much of western Nevada. As it covers the same general area and is applicable to this report, this chapter is taken from the previous Class I Overview Report (see Estes et al. 2017). Following this overview are highlighted research themes and data needs to evaluate prehistoric cultural resources for NRHP inclusion. Additional themes may be found in the NAS Fallon Integrated Cultural Resources Management Plan (ICRMP) (Smith and Michel 2013), as well as in the Nevada State Historic Preservation Plan element entitled “Prehistoric Wetlands Adaptations in the Carson Desert and the Humboldt Sink” (Elston and Raven 1992).

PREHISTORIC BACKGROUND

This discussion draws from a myriad of sources but is based largely on works by Elston (1982, 1986), Kelly (1985, 2001), Janetski and Madsen (1990), Raven and Elston (1988), Thomas (1985), Zeanah et al. (1995), and several articles within Hemphill and Larsen (1999), all of which have some degree of focus within the Lahontan Basin. Figure 5.1 highlights various regional chronologies developed for the local area or surrounding regions as well as over 100 calibrated radiocarbon age ranges from cultural remains or sites in the Carson Desert area. It should be noted that, while many local chronologies with various named culture phases are present in the early literature, many were created based on minimal data, survey data alone, presumed correlations with gross scale environmental shifts, and/or what would be considered today poor chronological hygiene. In discussing the prehistory of the Carson Desert and Stillwater Mountains, Kelly (2001:14) employed the cultural chronology originally developed for the central Great Basin (Thomas 1981), which he acknowledged was utilized strictly for the ease and precise chronological control associated with diagnostic projectile points; it was not meant to presume similarity in culture contents or adaptive strategies between the two areas. In a similar vein, Elston et al. (1988) found too many similarities in feature types, as well as artifact, faunal, and floral assemblages of tested sites of various ages, to clearly define distinct cultural phases in the Stillwater Marsh area and thus circumvented this problem by dividing time based solely on the diagnostic projectile point ranges from the central Great Basin (Thomas 1981) and removing the associated culture phase names. Following their lead, we correlate projectile points with associated adaptive strategies as a means for distinguishing prehistoric components rather than attempting to fit them within inaccurate or non-local cultural phases (Figure 5.2). The discussion below provides gross environmental eras as the basis for the following discussion, and, within each, the adaptive strategies and diagnostic tools employed. Dates are provided in radiocarbon years before present (B.P.) unless otherwise stated.

Terminal Pleistocene-Early Holocene/Pre-Archaic (11,500-7500 B.P.)

The last glacial epoch (Pleistocene) was a time of lower average temperatures, increased effective moisture, and reduced evaporation (compared to present conditions), resulting in the establishment and persistence of large pluvial lakes that covered many now-dry valleys across much of Nevada and the Great Basin (Grayson 2011; Mifflin and Wheat 1979). Toward the end of the Pleistocene, as temperatures were warming and becoming increasingly dry, the pluvial lakes were retreating from their terminal Pleistocene highstands. By the time of human arrival (perhaps between 14,500-13,000 years ago or more), sizeable (but much reduced) lakes would have been present across much of the proposed Study Areas, the largest being Lake Lahontan, which covered Lahontan Valley and connected numerous other basins across western and northern Nevada with a highstand at roughly 15,500 years ago (Adams et al. 2008). Other valleys in the Study Area also contained water during the terminal Pleistocene, such as Lake Dixie at an elevation of 1,097 masl in Dixie Valley and Lake Labou at roughly 1,274 masl in Fairview Valley (Mifflin and Wheat 1979; Reheis 1999). Around 11,000 B.P., a sudden reversal of conditions (possibly triggered by a shutdown of the Atlantic thermohaline circulation system) plunged the northern hemisphere back into a cold/wet cycle that lasted over a millennium; an event known as the Younger Dryas (Grayson 2011:104-105). Shortly thereafter, conditions returned to a warming/drying trend, marking the beginning of the Holocene.

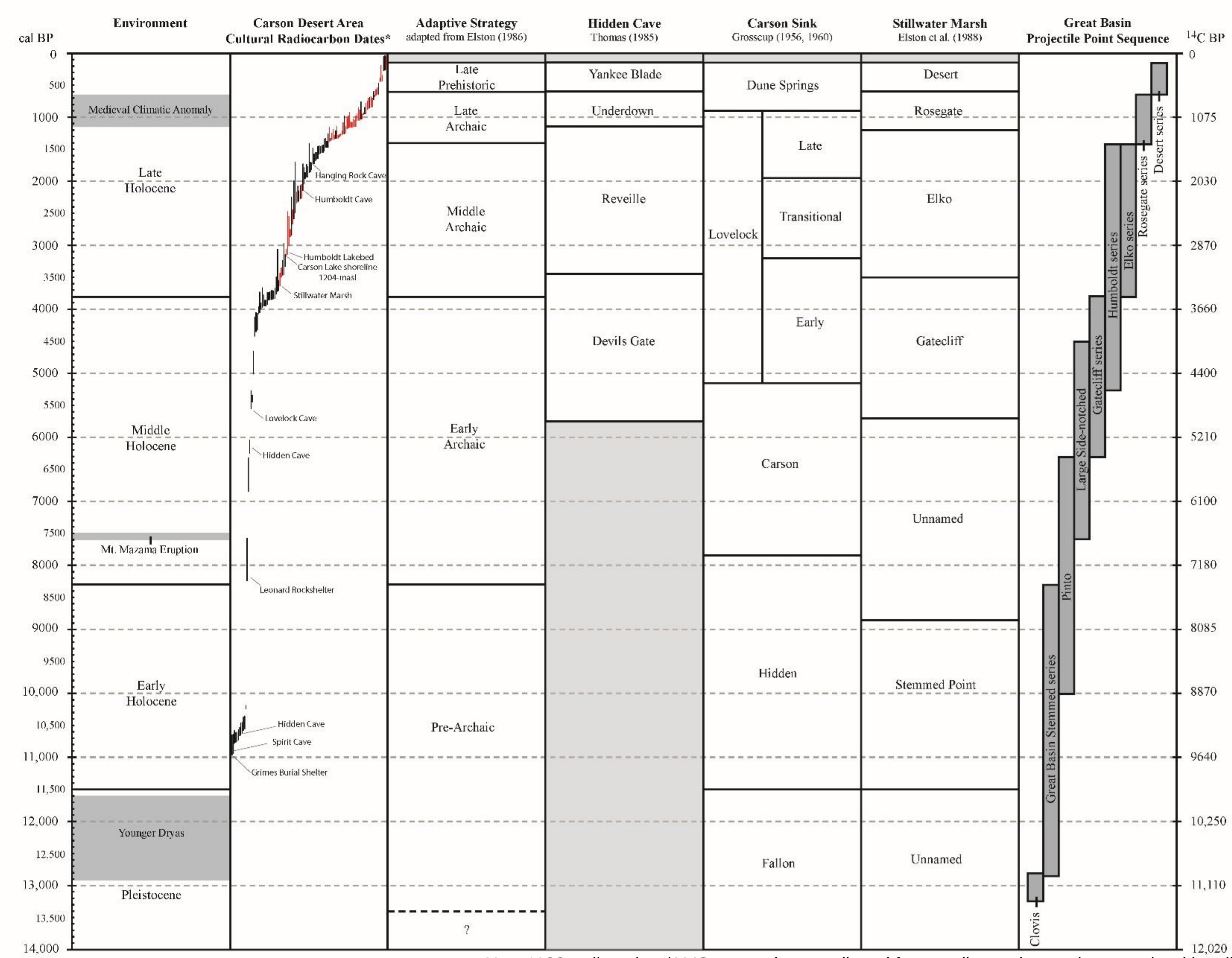

Figure 5-1 Prehistoric regional chronology.

Note:*123 radiocarbon/AMS age estimates aligned from earliest to latest along x-axis with calibrated 2-sigma age range on y-axis. Earliest dated cultural remains are highlighted from key regional sites. Ages in black indicate cave/rockshelter sites; ages in red indicate open-air sites.

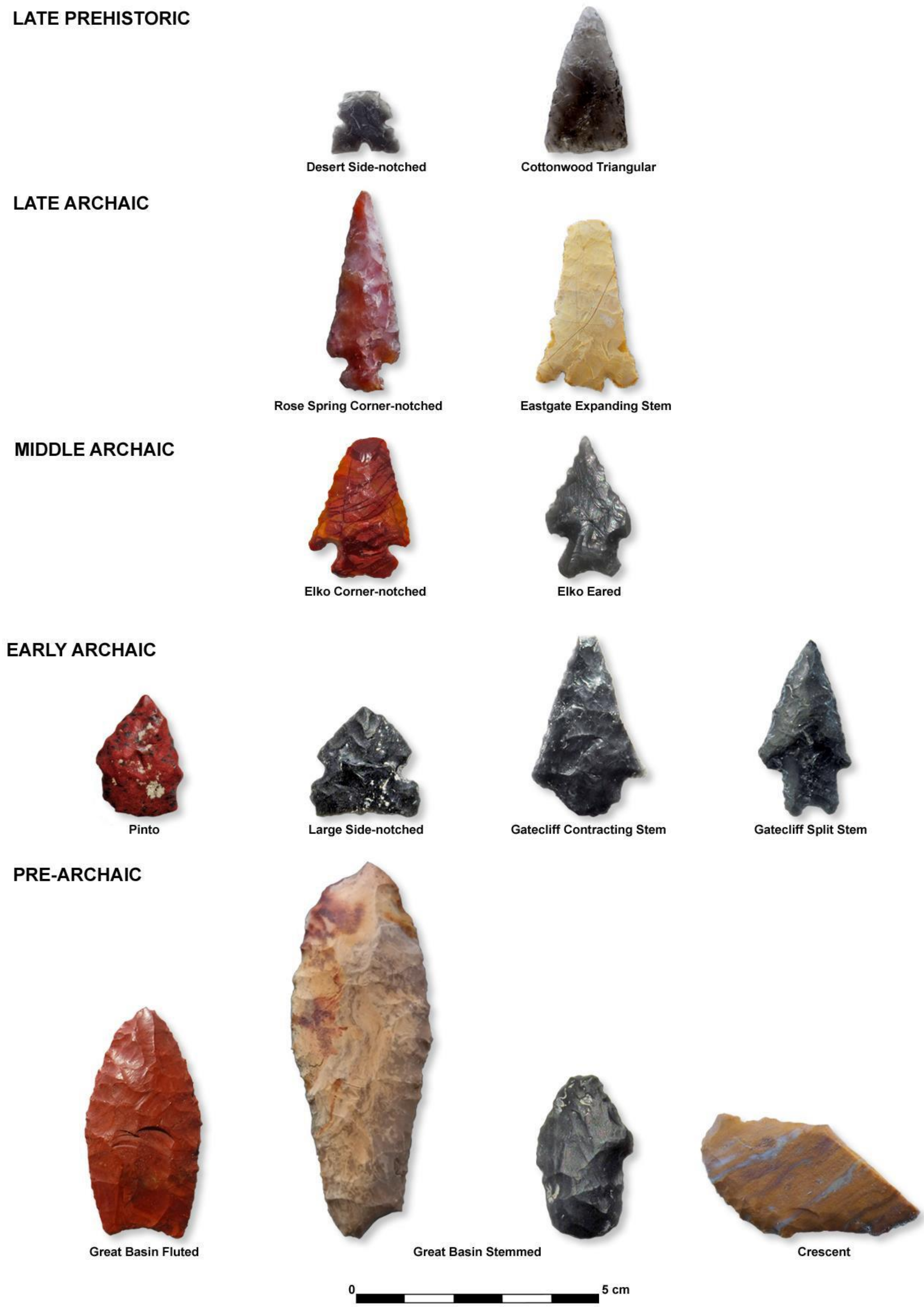

Figure 5-2 Common Projectile Point types in the Western Great Basin.

In general, stemmed point complexes in the Great Basin are better dated than their fluted counterparts. For example, Grayson (2011) and Beck and Jones (2010) discuss several localities in Nevada where stemmed points and their inclusive artifact assemblages occur in radiocarbon-dated contexts. An important though controversial site, Smith Creek Cave, yielded seven dates on Mount Moriah components that range from 10,570 ±160 B.P. to 11,140 ±120 B.P. (Bryan 1979; but see Goebel et al. 2007). Five other Nevada sites have also yielded radiometric dates in association with Great Basin Stemmed projectile points, including Bonneville Estates Rockshelter (10,560 ±50 [Graf 2007]), the Sunshine Locality (10,700 ±180 [Beck and Jones 2009; Huckleberry et al. 2001]), Handprint Cave (10,740 ±70 [Bryan 1988]), Falcon Hill (8380 ±120 B.P. to 9540 ±120 B.P. [Hattori 1982]), and Last Supper Cave (10,280 ±40 B.P. [Smith 2008; Smith et al. 2015], 8910 ±50 and 8160 ±50 [Grant 2008; Smith et al. 2015], and 8260 ±90 B.P. to 8960 ±190 B.P. [Layton 1970, 1979; Layton and Davis 1978]).

Recent investigations by Charlotte Beck and George Jones at the Sunshine Locality in southern Long Valley and in adjacent Butte Valley and Jakes Valley (Beck and Jones 1990, 2007, 2009) have bettered our understanding of terminal Pleistocene-early Holocene adaptive relationships in eastern Nevada. Of greatest significance to the present discussion is the recovery of 17 fluted points, 73 unfluted concave base points, and 708 Great Basin Stemmed points from the Sunshine Locality alone. Nearly all of these artifacts were surface finds, but one fluted point, a crescent, and a single stemmed point were recovered in good association with dated strata. The fluted point and crescent were unearthed below charcoal that was dated to 10,340 ±60 B.P. (Huckleberry et al. 2001), while the stemmed point was found atop a charcoal lens that yielded a date of 9820 ±60 B.P. (Huckleberry et al. 2001; Jones et al. 1996); these dates reflect traditional wisdom concerning the temporal relationship between fluted and stemmed points, the former being slightly older than the latter. Along other lines, metric analyses indicate that unfluted concave base points and fluted points are not both parts of a fluted blank-to-point manufacturing trajectory. Instead, Beck and Jones (2009) suggest that Sunshine fluted points are a derivative of Clovis and are thus slightly younger in age, while unfluted concave base points represent an altogether separate tool form that might be of even more recent antiquity.

In this light, Beck and Jones (2010) have reviewed evidence for the earliest manifestations of fluted and stemmed projectile points in the Intermountain West, including many of the dates and localities mentioned earlier in this discussion. One of their main points centers on the fact that most radiocarbon dates associated with fluted points in the region are younger than those for stemmed points, and that this may reflect the presence of humans in the West prior to the emergence of Clovis anywhere in North America. If Clovis and Great Basin fluted points are not parts of the same technological tradition, it seems reasonable to conclude they are not of the same age. And, as posited by Alan Bryan many years ago (Bryan 1979, 1980, 1988), Beck and Jones (2009, 2010) raise the possibility that Great Basin fluted and Great Basin stemmed projectile points may represent the presence of two distinct human populations in the Intermountain West during terminal Pleistocene-early Holocene times, with stemmed point makers predating fluted point makers. Paisley 5-Mile Point Caves in Oregon have yielded Accelerator Mass Spectrometry (AMS) ages that seem to bracket stemmed projectile points to the Clovis Era or perhaps just prior (Jenkins et al. 2012), adding to the debate that stemmed points in the Great Basin are as old, or older, than Clovis. Other researchers stress caution about acceptance of many of the earliest dates from stemmed point assemblages, as they often are spurious, inconsistent, or derived from non-cultural materials (Goebel and Keene 2014; Goebel et al. 2007). To these researchers, the onset of the stemmed point tradition dates closer to the time of the Younger Dryas, and thus post-dates true Clovis technology.

In the Carson Desert and the immediate surrounding areas, Pre-Archaic sites are found in similar contexts as other Great Basin localities, primarily as surface assemblages along ancient shorelines. As seen in Figure 5.1 above, the earliest dated cultural material from the Carson Desert occurs well after the Younger Dryas. Spirit Cave, a well-known early site located in the Lahontan Mountains southeast of Fallon, yielded textiles and mummified and cremated remains of three individuals dating from roughly 9500-9000 B.P. (Tuohy and Dansie 1997). Paleofecal materials recovered from the Spirit Cave mummy included tui-chub, Lahontan redside/speckled dace, and suckers, indicating moderately swift and bottom-water habitats, although suggestive of shallow waters based on the small size of the specimens (Eiselt 1997). Thus, we know that some of the earliest inhabitants in the area subsisted on fish from the nearby marsh/stream environments. Nearby sites in the Grimes Point Area also yielded Pre-Archaic archaeological materials. Warp-faced plain weave mats at Grimes Burial Shelter and Hidden Cave were dated to 9470 ±60 B.P. (Tuohy and Dansie 1997) and 9329 ±50 B.P. (Fowler et al. 2000), respectively. A single Great Basin stemmed point was also recovered from below Mazama ash deposits in Hidden Cave, though it was presumed to have either washed into the cave or was brought into the shelter by later activity (Pendleton 1985:206).

To date, no open-air Pre-Archaic sites in the Carson Desert have produced cultural radiocarbon dates. The Sadmat site (26CH163) is a large, open-air surface scatter located north of Hazen on or near beach terraces presumably associated with a Younger Dryas-age lake in the Carson Sink (Graf 2001:28). Private collectors gathered many of the artifacts during several trips to the site, but both collections were donated to the Nevada State Museum in the early 1970s (Graf 2001). The assemblage includes 180 stemmed points, as well as a large biface and uniface collection with crescents. Graf (2001:120-121) interprets this site as a retooling station dominated by formal and heavily curated tools. Obsidian stemmed points from the assemblage overwhelmingly came from southern sources, including Mt. Hicks, Bodie Hills, Casa Diablo (Sawmill Ridge), and Sutro Springs to the southwest, with only a few sources in northern Nevada (Graf 2001:Table 5.1). A number of other open-air early sites containing fluted and stemmed point assemblages are present around the margins of Carson Lake in Range B-16, as well as more intermediate upland settings along the dissected and deflated fans of the Barnett Hills and Cocoon Mountains surrounding Diamond Field Jack Wash on Range B-19 (Clay and Neidig 2013; Estes 2016a). In the foothills of the Dead Camel Mountains on Range B-16 lands, Rice (2015) tested the Overlook Site (26CH3413), a discrete residential base camp used by stemmed point makers who focused on local raw material to replenish used and broken tools, primarily mid-to-late-stage bifaces. The only date recovered from this site (10,930 ±30 B.P.) was on tufa laid down prior to occupation when the area was submerged by Lake Lahontan.

Middle Holocene/Early Archaic (7500-3500 B.P.)

This temporal interval includes both the Middle Holocene (approximately 7500-5000 B.P.) and the Post-Middle Holocene Transition (5000-3500 B.P.) (Tausch et al. 2004). The Middle Holocene was a time of extreme aridity throughout much of the Great Basin, and some areas may have been largely abandoned, particularly where wetlands disappeared, while others clearly saw continued occupation in different ways, either in the use of higher elevation landscapes, a focus on sources of water, or in the more extensive use of certain resources.

Changes in the archaeological record of the Great Basin prior to 5000 B.P. signal the beginning of the transition from Pre-Archaic to Early Archaic adaptive strategies. The timing of this shift, however, is not well defined. Leonard Rockshelter, near Lovelock, produced an atlatl foreshaft dated to 7038 B.P. and a burial dated around 5700 B.P. (Heizer 1951). Radiocarbon dates from Early Archaic sites at Winnemucca Lake range from about 7300 to 5200 B.P. (Elston 1986). At Shinners Site I in Falcon Hill, a grass layer found over a cache pit dates to ca. 6780 B.P.; organic debris from Guano Cave dates to ca. 6550 B.P); and a cedar bark cloth from a burial in Cowbone Cave dates to roughly 5720 B.P. (Elston 1986; Heizer and Hester 1978; Hattori 1982). In general, archaeologists recognize the onset of the Early Archaic by about 7000 to 6000 B.P. in the northern and central Great Basin (Elston 1986), although some researchers place it well after the Mount Mazama eruption, closer to 5000 B.P. (Hildebrandt et al. 2016; McGuire 2002).

Archaeological assemblages from this interval are typified by large side-notched projectile points (Northern Side-notched, Large Side-notched, etc.), and those bearing weak shoulders and indented or split-stem bases that diverge in both space and time with southern Great Basin forms (Pinto) and northern Great Basin forms (Gatecliff series). The Pinto type (Amsden 1937; Campbell and Campbell 1935; Rogers 1939) is a more robust form with a concave or notched base more commonly associated with the Inyo-Mono region of eastern California and Mojave Desert (Basgall and Hall 1993; Delacorte et al. 1995) dated from 8500 to 5500 B.P. (Basgall 1993; Basgall and Hall 2000). Recent research in the eastern Great Basin, however, indicates that the Pinto influence extends and may be just as old as Great Basin Stemmed Series assemblages. Duke (2011) and Hamilton (2012) discuss Pre-Archaic assemblages of Great Basin Stemmed Series projectile points occasionally mixed with Pinto points, suggesting the possibility of contemporaneity. Obsidian hydration results from these assemblages indicate a significant overlap in hydration rims, bolstering the argument that they coexisted during the Pre-Archaic period, but that only the Pinto forms continued on into the Early Archaic. In addition, Hockett (1995) identified an early and late style of split-stemmed projectile point in northeastern Nevada using obsidian hydration. These studies indicate that the Pinto type may not be geographically constrained to southwestern regions and may also be older than originally thought. Large Side-notched or Northern Side-notched points are typically found in the northern Great Basin, but they are also distributed across western and central Nevada and tend to date between 7000-5000 or 4000 B.P. (Delacorte 1997; Gruhn 1961; Hildebrandt et al. 2016); Layton 1985; O'Connell 1975; O'Connell and Inoway 1994; Orvald and Giambastiani 2012).

The more gracile split-stem points have been described under a variety of local terms including Little Lake (Harrington 1957; Bettinger and Taylor 1974), Silent Snake (Layton 1970), and Bare-Creek Eared (O'Connell 1971) that were all later combined into the inclusive Gatecliff series by Thomas (1981) and are dated mainly between 5500 and 3500 B.P. (Basgall 1993; Basgall and Hall 2000; Thomas 1981), although Hildebrandt and others suggest Gatecliff may extend through the Middle Archaic (Hildebrandt and King 2002; Hildebrandt et al. 2016). This period roughly coincides with the Post Middle Holocene Transition, which was still warm and dry, but punctuated with short, irregular cool and wet spells (Tausch et al. 2004; Wriston 2009). Humboldt series projectile points also first appear during this period, but are generally considered poor temporal markers due to their long persistence (approximately 4600-1500 B.P. in Gatecliff Shelter [Kennett et al. 2014; Thomas 1981]). Other researchers, such as Hildebrandt et al. (2016) and Delacorte (1997), identified them primarily within Early Archaic components (7000-3500 B.P.). Flaked stone artifact assemblages of this period are also characterized by leaf-shaped bifaces, formal unifaces, flake tools, and various core-cobble implements (Basgall 1993; Campbell and Campbell 1935; Delacorte et al. 1995; Hunt 1960; Rogers 1939). Raw material variability is greater than in more recent assemblages, presumably indicating a high degree of residential mobility in settlement strategies. The use of milling equipment increased substantially during the middle Holocene, although its morphology reflected the importance of portability and less concern for intensive shaping (Basgall 1993, 2000; Basgall and Hall 1994). Grayson (2011) attributes the increased use of small seeds during the middle Holocene to the drying of regional climates and a resulting decline in the production of other important resources, particularly those in wetland settings. While Catlow twining may have been introduced in the Pre-Archaic period, it became more common in the Early Archaic (Hattori et al. 2001) in association with multiple-warp and spiral-weft woven sandals. Later in this period, coiled basketry and Lovelock Wickerware appear as twining declines (Hattori et al. 2001).

Human groups began to regularly occupy and utilize rockshelters and caves in lowland areas, using them primarily for short-term shelter and long-term storage. Sporadic use of these shelters occurred until about 5000 B.P., when Early Archaic occupations in the Lahontan Basin became more abundant, judging by the numerous sites known in the Winnemucca Basin, Humboldt Sink, and Carson Sink. Some of these sites demonstrate the regular use of cache caves (see below), a pattern most evident during periods when shoreline lacustrine resources were abundant. Hidden Cave is one such cache cave that supports evidence of Early Archaic use of Lahontan Valley and the Grimes Point area. Its record of diagnostic projectile points (n = 201) is dominated (76 percent) by specimens of the Gatecliff series, and excavated cave deposits yielded six radiocarbon dates on cultural materials ranging from 5365 to 3520 B.P. (Thomas 1985), as well as 12 dates on human coprolites spanning 3700-3450 B.P. (Rhode 2003). Bat guano associated with archaeological remains may date the earliest use of Lovelock Cave to 4700-4300 B.P. (Heizer and Napton 1970). Open-air sites in lowland areas within Stillwater Marsh contain Early Archaic point types (Gatecliff series), suggesting that initial occupation occurred during this time, but the earliest radiocarbon dates (site 26CH2052) are of Middle Archaic origin, around 3300-3200 B.P. (Raven and Elston 1988).

Early Late Holocene/Middle Archaic (3500-1500 B.P.)

Climatic conditions improved during the Late Holocene around 3500 B.P., becoming cooler and wetter than the previous interval (Grayson 2011; Tausch et al. 2004). Dramatic changes in Great Basin subsistence adaptations, beginning in the Middle Archaic, produced a wide variety of temporal and spatial differences in archaeological patterning. Not only does the number of archaeological sites dating to this period increase markedly over the previous interval, but attendant material remains diversify considerably in terms of functional specialization and stylistic/cultural affinity. These changes, along with an "explosive" increase in rock art (Delacorte 1997:15), imply a drastic rise in cultural complexity and increased settlement centralization throughout the Great Basin.

As discussed by Delacorte (1997), Middle Archaic sites in the Great Basin are widespread and highly variable in size, function, and complexity. Along the eastern front of the Sierra Nevada there are large Middle Archaic settlements at Bordertown (Elston 1979), Hobo Hot Springs (Elsasser 1960), and the Steamboat Hot Springs locality (Elston and Davis 1972; Elston and Turner 1968). Many other Middle Archaic sites have been investigated elsewhere in Nevada, at places like Trego Hot Springs (Seck 1980), and along the Truckee and Humboldt rivers (Elston et al. 1988; Rusco et al. 1979; Tuohy and Clark 1979), not to mention the more famous cave sites in the Humboldt/Carson Sink area such as Hidden Cave (Roust and Grosscup n.d.; Thomas 1985; Wheeler and Wheeler 1944), Lovelock Cave (Grosscup 1960; Heizer and Napton 1970; Loud and Harrington 1929; Napton 1969), Leonard Rockshelter (Heizer 1951, 1956), Humboldt Cave (Heizer and Krieger 1956), Hanging Rock Cave (Tuohy 1969), and the Winnemucca Caves (Orr 1974) that either witnessed initial use or increased utilization during this time. While open-air sites served a variety of purposes, as residential bases, short-term camps, task-specific procurement or processing sites, lithic quarries and workshops, and hunting/butchering camps, most cave sites were primarily "cache caves" used to store perishable subsistence gear (e.g., fishing nets and tackle, baskets, duck decoys, textiles) and were not used for residential occupation (Kelly 2001; Thomas 1985). This diversity of site types, along with the emergence of formal house pit features at places like the Humboldt Lakebed site, Marble Bluff, and Karlo (Elston 1986; Grosscup 1956, 1960; Livingston 1986; Riddell 1958; Tuohy and Clark 1979), indicates that Middle Archaic settlement patterns in the Great Basin were highly regularized, involving a network of interrelated residential and procurement sites rather than a broad distribution of residential sites.

This is indeed evident across western and central Nevada. In particular, Elko-series projectile points are extremely common and widespread in many different environments and landscapes, much more so than earlier dart-point forms. This fluorescence is often attributed to the more frequent establishment of task-specific sites by Middle Archaic groups, but it must also relate to increasing population sizes in Nevada and all across the Great Basin. As discussed by Grayson (2011), an increase in human populations may also have been influenced in part by the maturation of pinyon woodlands and by the amelioration of climates at the end of the arid middle Holocene. Whatever these factors were, it is rare to find a major archaeological survey in the region that has not identified an abundance of Elko-age sites, typically considered 3500-1500 B.P. in central and western Nevada (Thomas 1981). Recent research, however, has shown that Elko projectile points can date as early as 6900 B.P. from Elephant Mountain Cave in northern Nevada (Smith et al. 2013). While Elko points have previously been shown to have an early initiation date in the northern and eastern Great Basin (Holmer 1986), the vast majority of Elko points in western and central Nevada fit within the more limited range between approximately 3500-1500 B.P. (Beck 1995, 1998; Holmer 1986; Thomas 1981).

The early part of the Middle Archaic also saw the emergence and fluorescence of a major biface manufacturing industry, as evidenced by substantially heightened production at eastern California obsidian quarries (Gilreath and Hildebrandt 1997; Hall 1983; Ramos 2000; Singer and Ericson 1977), at the Tosawihi chert quarries in north-central Nevada (Elston 2006; Elston and Raven 1992), and at Sierran basalt quarries around Lake Tahoe (Bloomer 1997; Bloomer et al. 1997; Markley and Day 1992; McGuire 1997). Toward the end of the Middle Archaic, these production systems appear to have waned considerably, presumably in association with the introduction of bow-and-arrow technology that was less reliant on biface manufacture than were previous dart-point technologies (e.g., Gatecliff and Elko points). As the demand for toolstone during the Middle Archaic was probably greater in the western Great Basin than during earlier times, it is likely that local lithic sources in the Carson Sink and Stillwater Mountains witnessed peaks in exploitation prior to the onset of arrow point technology.

Ultimately, it seems that adaptive patterns in the Middle Archaic generally followed those that were initiated during the Early Archaic. In particular, a gradual shift toward greater organization and centralization in settlement patterns, a continued pursuit of high-ranked or easily captured animal species, and a growing importance of vegetal foods (and use of milling tools) are all trends that become strong during this period. In the Lahontan Basin between 3500 and 1500 B.P., human groups practiced a slightly more regular settlement pattern, shifting from upland to lowland camps during certain seasons. Lowland residential camps were fairly large, village-like sites established at the mouths of large rivers such as the Humboldt and Truckee (Jennings 1986) and in the Stillwater Marsh (Kelly 2001; Raven and Elston 1988). Presumably, the preference of such locations implies that Middle Archaic groups in the Lahontan Basin relied on riverine and lacustrine subsistence resources for much of the year. Zeanah et al. (1995) have argued that women’s foraging strategies were focused on wetland habitats, especially from 4500 B.P. to 2000 B.P., when intervals of mesic climate, shifts in seasonal temperatures and precipitation, and fluctuations in stream flow were common. Since foraging locations often reflect where residential camps were based, these habitations would have occurred in marsh communities as well (Kelly 2001). Osteopathologies identified on skeletal remains of nearly 400 individuals recovered from Stillwater Marsh during salvage recovery after flood events indicate that males suffered increased osteoarthritis within the shoulder, hip, and ankle, suggesting that they were more mobile and utilized more difficult terrain, likely for hunting purposes, than women, who had fewer such maladies, suggesting that they had a relatively more sedentary lifestyle (Larsen and Hutchinson 1999).

Late Holocene/Late Archaic (1500-650 B.P.)

A major theme to be drawn from the last two cultural periods relates to the intensification of subsistence strategies that culminated as a result of environmental amelioration, technological innovation, and long-term population growth. In many parts of Nevada and the Great Basin there are clear archaeological examples of shifts in subsistence organization that relate to the increased use of plant resources after about 1500 B.P. (Basgall and Giambastiani 1995; Basgall and McGuire 1988; Bettinger 1989, 1991, 1999; Delacorte 1990, 1995; Giambastiani 2004; Hagerty 1970; Pippin 1980; Thomas 1971; Wells 1983). These shifts were characterized by a diversification of diet breadth to include more low-return or labor-intensive foodstuffs (both faunal and floral), and were accomplished through the development or incorporation of new technology (the seed-beater, specialized baskets, and extensive milling features for bulk seed procurement; advent of the bow-and-arrow; pottery for cooking and storage), and/or by the adjustment of plant collection and processing techniques in an effort to extend plant harvests (green-cone pinyon collection and roasting; green-seed collection and flash-burning; dry storage). Population pressure, in combination with small-scale environmental changes, has been given much of the credit for increasing resource competition among Great Basin hunter-gatherers, thus necessitating some alteration of subsistence strategies. In addition to the above changes in material technology and extractive methods, extensive trade during the Late Archaic allowed human groups access to resources that may have been previously unavailable or hard to get because of geographic and/or political circumscription.

A hallmark of the Late Archaic period is the introduction of bow-and-arrow technology, which likely occurred at different times within the various subareas of the Great Basin (Grayson 2011). Along the peripheries, this technology may have been introduced as early as 1800-1600 B.P., whereas in central Nevada, it appears slightly later in time, around 1500-1400 B.P. Coincident with this is a shift from the biface-heavy technologies of the past to flake-based technologies, largely because arrow points (Rose Spring and Eastgate types) needed to be smaller and lighter to affix to the reduced size of arrow shafts. The timing of this technological introduction roughly corresponds with the onset of the MCA, which occurs at different times across the Great Basin but generally falls within a wide period from approximately 1700 to 700 B.P. (Tausch et al. 2004:35-36). Others recognize a more narrow MCA window from roughly 1200 to 700 B.P. (Stine 1994; Nieto-Moreno et al. 2013). Throughout this anomaly, temperatures across the Great Basin inconsistently increased moderately to dramatically, causing epic droughts in some areas after 1400 B.P.; precipitation shifted to a late spring/early summer, causing tree lines to advance uphill; and winters were milder. Despite this warming trend, or because of it, pinyon appears to have expanded in the southern Great Basin and elsewhere (Tausch et al. 2004:36).

Other technological changes occurred during this period. For instance, living structures decreased in size and became somewhat less substantial than during the Middle Archaic (Estes 2014; McGuire 2002). While bow-and-arrow technology allowed for increased individual-style hunting of large mammals, many sites seem to reflect a shifting focus from large mammals to medium and small mammals, such as hares/rabbits (Estes 2014). This could be due to an increase in cooperative hunting with nets. Of course, the environment in which sites are located plays a key role in the types and variety of flora and fauna resources captured. Kelly (1985, 1999, 2001) conducted survey and excavations within the Stillwater Marsh during drought years that had exposed a number of Late Archaic house floor features, storage pits, and postholes, as well as numerous burials. Subsistence remains at these sites indicate a focus on wetland resources such as tui chub, waterfowl, bulrush, and cattail, with only minor use of bighorn sheep, mussel shell, and lagomorphs, while pinyon and ricegrass were completely absent (Kelly 1999:143). Similarly, recent excavations along the southern margin of the playa in Range B-16 indicate marsh resources, such as goose, duck, fish (minnows, suckers, and trout), eggshell, mussel shell, rabbit, bulrush, seepweed, and cattail were procured and processed during this period (Clay et al. 2014; Estes 2016a). Tested sites in the Stillwater Marsh (Dansie 2011; Raven and Elston 1988; Kelly 2001) produced abundant Late Archaic point types (Rosegate series) and radiocarbon dates, indicating that while occupation likely began during the Early Archaic and continued sporadically through the Middle Archaic, the Late Archaic occupations were the most intensive.

Terminal Late Holocene/Late Prehistoric (650 B.P.-Contact)

In western and central Nevada, the most obvious shift toward intensive subsistence practices involved strategic changes in the use of singleleaf pinyon (*Pinus monophylla*). While there is good evidence that pinyon nuts were a regular part of human diets in central Nevada at least since 3000 or 4000 B.P., there is even more convincing data that the focused use of and reliance on pinyon did not occur until much later, perhaps not even until the Late Prehistoric period, around 650-170 B.P. (e.g., Bettinger 1994, 1999; Delacorte 1990; Hildebrandt and Ruby 2003; Lechner et al. 2009; Madsen 1986). This may be due in part to the late (post-2000 B.P.) arrival of pinyon in many parts of the western Great Basin. Whatever its timing, the emergence of green-cone procurement, processing, and storage is demonstrated by the establishment of small, residential “pinyon camps” within contemporary pinyon ecotones. These sites often manifest rock ring house structures, circular stacked rock caches, and various ground stone tools (millingstones and handstones), and less frequently contain pinyon-collecting implements (pinyon poles, hooks, basketry) and other processing tools (e.g., pottery). There is no doubt that this type of procurement system existed at the time of Euro-American contact and continued through historic times; pinyon camps of ethnohistoric age reflect the incorporation of new technology (e.g., wire-fastened pinyon poles; pots and Dutch ovens replacing pottery) but testifying to the persistence of the green-cone collection strategy.

In an effort to explain this dramatic reorganization involving pinyon and other subsistence resources, archaeologists have argued that a Numic-speaking population rapidly spread throughout the western Great Basin around 1,000 years ago (Aikens and Witherspoon 1986; Bettinger 1994, 1999; Bettinger and Baumhoff 1982, 1983; Lamb 1958; Layton 1985; Sutton 1986). The model given most support would have Numic populations spreading north and east through the Great Basin, perhaps originating in southern Owens Valley or entering the basin from that area. Armed with the more intensive adaptive strategies outlined above, Numic groups either replaced or assimilated any pre-Numic populations already present through resource competition (Bettinger and Baumhoff 1982, 1983). Kaestle and Smith (2001) provide mitochondrial DNA (mtDNA) data that support replacement of pre-Numic populations by Numic groups. However, Grayson (2011:331-332) argues that mtDNA fails to provide a full picture, as it is inherited only through females, but more importantly, that the small sample size of prehistoric individuals from Kaestle and Smith's (2001) research creates an artificial pre-Numic population spanning nearly 6,000 years, rather than at any one moment in time, thus potentially biasing the sample toward greater diversity than in their Numic population sample. Delacorte (1995, 2008) has argued that the distribution of Desert-series points (Late Prehistoric period) across the Great Basin is reflective of the Numic Spread. Assuming that these point types (Desert Side-notched and Cottonwood) are distinctive Numic markers, their distribution and variability in age support the notion that Numic speakers did indeed move northward from an eastern California homeland less than 1,000 years ago, perhaps only reaching parts of northern Nevada around 600 B.P. or later. Various forms of brownware pottery may also constitute a Numic signature, given consistency between their inferred ages (all probably younger than 1000 B.P.) and their inferred use in preparing bulk-processed plant foods (Eerkens 2003, 2004).

Grayson (2011) has recently reviewed the suite of evidence for the Numic Spread, including some new linguistic studies that posit alternative views regarding the prehistoric homeland of Proto-Uto-Aztecan (PUA) speakers (among which were the Numic). The traditional Numic Spread argument suggests that the ancestral Numic were maize farmers that came from Mesoamerica via the Southwest; upon reaching the Great Basin, they abandoned agriculture and returned to a foraging lifeway in order to best take advantage of the environmental conditions they encountered. In contrast, Merrill et al. (2009) have argued that maize agriculture was present in the Southwest by at least 4000 B.P. and, based mainly on linguistic data, that central Nevada was the original homeland of the PUA. In their scenario, arid conditions in the middle Holocene forced PUA foragers to the southwest edge of the Great Basin; from there, some groups moved east and became farmers (Southern Uto-Aztecan), while others remained and eventually spread back across the Great Basin (Northern Uto-Aztecan)—perhaps in accordance with the traditionally held timing of the Numic Spread (~1000 B.P.). From another perspective, Hill (2001, 2006) has also used linguistic data to argue that Numic speakers entered the southern Great Basin roughly 3,000 years ago and moved across the region between 2,000 and 1,000 years ago. This temporal scheme is not totally inconsistent with the standard model of Numic migration (in which the Great Basin was populated by Numic speakers 1,000 years ago), but both Merrill's and Hill's hypotheses appear contrary to the archaeological record of central Nevada. In the case of Merrill's argument, it seems unlikely that populations in central Nevada were large enough during the early-middle Holocene transition to necessitate a broad-scale migration in coping with drying climate; concerning Hill's argument, we might expect to see a much earlier dispersal of Numic traits in the archaeological record if they arrived in central Nevada more than 1,000 years earlier than is generally accepted.

Ultimately, patterns of land-use intensification that began in the previous interval grew even more pronounced during Late Prehistoric times, and associated settlement patterns became increasingly centralized. The exploitation of high-cost, low-return resources was successfully conducted through the use of bulk-processing methods (e.g., involving pine nuts and grass seeds), foodstuff storage, and the communal hunting of smaller game (e.g., rabbits). Such practices may have been accomplished without the aid of major technological innovations (Delacorte 1997), but the basketry seed-beater (Bettinger and Baumhoff

1982), two-handed stone muller (Basgall and Giambastiani 1995), woven rabbit net, and other material items probably grew in importance as pieces of bulk/communal procurement technology in parts of the western Great Basin. Moreover, Delacorte (1997) has suggested a major shift in social organization was a contributing factor to intensified land-use, family-sized household groups having replaced larger extended-family groups as the main force in resource exploitation. This change allowed for more flexibility in residential mobility and raised incentives for individual production, giving family-sized units advantages over larger, band-sized units in terms of resource redistribution and cooperation. Bettinger (1999) has argued that this represents a change from an importance of “public” goods to that of “private” goods, in part influenced by the adoption of the bow-and-arrow and the advantages it gave an individual hunter.

While Late Prehistoric sites and projectile points are present in the area (generally restricted to open-air sites), they are less common than Late Archaic sites, and few Late Prehistoric sites have been investigated as thoroughly. No Desert series points were recovered from Hidden Cave, nor did it produce any radiocarbon ages indicating use during the Late Prehistoric period (Thomas 1985). Lovelock Cave yielded a few Desert series points and three Late Prehistoric radiocarbon dates on bulrush seeds and a human coprolite (Heizer and Napton 1970; Napton and Heizer 1970; Tuohy and Dansie 1997). Just outside Lovelock Cave, the Humboldt Lakebed site yielded over 400 Desert series points and possibly 47 undated shallow house floors (Heizer and Clewlow 1968; Livingston 1986) as well as a storage pit dated to 550 B.P. (Heizer and Napton 1970). Tested sites in the Stillwater Marsh appear to have only minimal Late Prehistoric archaeological evidence, suggesting only occasional use of the area (Elston et al. 1988; Kelly 2001). In addition to the few projectile points found there, two Stillwater Marsh sites yielded Late Prehistoric human remains dated to 660-290 B.P. (Kelly 2001). One explanation for the scant Late Prehistoric occupation of Stillwater Marsh provided by Elston et al. (1988:384) is potential shifting of the Carson River back toward Carson Lake in the southern portion of Lahontan Valley. Indeed, open-air sites containing Desert series points and radiocarbon dates indicate use along the southern shorelines of Carson Lake within Range B-16 (Clay and Neidig 2013; Clay et al. 2014; Estes 2016b, 2016c) and in Rawhide Flat of Range B-19 (Clay and Neidig 2013).

Modern Conditions/Ethnohistoric (Post-Contact)

At the time of Euro-American contact, the western Great Basin was inhabited primarily by the Northern Paiute, such as the Sawawaktödö, Makuhadökadö, and Küpadökadö along the Humboldt River, the Wadadökadö near Honey Lake, the Huyuidokado at Pyramid Lake, the Aga’idökadö and Pakwidökadö around Walker Lake, and, in Carson Desert, the Toedökadö (Fowler 1989, 2002; Gilmore 1953; Heizer 1960, 1970a, 1970b; Kelly 2001; Loud 1929; Park 1938; Steward 1937, 1938, 1939; Stewart 1937, 1938, 1941; Wheat 1967).

The territory of the Toedökadö (also Toidɨkadɨ, or “Cattail-eaters”) (Fowler 2002) has been drawn and redrawn by various researchers. The most commonly used territory description encompasses “all of the Carson Sink, some distance up the Carson River, Fairview Valley to the southeast of Carson Lake, Dixie Valley, and into the Clan Alpine Range” (Shimkin and Reid 1970) (Figure 5.3). But Stewart (1939, 1941) extended the territorial boundary farther east, across the Desatoya Mountains and near the Reese River Valley. Ethnographic and archaeological data suggest that these groups mostly relied on wetland communities as residential bases but adopted a mobile lifeway to utilize more distant upland and lowland resources outside the Carson Desert, given that fish, large game, seeds, and pinyon appear to have all been important in their diet (Kelly 2001).

The Toedökadö practiced a seasonally semi-nomadic lifeway, hunting, gathering, and fishing in the wetlands, the surrounding desert, and uplands. Fowler (2002) describes the plant geography of the Toedökadö, where resources were seasonally acquired (or stored) for their seeds, berries, pollen, roots, and stems or leaves. Little greasewood-shadscale shrubs are dominant in lowlands, where numerous edible perennial grasses and other annual and perennial plants were sought. A larger array of plants in wetland habitats present in Stillwater Marsh, Stillwater Slough, along the Carson River, in the Carson Sink, and on the margins of the Carson Lakes include Indian ricegrass, needlegrass, bluegrass, saltgrass, meadow barley, and squirreltail; these were available during early to midsummer. Wildrye, bulrush, wheatgrass, sand dropseed, and alkali sacaton were available during mid- to late summer, while cattail was available in the fall (Kelly 2001). Tubers of chufa flatsedge and sego lily were also available (Kelly 2001). Tule, willow, sagebrush, and cattail were heavily utilized to make clothing, personal adornment, basketry, tools, and a variety of other woven materials, including matted covers for domed houses or boats (Bengston 2003; Fowler 2002). Resources from upland zones, such as summer seeds, fall berries, and pine nuts, were also sought.

Other animal and insect resources found in the wetland ecosystem were also important in the diet. These included waterfowl (including their eggs and hatchlings), shore and wading birds, raptors, freshwater clams, fish (like tui chub [*Gila bicolor obesus*]), aquatic insects (and their larvae), emergent and submergent plants, small mammals, and more (Fowler 2002:44). Fishing was a very important task in the lacustrine environment and involved the use of fishing platforms, nets, weirs, harpoons, and basket traps, which were used for river fishing, and gill nets, dip netting, hooks and lines, spears, duck decoys, and harpoons used for lake fishing (Bengston 2003; Fowler and Liljeblad 1986). The Toedökadö used a number of different kinds of game enclosures, including traps and corrals, in communal hunting for upland mammals such as deer, antelope, desert bighorn sheep, and rabbits (Fowler and Liljeblad 1986:439). Food storage was an important strategy in preparation for the winter. The Northern Paiute gathered and stored small sun-dried fish, dried fly larvae, grass seeds, and dried rabbit meat (Fowler and Fowler 1971; Heizer 1970b; Hopkins 1994; Lowie 1924; Steward 1939).

The first Euro-American explorers to visit the Lahontan Basin, around A.D. 1830, noted the relatively large Native American (Toedökadö) population in the area (Bidwell 1890; Dodge 1860; Leonard 1904; Simpson 1876). Relations between the Toedökadö and the earliest explorers in the area were peaceful. Once the gold rush in California commenced in 1848, however, tens of thousands of Euro-Americans passed through the Carson Desert each year on their way to try to strike it rich; other waves of emigrations followed. The emigrants brought with them disease and left behind abandoned wagons and dead livestock, which likely provided the Toedökadö with new sources of food and material goods as their natural habitat was altered (Fowler 2002:18).

The first permanent Euro-American settlers in the area appeared in the mid-1850s, and Mormon settlement in the Carson Valley required a new route connecting Salt Lake City to the region, which passed through Toedökadö territory. The settlers soon began to displace local people from the wetter meadow areas and into less desirable areas; some native peoples soon began to work for the settlers as ranch hands and laborers, while others retreated to upland areas. Hostile encounters between the settlers and the Toedökadö appear to have been minimal until around 1860, and, shortly thereafter, Fort Churchill was established approximately 25 mi. west of present-day Fallon (Fowler 2002:18-19). In 1861, a Virginia City journalist by the name of William Wright (a.k.a. Dan DeQuille) visited the area and wrote a very detailed ethnographic account of the Toedökadö. DeQuille reported that though they were adapting some cultural elements from the white settlers, the native people were still living at traditional sites and were following traditional subsistence patterns (DeQuille 1963). As settlement and cultivation of the land increased, the Toedökadö people more intensively adopted Euro-American culture. In 1893, the Bureau of Indian Affairs distributed 30,000 acres of land to the Churchill County Indians; however, this allotment excluded the prime lands already owned by white settlers. As much of their land lacked water and proved too alkaline to cultivate, native peoples continued to work as ranchers and in other capacities for Euro-American settlers (Fowler 2002:21-23).

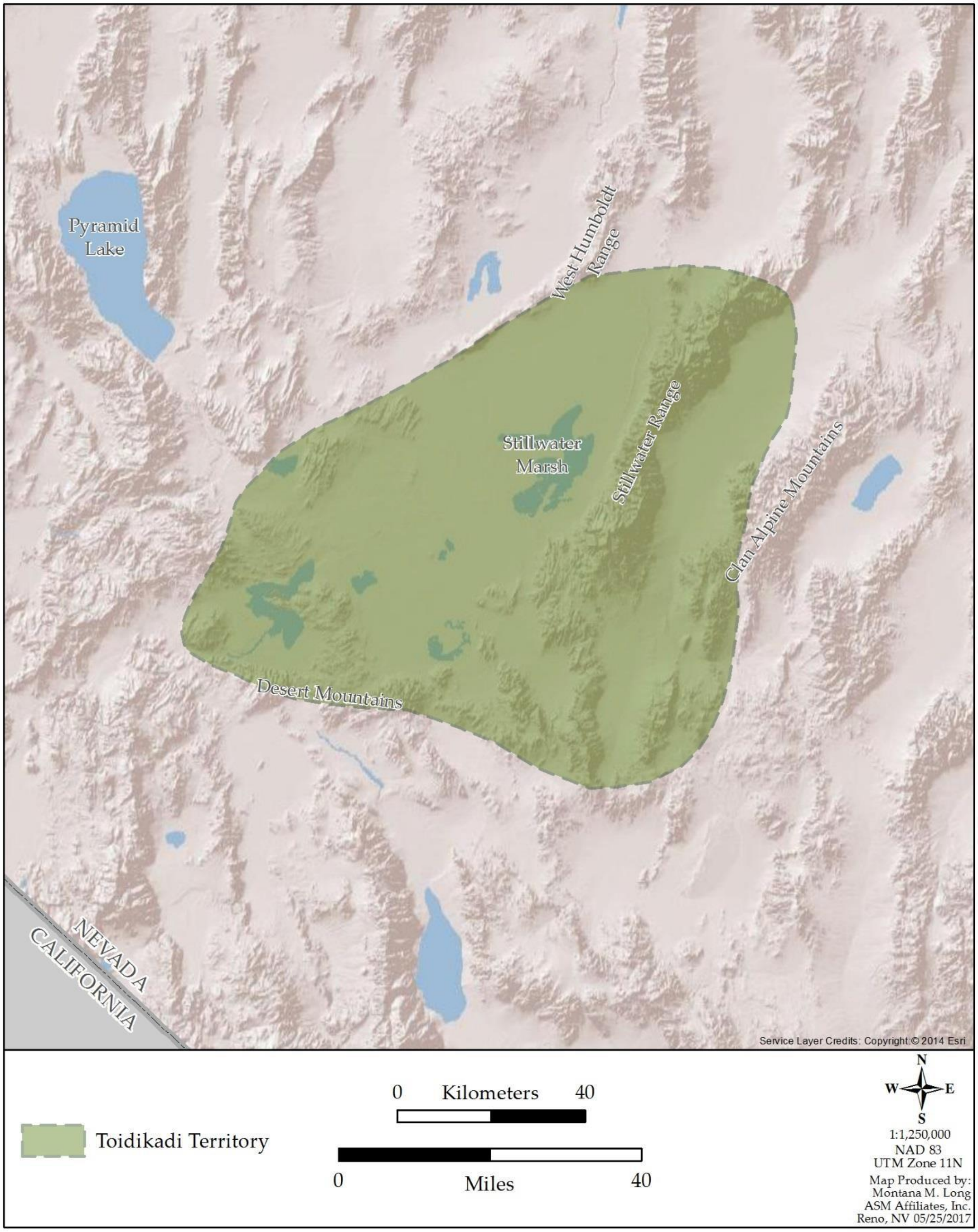

Figure 5-3 Ethnohistoric territory of the Toidikadi (after Shimkin and Reid 1970).

Archaeological evidence for ethnohistoric occupations in the area around Stillwater/Carson Slough on NAS Fallon-managed lands have been previously identified (Branch 2016; Estes 2016d). A cluster of eight sites occurs in the near vicinity of Redman Station (26CH1407), which was a major toll bridge crossing the Stillwater/Carson Slough from 1862-1912. DeQuille (1963) penned a detailed account of his journeys through the Carson Desert and reported a number of Indian villages with cattail huts and sunscreens between Carson Lake and Redman Station, including a large camp opposite the slough, where he traded for fish. These sites contain artifacts suggestive of ethnohistoric use of traditional tools (such as flaked and ground stone implements, including Desert series projectile points) as well as historic goods (such as glass trade beads in a variety of colors, shapes, and styles, prosser buttons as well as shell and metal varieties, bottles dating from the 1850s-1880s, flaked glass, and other items); heir placement in close proximity to Redman Station suggests trade or exchange of goods during the Ethnohistoric period. Furthermore, four sites were recently recorded about 2 mi. to the south, on the edge of what would have been a marsh surrounding Upper Carson Lake, according to GLO maps for T18N R29E (GLO 1869) and T18N R30E (GLO 1868). These sites contained a mixture of traditional stone artifacts as well as beads, Euro-American style buttons, and bottle glass (Branch 2016). These sites indicate presence of Northern Paiute (Toedökadö) groups in and around the Carson Lake and Stillwater Slough area during the late nineteenth century.

PREHISTORIC RESEARCH THEMES

The following research themes are proposed based on the existing research conducted in and surrounding the proposed Study Areas in western, northern, and central Nevada. These themes include: Chronology, Subsistence and Settlement, Toolstone Procurement and Use, and Rock Art Studies. Typically, prehistoric cultural resources are evaluated for their NRHP eligibility solely under Criterion D and their ability to contribute meaningful information about the past. This is partly due to the absence of historic records that can be used to identify specific events (Criterion A) or individuals (Criterion B) in the prehistoric past, with some exceptions related to mythology. Similarly, prehistoric cultural resources in northern Nevada are seldom evaluated under Criterion C, that is, if they can "embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or that possess high artistic value, or that represent a significant and distinguishable entity whose components may lack individual distinction" (36 CFR 60.4). However, petroglyph and pictograph resources may possess "high artistic value" and may be eligible "if it so fully articulates a particular concept of design that it expresses an aesthetic ideal" (USDI 1995). Therefore, rock art sites may also be evaluated under Criterion C. These themes, NRHP evaluations, and data needs were largely developed for a previous Class I Overview Report (see Estes et al. 2017) and are reproduced herein.

Chronology

After nearly a century of archaeological research in the Great Basin, there is still much debate regarding the timing of introduction and persistence of projectile point styles often regarded as "diagnostic" of a particular adaptive strategy or period of time. Of course, the Great Basin is expansive, and technology was likely introduced to different regions at different times or may have skipped large areas altogether due to environmental, cultural, sociopolitical, or other factors. Thus, a single chronology for all point styles across the Great Basin may be unwarranted and should not be expected. Holmer (1986:101) discussed part of this issue as it pertains to Elko series points in what he termed "long vs. short" chronology, noting that Elko points in the eastern Great Basin experienced three "floruits" of use within the past 7,000 years, whereas in the west (most of Nevada) the Elko series corresponds to a short period of use (roughly 3300-1300 B.P.). However, Smith et al. (2013) identified an early date (6879 ±58 B.P.) for an Elko point in northern Nevada, suggesting they may date earlier elsewhere as well. In addition, they identified Humboldt points as old as 5900 B.P. and Rosegate points as early as 2000 B.P. and as late as 580 B.P. When compared to the generally applied Great Basin short chronology (see Thomas 1981), these dates extend ages in both directions. Other research projects along the California-Nevada border and along northern Nevada have identified similar patterns (Hildebrandt and King 2002; Hildebrandt et al. 2016). Therefore, we must stress caution when using projectile points to establish chronology, as it appears that multiple point styles overlap in age, often by thousands more years than traditionally expected. However, introduction date and period of most intensive use are likely to show a traditional battleship curve more in line with traditional chronologies.

In addition to expanded temporal chronologies in the Great Basin, there are other, less well-documented and dated projectile point styles found locally. For instance, Carson points were identified by Kelly (2001:96-97) in the Carson Sink, representing a new type not identified in the Monitor Valley key (Thomas 1981). These types are small, averaging 13 mm in length, typically bifacial, and exhibit varying basal morphologies (similar to Gatecliff Split Stem and Gatecliff Contracting Stem types, but miniature) and, based on a very small sample of two specimens submitted for obsidian hydration measurement, may pre-date both Rosegate and Elko points. Kelly (2001) further notes that they are often found in abundance when present, and are rare outside the Carson Desert and absent from the Stillwater Range. Ascertaining the range of dates associated with this unique point type is imperative to local chronologies.

Lacking cultural features with radiometric-assayable residues, obsidian hydration rim measurement has long been an alternative to refining relative and absolute chronologies of projectile point types. Comparisons between point types of the same source can help define periods of use and identify potential overlaps. When used in conjunction with radiocarbon or AMS ages on associated cultural features, obsidian hydration can be a powerful tool to develop hydration curves useful in applying absolute ages to artifacts of unknown age; for instance, non-diagnostic flakes, bifaces, or other obsidian tools. Sourcing studies from the area have yielded valuable data that reveal the direction of travel of material into the Carson Desert, which was not static, but changed through time. The Carson Desert and surrounding mountains form a sink where obsidian sources are lacking (Figure 5.4), although recent research has identified three distinct local sources (Dead Camel Mountains, Desert Mountains, and Lahontan Valley) that provided small cobble to pebble-sized obsidian nodules (Clay et al. 2014). Several larger obsidian sources are situated to the west, including Patrick, CB Concrete, and Sutro Springs. Further south are more high-profile and far-ranging obsidian sources, including Bodie Hills, Garfield Hills, Mt. Hicks, Queen, Mono, and Casa Diablo. Similar widespread sources north of the Carson Desert include Mt. Majuba, Buffalo Hills, Bordwell Spring/Pinto Peak/ Fox Mountain, Massacre Lake/Guano Valley, and other sources of northwestern Nevada. Obsidian from these sources and more found their way into the Carson Desert and surrounding areas in the prehistoric past. Recent sourcing and hydration studies include 176 sourced and 53 hydrated obsidian artifacts from Hidden Cave (Thomas 1985), 71 sourced obsidian artifacts from Kelly's work in the Carson Desert and Stillwater Mountains (Hughes 2001), 51 sourced and 86 hydrated samples from 25 open-air sites in Lahontan Valley (Clay et al. 2014), and 27 sourced and 24 hydrated samples from seven open-air sites in Lahontan Valley (Estes 2016a, 2016b). Generated results indicate wide disparities among obsidian hydration rates between projectile points from open-air sites and those from a sheltered context.

While Chronology is a relatively basic theme, it is perhaps the most important to which any prehistoric site can contribute, and it is also a significant issue with regard to determining the NRHP eligibility of a given property. Estimates of age not only allow for a better understanding of where within evolutionary trajectories (social or technological) a particular site or group of sites fits, but also, they afford a chance for cross-comparisons between sites, areas, and regions. With prehistoric sites, chronology is normally determined based on the presence of artifact types known to be "time-sensitive" (e.g., projectile points, beads, ceramics), on any direct dates obtained from radiometric assays of organic remains (charcoal, bone, etc.), or on any relative age estimates obtained through obsidian hydration, geomorphological indices, or cross-dating. Although prehistoric sites are best dated when multiple lines of chronological data are available, such evidence is usually scarce, and temporal estimates are often limited to implications drawn from a single data type. For this reason, prehistoric sites containing time-sensitive materials are frequently recommended as significant and NRHP-eligible because they can be placed in time and associated with past adaptive changes in settlement patterns, subsistence strategies, and technology at a particular point in time.

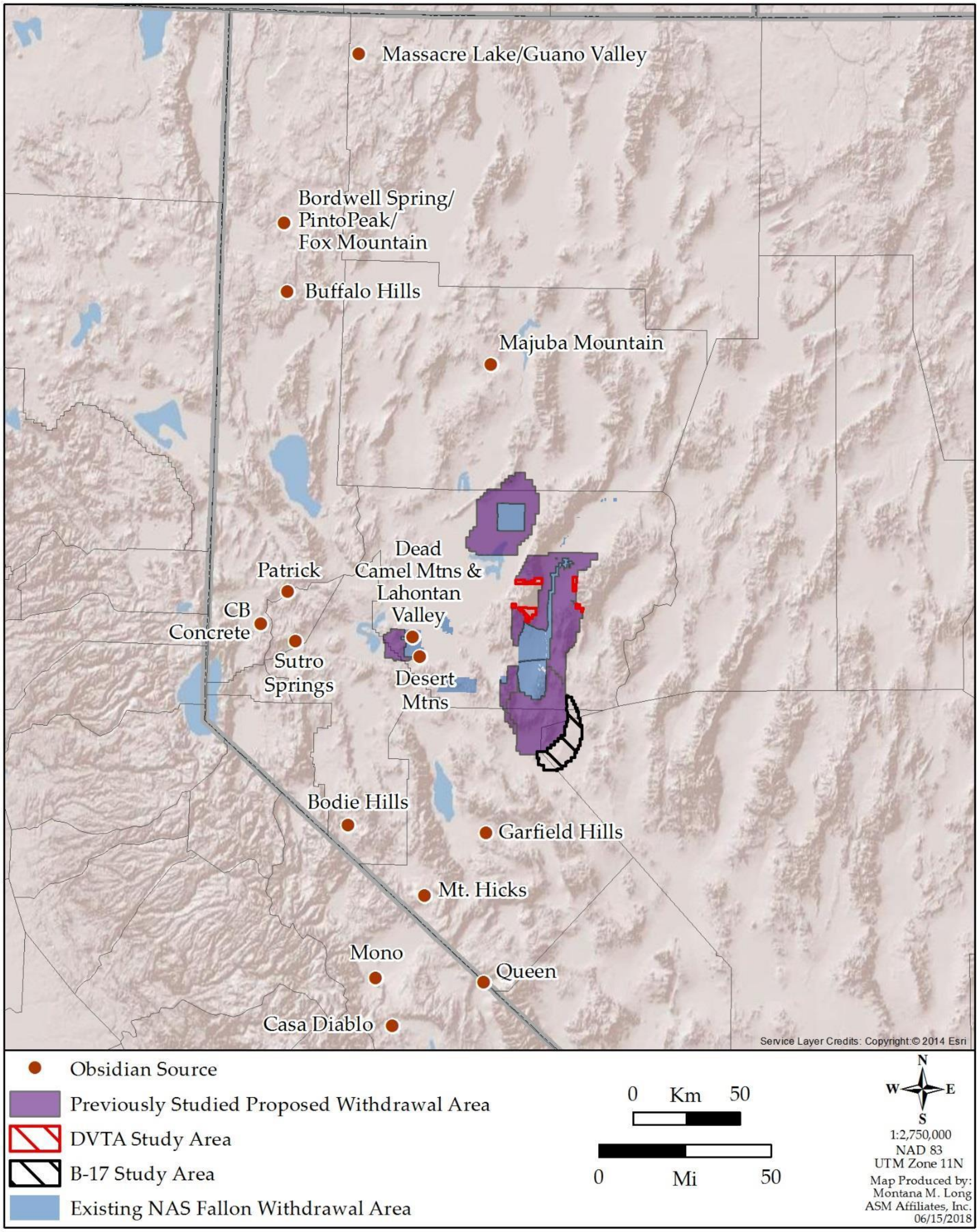

Figure 5-4 Obsidian source location map.

Data Needs for Chronology

To contribute meaningful information to the Chronology research theme, sites must exhibit at least one intact, unmixed, and undisturbed single-component cultural deposit. The most accurate and precise method for determining site age is through the dating of unmixed, buried cultural deposits, preferably through radiometric assay of charred, short-lived plant material. However, initial recordation is generally limited to surface identification only and must rely on the observable record to infer chronological placement. Temporally diagnostic artifacts, such as typeable projectile points, ceramics, or shell beads typically provide a coarse-grained chronology and can only be used to infer the general period of use for a given site. Artifact assemblages that contain a sizeable number of obsidian artifacts (10+ pieces per site) may be able to provide useful data pertaining to hydration studies. Single-component sites can be identified by discrete assemblages, those that are dominated by single point types, or those with similar hydration rim measurements. Obsidian hydration may also be useful to determine the age of a site or provide insight regarding site reoccupation. However, the presence of diagnostic or obsidian artifacts does not necessitate that a site be determined as significant under the theme of Chronology, as many sites may exhibit these specimens, yet be highly disturbed by looting, deflation, erosion, or other damaging impacts.

Subsistence and Settlement

Given regional evidence, prehistoric occupations in the proposed Study Areas appear to extend back to the Pleistocene-Holocene transition and up to the arrival of European emigrants. Although studies of terminal Pleistocene-early Holocene land use in the western Great Basin have been few, they have generally focused on aspects of subsistence-settlement organization, based on site landscape position, lithic assemblage function, and toolstone use and conveyance. Because many of these ancient sites are often preserved along relict lake shorelines, it is assumed that terminal Pleistocene-early Holocene subsistence had at least a partial lacustrine focus centered on the use of marshland habitats. Clearly, though, sites of this age also occur in various upland areas far from lake shorelines, testifying to the use of dryland habitats as well. What remains to be understood are the settlement relationships between early lowland and upland occupations and whether or not those relationships differed from similar ones identified during later times.

In contrast, studies of middle to late Holocene land-use adaptations in the Carson Desert have been able to draw on the occupation of cave sites, as well as open sites, in reconstructing subsistence-settlement organization. The fact that many caves were used as “cache caves” during middle Holocene times implies that patterns of settlement and mobility, as well as resource availability, may have been somewhat less predictable than during previous millennia. Finally, much of the focus on late Holocene subsistence and settlement patterns has been directed to the exploitation of singleleaf pinyon (*Pinus monophylla*) and of marsh resources, and how the intensive use of pinyon in late prehistoric times influenced settlement practices.

Nonetheless, the history of human occupation in the Carson Desert and surrounding area is really about how people alternately used lowland and upland habitats. Regarding lowlands, the productivity of wetland habitats and their suitability for human occupation has been the subject of much discussion (Kelly 2001; Janetski and Madsen 1990; Larsen and Kelly 1995; Madsen and O’Connell 1982; Raven 1990a, 1990b; Raven and Elston 1988, 1989; Zeanah 1996, 2002; Zeanah and Simms 1999; Zeanah et al. 1995). Zeanah (1996; Zeanah et al. 1995) and Kelly (2001) have argued that wetlands in the Carson Desert provided a year-long focus of settlement and subsistence for both male and female foragers. During warm/dry months, both men and women focused on wetland resources (fish, waterfowl, plants) until the arrival of fall pinyon; at this time, women spent more time in upland pinyon zones. In wetter months, men may have used upland zones more frequently for hunting sheep and/or other large game. Differences in the seasonal productivity of uplands drove this system; people primarily resided in the lowlands, but whenever upland resources were available, they procured them through logistical forays.

Beyond the boundaries of the Carson Sink, nearby upland landscapes like the Stillwater Mountains and Fairview Range are dominated by sagebrush-steppe vegetation and host many seed-bearing shrubs and grasses (e.g., Great Basin wild rye [*Elymus cinerus*], prairie sunflower [*Helianthus petiolaris*], and woolly wyethia [*Wyethia mollis*]). Other important subsistence resources were likely geophytes—perennial plants that hold water and food reserves in underground storage organs (bulb, corm, rhizome, or stem tuber) during dry parts of the year. During adverse climatic conditions, especially during temperature extremes, the above-ground portion of a geophyte dies back, and the storage organ in the soil survives until above-ground growth starts again. These storage organs allow geophytes to have perennial life cycles and geographic and temporal stability. They also make geophytes a highly ranked, predictable, and reliable food source, especially at the end of winter (Fowler 1986, 1990, 2002; Trammel et al. 2008). Kelly (2001) has indicated that yampa (*Perideridia bolanderi*), sego lily (*Calochortus leichtlinii*), and bitterroot (*Lewisia redivivia*) all occur in uplands of the Carson Desert and Stillwater Mountains.

Pinyon occurs today in the Stillwater Mountains and in the Fairview Range, likely having arrived from more southern climes by 1,500 years ago (Kelly 2001). It was also certainly a key subsistence resource for prehistoric and historic Native American populations in the Carson Desert, featuring prominently in ethnographic descriptions of Native subsistence in the region (e.g., Fowler 2002; Wheat 1967). The ethnographic record, however, indicates that pinyon uplands surrounding the current survey areas were not long-term residential zones for the historic Toedökadö, but were instead used seasonally. This is in agreement with current prehistoric foraging models for central and western Nevada (e.g., Kelly 2001; Zeanah 2002; Zeanah et al. 1995), which posit that residential bases were usually maintained in lowland settings (and particularly around marshy environments). The same models also predict that foothill zones should have been used for logistical resource procurement, if only on a seasonal basis, for hunting, pinyon use, and the collection of other dryland plants (including geophytes).

With regard to subsistence, it is feasible that sites in the proposed Study Areas might yield archaeological data relevant to the prehistoric use of marshland, dry lowland, and upland environments. Realistically, however, the kinds of subsistence data we might obtain from survey recordation are somewhat limited and typically reflect the *potential* for these types of data. The majority of sites in these areas are likely to be open-air sites that generally have fair to poor organic residue preservation conditions. However, that can be dependent on how quickly a deposit may have been buried and the soil chemistry. Any sites in the Carson Sink may be subject to the effects of past lake inundation and erosion, whereas sites in higher valley and mountainous regions are likely to be affected by wind erosion, displacement by gravity, and mining/prospecting. This reduces the likelihood that cultural deposits still contain useful volumes of organic material or that artifacts have preserved food residues suitable for analysis. While the character of both flaked and ground stone tool assemblages can provide some general indications of animal and plant exploitation, the presence of vertebrate and invertebrate faunal detritus, paleobotanical remains, and blood/starch residues would allow for more specific reconstructions of habitat use and prehistoric diet. Hearth or midden features remain the most promising indicators for the presence of organic materials and residues that would be useful in understanding prehistoric settlement and subsistence.

Data Needs for Settlement and Subsistence Patterns

Residential or persistent occupation of sites in the Carson Lake are likely to be characterized by residential features, such as circular housepits or brush structures. Other features, such as formal hearths, may also be indicative of residential occupation. Absent these features, the data potential to address the settlement and subsistence theme begins to fall short, though other means of obtaining useful data do exist. For example, large samples of faunal remains and plant residues may help identify the time of year in which sites were occupied. Opportunistic use would be characterized by short-term residences, small assemblages, or remains, indicating that a unique environmental setting was occupied during a single season or that a specific resource was targeted there (e.g., geophytes, pinyon, etc.). Pollen, phytoliths, and starch extracted from milling equipment, and blood residues found on flaked stone tools can inform on the types of activities and plants and animals that were targeted. However, the best samples for all of these tests typically come from subsurface contexts, as surface artifacts have been exposed to the elements and have diminished potential for yielding positive results. Fire-affected rock typically does not preserve pollen grains due to the high temperatures achieved within prehistoric cooking features, but often retains intact starch grains. Lithic assemblages themselves can also inform on settlement and subsistence patterns; however, such assemblages must be sizeable to determine their character and technological makeup.

Toolstone Procurement and Use

With respect to prehistoric Great Basin human populations, patterns of toolstone procurement and use reflect modes of local and regional land use, basic technological needs, and the physical requirements of particular kinds of tools, all of which shared a functional relationship within the context of past settlement-subsistence systems. The composition of flaked stone assemblages, as indicated by the kinds of tools they contain, differences in the state or condition of those tools, the nature of associated flaking debris, and the kinds of raw materials represented in distinct tool classes, can reveal a great deal about how different tools were manufactured, used, and/or discarded at a given location. Aspects of lithic assemblage composition also have implications for the kinds of subsistence practices, diet, and degree of residential mobility that characterized the adaptations of the human group or groups responsible for creating any set of flaked stone debris.

The reconstruction of strategies and patterns of prehistoric toolstone acquisition in a given area begins with an intimate knowledge of local geology and the ability to visually identify distinct types of lithic material in raw (unused) form, among quarrying waste, and as various finished/nearly completed tools. Although not normally available for use at the survey level, the identification of specific geochemical sources of obsidian and basalt is possible through the use of X-ray fluorescence or other methods of trace-element analysis. In areas where lithic material sources are reasonably well known in terms of their spatial extent, abundance, and quality, we can analyze flaked stone assemblages produced during subsequent stages of lithic reduction (e.g., testing and quarrying; secondary shaping and preform manufacture; tool finishing) to see how lithic materials were collected, how they were moved across the landscape (and in what forms), and what kinds of treatments they were subjected to at places of waste production and discard. When such materials are associated with or include dateable artifacts or remains, we can often identify long or short-term, spatio-temporal trends in lithic acquisition and use that may have involved direct procurement, trade, or frequent scavenging and re-use.

Excavations at Hidden Cave (Thomas 1985) generated an obsidian source profile for projectile points that reflects the primary use of obsidians from the Mono Basin—particularly Truman-Queen, Mt. Hicks, and Bodie Hills (Hughes 1985). Obsidian from Mt. Majuba was also found in some abundance, while obsidians from the Garfield Hills, Pine Grove Hills, and a few unknown/poorly studied locations were identified in minimal amounts. Considering the implications of regional sourcing studies that have generated long-distance obsidian conveyance zones for western and central Nevada (e.g., Delacorte 1997; Giambastiani 2004; Jones et al. 2003; Hauer 2005; Sibley 2013), alongside recent sourcing studies in the Carson Desert and Stillwater Mountains (Hughes 2001), it seems reasonable to conclude that most obsidian artifacts in the proposed Study Areas should represent sources from both southern and northern Nevada. Alternatively, few, if any, artifacts should derive from sources in the Truckee Meadows region (e.g., C.B. Concrete, Patrick, Sutro Springs), in northwestern Nevada/northeastern California (e.g., Bordwell Spring/Pinto Peak, Double H/Whitehorse, Paradise Valley), in central Nevada (e.g., Crow Spring, Box Spring, Cloverdale Canyon), or farther afield. Giambastiani (2004) has already included the Carson Desert within a sphere of obsidian conveyance that was anchored in the Mono Basin/Mineral County region to the southwest rather than in areas west, north, or east.

There are also many kinds of lithic toolstone present in the Carson Lake area. Recent surveys in Range B-17 (Ramirez et al. 2011) have identified many different sources of chert, or CCS, while inventories in Range B-16 have identified tested clasts of CCS and associated decortication wastes at project sites (Clay et al. 2012; Clay and Lenzi 2013). Evidently, older alluvial sediments around Carson Lake contain cobbles and gravels of toolstone-quality material that were exploited to a modest degree by regional prehistoric occupants. Although these materials cannot be traced to specific source origins, their use alongside imported obsidian provides clues to patterns of regional settlement, lithic procurement, and toolstone use in the project area.

Data Needs for Toolstone Procurement and Use

Single-component sites with large assemblages are the best candidates to contribute information to the theme of Toolstone Procurement and Use. These sites typically contain a variety of toolstone types, including local types (typically represented by larger pieces with higher percentages of cortex and simple platforms) as well as "exotic" or non-local types (typically obsidian in this part of the Great Basin). For instance, the materials used to manufacture formed tools can elicit patterns in the assemblages, and we may find that non-local materials (such as obsidian) are generally restricted to one or two tool types (usually projectile points and bifaces). Local toolstones should occur in higher concentrations, whereas non-local toolstones may indicate direct procurement or exchange. Patterns of rejuvenation on formed tools and projectile points, in combination with debitage profiles, can contribute information on prehistoric conveyance systems in place in Lahontan Basin during prehistoric times. Obsidian source profiles can be used to identify the sources and directions in which the toolstone traveled. Quarries in the area provide important information on where local materials were acquired as well as how the material was used. Single-component sites of various ages will allow for comparisons across space and through time.

Rock Art Studies

Research into Great Basin rock art dates back at least to Julian Steward (1929), who discussed motifs with informants, though rarely got straightforward answers about their meaning, who created them, or how they were meant to be viewed. He speculated that they served a ceremonial purpose that may have included puberty ceremonies, clan symbolism, or even provided shamanistic power, as well as other purposes. In any case, it was clear that these images had some symbolic meaning and were likely created to convey social meaning. In the mid-twentieth century, Heizer and Baumhoff's (1962) seminal work on the subject focused interpretation toward hunting magic, as they noted associations with hunting sites and equipment, game trails, and other features normally associated with hunting. While this view has not entirely lost favor, other models have been presented more recently to explain their origin, context, and purpose. Prominent among these is the role of shamanistic power and trance states that relies heavily on ethnographic analogy and that supports cultural continuity throughout prehistory (Whitley 1987, 1992, 1994a, 1994b, 1998a, 1998b). These models typically argue that rock art was used by male shamans or during vision quests to acquire power or to showcase visual images they perceived during altered states of consciousness. As such, they are commonly regarded as a personal and not a social phenomenon. Another view considers the art from a landscape perspective, incorporating archaeological remains nearby and examines the role rock art plays in social relationships at the group and individual level (Quinlan 2007; Woody 2000). Site association with rock art helps define the intended audience. Some rock art is very deliberate and placed in open settings or near habitation sites, small camps, and rockshelters used to cache equipment, such as at Grimes Point and the two major Salt Caves (26CH84 and 26CH2092). Other art is hidden, with images placed in locations difficult to access or caves that few entered, such as Dynamite Cave or 26CH2100 (a small cave in which only one or two people can enter at a time). However, not all rock art is created to serve the same purpose. As in archaeology in general, context is key. Rock art was likely created and used for a variety of reasons by different groups and cultures throughout prehistory. As such, we should not be surprised to find merit in any of the above models, depending on the particular site or even motif within a site.

Data Needs for Rock Art Studies

The most important need for this research theme is the presence of rock art, which in general is scarce, or perhaps locally concentrated, across the Great Basin landscape. Previous studies have recorded multiple cave/rockshelter sites in the Dead Camel Mountains that contain a wealth of red-painted pictographs on tufa-covered walls. The Salt Cave sites are well known to locals and they are open to the public, although they are fenced with signage. However, as evidenced by the Grimes Point site across the valley, rock art can also be present in open-air sites, on boulders, outcrops, or cliff faces. Superimposed motifs may help to determine a relative local chronology, assuming different styles are represented. The presence of rock art is necessary, and the nature of it may dictate the types of additional analyses needed to extract additional important information to make it eligible under Criterion D. For instance, the materials used in the manufacture of pictographs (or the material on which rock art is located) may be able to be dated by radiometric assay, or identified to source location. Further photographic analysis may be able to identify superimposition. Similarly, degree of patination can be analyzed to evaluate age. Associated artifacts may also yield important information useful in cross-dating specific rock art styles and designs. Under Criterion C, a property must be shown to articulate a design so fully that it expresses an aesthetic ideal, or is representative of the aesthetic value of a cultural group. Clearly defined and well-crafted motifs are necessary.

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6. HISTORICAL CONTEXT AND RESEARCH THEMES

This chapter focuses on, and provides an overview of, the historic era of western Nevada. The focus is split into various interconnected thematic and well-known subjects important in the settlement and development of the western United States. Research themes and data needs are then provided to evaluate associated historic cultural resources for NRHP inclusion. Additional research themes and questions may be found in the NAS Fallon ICRMP (Smith and Michel 2013), as well as the *Nevada Comprehensive Preservation Plan* (White et al. 1991), and *An Archaeological Element for the Nevada Historic Preservation Plan* (Lyneis et al. 1982).

HISTORICAL BACKGROUND

The following review is divided into five historic themes that were important in the history and development of Nevada and are discussed in roughly chronological order. These thematic background reviews include: 1) Expeditions, Emigration, and early Non-Native Settlement; 2) Mining; 3) Agriculture and Ranching; 4) Transportation and Communication; and 5) Military. This section reviews the history of the Study Areas within each theme and reviews cultural resources that may be associated with that theme.

The historical context for the DVTA and B-17 Study Areas is a compilation of data from archival records, secondary documents, and public records. Archival research was conducted using GLO maps and patents, master title plats, historical USGS topographic quadrangles, and historical USGS aerial photography archives. Digital newspaper archives were reviewed for articles pertinent to key locations within the Study Areas. Examination of public records included a search of the Land & Mineral Legacy Rehost 2000 (LR2000) System for mining claims in the Study Areas predating 1969. Selective document inquiries were made through the Churchill, Mineral, and Nye County Recorder's online document inquiry databases. ASM also conducted a search of the Nevada Department of Water Resources (NDWR) database of water rights applications and certificates for requests made within the Study Areas prior to 1969. Finally, a background search of NVCRIS was used to help identify which historic-era sites have already been identified and/or recorded within the Study Areas.

Expeditions, Emigration, and Early Non-Native Settlement

The earliest recorded non-Native expedition routes and wagon roads across Nevada developed mainly along the Humboldt River corridor to the north of the DVTA Study Area, avoiding the numerous mountain crossings and unreliable water sources that characterize the central portion of the state. In the 1820s, Fur trappers Jedediah Smith (Rocky Mountain Fur Company) and Peter Skene Ogden (Hudson's Bay Company) were the first recorded non-Native individuals to explore the American West. Both were in search of furs and explored the "Unknown Territory" (what was then a part of Mexico) by trapping beaver along the many rivers and tributaries of this unexplored region (McBride 2002:2-3). Fur trappers established a trail along the Humboldt River in the 1820s, much of which became part of the emigrant road to California by the mid-1840s (McBride 2002).

In 1833, after Ogden and Smith established that the rivers of Nevada were not bountiful sources of beaver pelts, other expeditions continued to scout the area for routes and resources. The Walker-Bonneville Expedition, commanded by Joseph R. Walker, entered Nevada near Pilot's Peak and then followed the Humboldt River to the Humboldt Sink, approximately 30 mi. northwest of the B-17 Study Area. Here, tensions with the Native Americans resulted in Walker's men killing 30 to 40 Native Americans. In the spring of 1834, Walker returned to the Great Basin from the San Joaquin Valley. This route again led Walker and his men to the Humboldt Sink. As before, Walker encountered a group of Northern Paiutes. The encounter resulted in Walker and his men killing 14 of the Northern Paiutes (McBride 2002:3-5).

Violent run-ins with the native populations resulted in overall distrust by Indians of Euroamericans and feelings of contempt for Walker (McBride 2002:5).

In December of 1843, John C. Frémont entered into northwestern Nevada in present-day Washoe County and trekked south to a large desert lake with a pyramid-shaped island. Frémont named the impressive body of water Pyramid Lake, then followed the Truckee River, which he named the Salmon Trout River, south to present-day Wadsworth. From Wadsworth he continued south to the Carson River, followed it to its sink, then turned back along the Carson River and crossed the Sierra Nevada near Carson Pass, ending at Sutter's Fort in March of 1844 (Elliott 1987:43; McBride 2002:9). Frémont led another exploration party into Nevada in 1845. At Mound Springs near the Pequop Mountains, his party split into two groups. Theodore Talbot and Joseph Walker led a party northwest along the Humboldt River. Frémont led his party southwest to Ruby Valley and eventually to Walker Lake, where the two groups met up again (Elliott 1987:44). At Walker Lake, they split once more. Frémont took his group north to the Truckee River, then through the Truckee Meadows and over Donner Pass, while the other group went south to Owens Valley. Frémont more accurately mapped the Humboldt, Truckee, Carson, and Walker river basins, giving him a clearer understanding of the nature of the region as an interior drainage and inspiring the name Great Basin (McBride 2002:9).

At the onset of the California Gold Rush in the late 1840s, potential prospectors followed the emigrant trail along the Humboldt River through Nevada to the Humboldt Sink, then headed south and followed the Carson River through Churchill Valley, Dayton, and Genoa before ascending the west fork of the Carson River to cross the Sierra Nevada at Carson Pass. The Carson River route of the California Trail quickly became the most heavily traveled road during the Gold Rush, not only for emigrants going west but for those who backtracked to prospect in western Nevada and ultimately encountered the rich silver ores of the Comstock in the 1860s (Angel 1881:440; Stewart 1962:324). In 1861, the soon-to-be state of Nevada transitioned from Utah Territory to Nevada Territory before gaining statehood in 1864.

In 1859, Captain James H. Simpson of the U.S. Army Topographical Engineers led a survey party from Camp Floyd in Utah along Egan's trail to Ruby Valley and then west to intersect the Carson River route of the California Trail near Genoa. Simpson's mission was to find a faster, yet practical route for wagons through central Utah and central Nevada (Peterson 2008:1). The route he mapped would subsequently be used by the Central Overland Mail (1859–69), Pony Express (1860–61), and the first transcontinental telegraph line (1861–69). This path crosses the Nevada landscape at Fairview Valley, between the proposed DVTA and B-17 Study Areas.

In 1862, President Abraham Lincoln signed the Homestead Act into law, which was intended to encourage emigrants to travel west and settle. The Act stated that settlers would be provided with 160 acres of land in exchange for a filing fee and five years of residence. The Homesteaders could purchase the land from the government for $1.25 an acre or, at the end of five years, the settler would have established occupancy and a patent or certificate would be issued to the occupant for the land. However, the settler would have had to build a structure and cultivate some portion of the land. The Act was phased out in 1976 due to the introduction of the Federal Land Policy and Management Act of 1976 (Bradsher 2012).

Dixie Valley Training Area Study Area

Dixie Valley was not on any of the major emigrant paths, possibly due to a lack of water and its location too far to the south to avoid some of the ranges that were more difficult to traverse, including the Clan Alpine and Stillwater ranges. This obstacle was noted early on by entrepreneurs Moses Job and Emanuel Penrod, who realized the necessity for a maintained road through the Stillwater Range to serve the numerous camps and mines drawing both miners and merchants in the 1860s. They constructed a toll road (Job's Toll Road) crossing the Stillwater Range, which is noted on the 1882 GLO map for T21N R33E just north of the DVTA Study Area (Estes et al. 2017). Ultimately, the Dixie Valley floor was much more amenable to potential settlers. A surveyor's notes from the 1882 GLO survey of T21N R35E state that the "…valley is a sandy loam and capable of producing abundant crops with proper irrigation, as is amply proven from the fine yield this year in the field in Secs 23 and 24" (Rogers and Bartlett 1882:61). The surveyor also pointed out that "cattle and sheep range in large numbers throughout the township" and that timber (nut pine and cedar) was available in the southeast corner of the township "...but not more than enough to supply settlers for firewood and fences" (Rogers and Bartlett 1882:61). Given the mountainous terrain of the Study Areas, it is unlikely that there are any cultural resources related to early non-Native exploration, emigration, and settlement within the DVTA Study Areas. Rather, settlers and emigrants would likely have preferred the Dixie Valley floor.

Bravo-17 Study Area

There was no incentive for many of the early expeditions or emigrants to travel too far south into Gabbs Valley, although freight routes and roads (likely associated with mining) crossed Gabbs Valley as early as the 1880s (see Transportation and Utility Lines section), and various stations and stops developed along these roads that encouraged settlement. In the 1860s, John Reese scouted a route between Wellington, in Smith Valley, and Reese River to the east (Pendleton et al. 1982), all of which were popular mining and ranching areas. The road crossed Gabbs Valley through the southern part of the B-17 Study Area. The road is discussed in greater detail in the Transportation and Utility Lines section of this chapter, but it is important to note that established roads such as these encourage settlement. An important stop on this freight road was the Hot Springs located just 2 mi. north of the southwest corner of the Study Area. A station clearly existed at the Hot Springs as early as the 1860s, but the first non-Native settler at the Hot Springs appears to be a man named William A. Woodruff in the 1880s. The stop at the Hot Springs was alternately called Kepler's Station (Danner 1992), or "Woodruffs Hot Spring" on the 1886 Parker Map of the State of Nevada (Parker 1886), and "Woodruff's house" on the 1884 T12N R34E GLO plat map. Stations along the roads in rural Nevada provided an opportunity for entrepreneurs to settle an area by providing lodging, supplies, and water for travelers and their animals.

The road, sometimes called Wellington Road, played an important role in an early survey of Nevada and California. In early 1864, a surveying party led by Nye County Surveyor John F. Kidder travelled through Gabbs Valley, and the party's narrative of their travels was printed in the Nye County News in July 1864. Their route from Ione to the White Mountains was planned so that they had relatively easy access to water. The journey would have taken them through the B-17 Study Area and was described as follows in the *Nye County News* by fellow surveyor J. S. Lawson:

> Journeying over this plain and the low ridges that skirted the mountains (presumably Monte Cristo Range) on the opposite side, for a distance of ten miles and finding no water, we retraced our steps till we had reached a hole of water three miles southwest of the spring we left in the morning. Here we camped having traveled about fifty miles without water. Discovering an Indian trail the next morning, we followed it down the opposite side of the mountain through a deep rocky precipitous cañon, containing several fine springs two miles above its mouth. Leaving this about ten miles from where we last camped, we entered the plain again about twenty miles north of the point from which we had the day before turned back. Here the trail became indistinct, we bore off to the northwest for the Hot Springs Ranch, on the Wellington Road, reaching it about 10 o'clock pm having struck the wagon road six miles east of the station" (Lawson quoted in Danner 1992:7).

The tale explicitly describes the treacherous landscape, lack of water, and unpopulated nature of Gabbs Valley in 1864.

The only indication of early settlement within the B-17 Study Area is a house surrounded by a meadow with a road that leads directly to the house from the northwest. The surveyorstated that "(t)here is a tract of meadow land in Sections 8, 9, 10, 15, and 16 and a settler in Section 10. Gabbs Creek flows through the township. It is the best of grazing land for which it is at present used and also fit for cultivation" (Conkling and Stewart 1883:424). The surveyor does not note the settler's name, and ASM could not locate Nevada State or United States land patents associated with this property. Likewise, U.S. and Nevada State Census records do not provide enough detail to determine who might have lived there. However, as mentioned above in Chapter 4, this settlement appears to have been misplotted.

Based on archival research, the only potential cultural resource related to emigration and settlement in the B-17 Study Area is the settler's house in the meadow. It is not clear what, if any, evidence remains of the 1880s' settler on the landscape. Aerial imagery shows no indication of the "meadow" shown in the GLO (other than typical alluvial fans covered in desert scrub brush and sandy deposits), and it is not clear if there is any evidence of the house that once stood there, or of its occupants, in the form of refuse, rock alignments, or footings. The road that is shown leading to, and terminating at, the house is still present, but extends much further south. The Wellington Road and the unnamed road terminating at the house in the meadow are discussed in greater detail in the Transportation and Utility Lines section.

Mining

Shortly after the discovery of silver in the Comstock Lode in the late 1850s, miners began branching out across what would later become the state of Nevada to seek their fortunes. This resulted in thousands of mineshafts, adits, and innumerable prospecting ventures across the mountainous interior of Nevada. Mining Districts were established by groups of miners working in a similar geographic area where local rules and regulations were established to bring about some semblance of order in the early years (Tingley 1998:3). The passing of legislation, including the General Mining Act of 1866 and the Mining Act of 1872, helped define federal mining rights and mining district regulations (Tingley 1998:3). The proposed DVTA and B-17 Study Areas overlap five historic Mining Districts spanning over a century of gold, silver, mercury, and fluorspar extraction, among other metal and mineral deposits (see Table 6.1 and Figure 6.1).

Veins yielding gold and ore were the dominant source of mining ventures. However, lead, copper, and other metals often co-occurred in the ore. In addition, the demand for other mineral resources changed as the values of metals fluctuated and new technologies took hold. World Wars I and II also created demand for metals to use in ammunition, armor, incendiary devices, and aircrafts. Nevada's natural resources proved to be valuable contributions to the war effort, and as the value of precious metals declined, the value of base metals and minerals for use in the war effort increased. Mines in the DVTA Study Area yielded fluorspar and tungsten. Fluorspar was used for flux in the steel industry and was in high demand for steel production during the first quarter of the twentieth century. Following the 1930s, fluorspar was used for both steel manufacturing and the production of chlorofluorocarbons (Freon) (Vanderburg 1937; Miller 2000). Production of fluorspar in the United States reached its peak during World War II in 1944 (Miller 2000). Tungsten is resistant to corrosion and has a high melting point among metals, making it very versatile for a variety of uses, and its properties have made it useful for lamp filaments and electronics. Tungsten's strength is enhanced when rendered as tungsten steel or tungsten carbide, used for manufacturing rockets, jet engines, and machining tools. Its peak periods of production in the United States during the early twentieth century were between 1941 and 1949 and from 1951 to 1956 (Schilling 1964).

Table 6-1 Historic Mining Districts that overlap with the Proposed Study Areas

Mining District	Year Developed	Period of Greatest Activity	Commodities Extracted	Recorded Production
DVTA Study Area				
Job Peak	1915	1965	Gold, mercury	minor
Mountain Wells	1862	1860s	Silver, fluorspar	minor
B-17 Study Area				
Broken Hills	1913	1920	Silver, lead, fluorspar, tungsten	$6 million (primarily from Kaiser mine)
Lodi	1874	1878-1880 1905-1914	Gold	$400,000
Quartz Mountain (subdistrict of Lodi)	1925	1925-1926	Silver, lead	$300,000 (primarily from the San Rafael Mine)
Poinsettia	1911 (Black Hills)	1950s – 1960s (Black Hills)	Mercury, gold, antimony, copper	unknown

The mining district boundaries and names discussed in this section are largely consistent with Tingley's (1998) study of the *Mining Districts of Nevada*. However, adits, prospects, shafts, tunnels, rock cairns, and claim markers are often found outside the designated boundaries. These may represent independent efforts, unpatented claims, failed attempts to follow a vein, prospecting, or perhaps inexact district boundary identification.

Dixie Valley Training Area Study Area

Portions of two mining districts, Job Peak and Mountain Wells, overlap with the DVTA Study Area exclusively in the Stillwater Range, though several others are located near the parcels in the Clan Alpine Mountains. Local Fallon and Stillwater ranching families clearly diversified their economy and juggled several ventures simultaneously. Family names that are primarily known for ranching or commerce in the Fallon area also appear on mining claim locations and deeds. The Kent, Freeman, Kaiser, and Crehore family names appear often in the ranching and mining history of the DVTA Study Areas, particularly in the Stillwater Range (Estes et al. 2017). It is likely that diversifying their investments helped the families avoid fluctuations and downturns in the economy during wars, economic recessions, and depressions, and enabled them to take advantage during upsurges in the value of various minerals.

Stillwater Range

Job Peak Mining District

The Job Peak Mining District, as drawn by Tingley (1998), extends across the Stillwater Range with West Job Canyon and East Job Canyon forming the northern boundary, and continues southeast of Big Box Canyon. As drawn, it overlaps the eastern half of the northern Study Area in the Stillwater Range. This district is grouped into various other mining districts by other researchers, including IXL and Silver Hill District that once encompassed most of the Stillwater Range (Tingley 1998). East Job Canyon currently serves as a geological marker that divides the IXL (to the north) and Job Peak (to the south) Mining Districts.

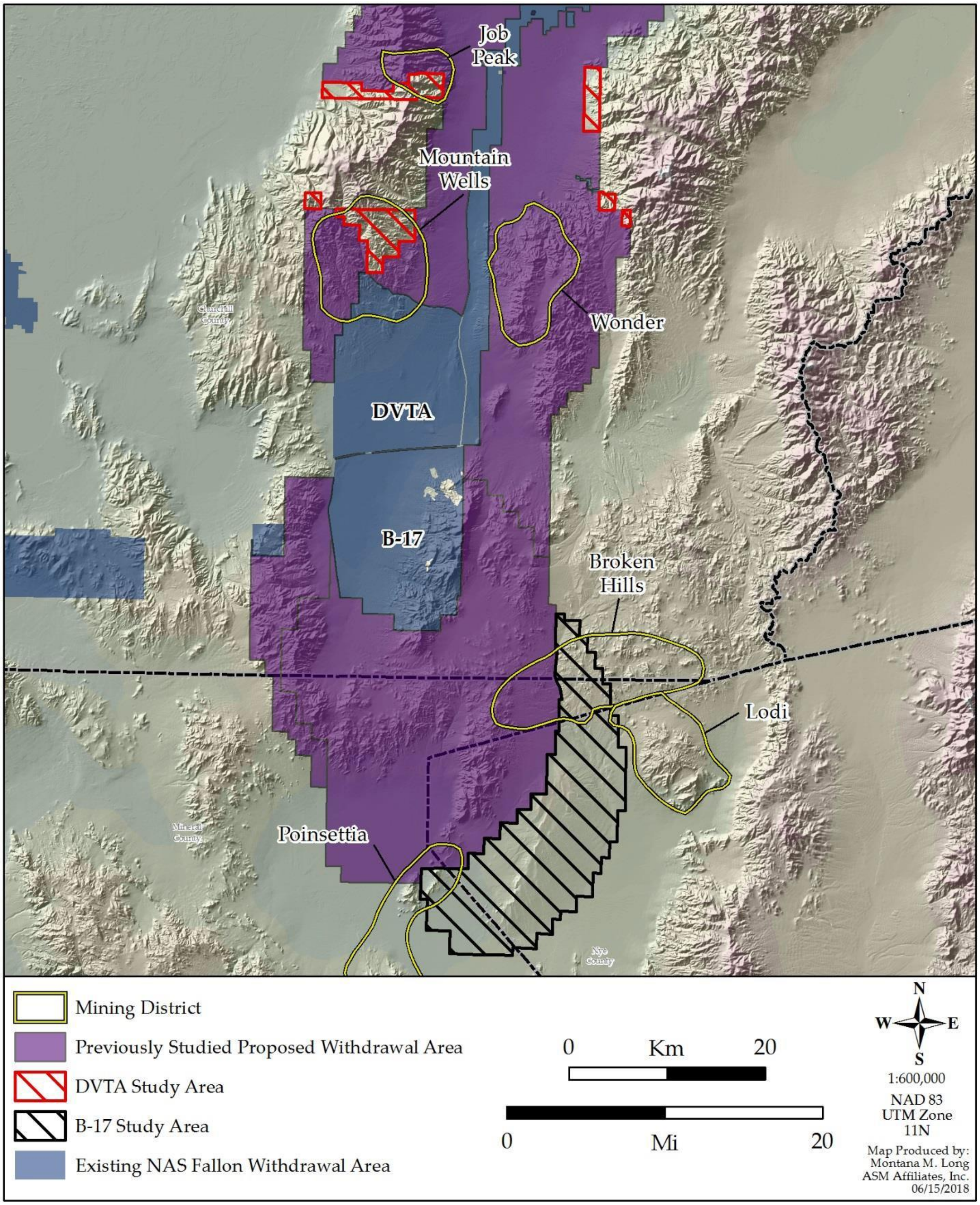

Figure 6-1 Tingley's (1998) Historic Mining Districts in proposed Study Areas (Wonder District shown for reference).

Brothers Henry and Leon Cirac prospected in the Job Peak area before hitting a strike in 1915 that drew attention to the gold-bearing veins crossing Job Canyon. Mineral extraction focused on lead, silver, and copper up to the 1960s (Schrader 1947). However, there is not a great deal of information for this district, and it is not clear what the final production value was for its seemingly limited amount of mining. Bennett and Hoke's (1975) assessment of the Job Peak Mining District boundary extended farther south than Tingley's, spanning the ridgeline between Job Peak and Mt. Lincoln to the south. This extension might have been intended to include, or account for, an area used for mercury mining in 1965. However, Bennett and Hoke did not visit the mine and did not know the exact location. Even so, they describe the operations as a "small, underground mercury mine" with an aerial tramway and a "2-tube Rossi-type retort" (Bennet and Hoke 1975:1). The demand for mercury increased during the 1960s for use in batteries and as an additive in paint before environmental concerns in the 1970s led to it being deemed a toxic pollutant (Wilburn 2013).

The 1972 IXL Canyon, NV, 7.5' USGS topographic quadrangle shows a small cluster of three prospects, a shaft labeled as the "Creore Mine," and a structure in T20N R33½E Section 1 at the head of Willow Canyon (Figure 6.2). Schrader (1947) states that L. W. Crehore (see Agriculture and Ranching section) shipped ore from Job Peak to the Western Ore Purchasing Company. At the time that Schrader recorded the district, there seemed to be a single 40-ft. shaft, which is likely the shaft shown on the map. The "Creore Mine" is located outside the current DVTA Study Area, but is within the proposed DVTA withdrawal. The IXL Canyon map also shows a two-track road leading up the west side of the Stillwater Range that follows the ridge line between Creore and Rough Creek Canyons and leads to the mine and adjacent prospects. The road is discussed in greater detail in the Transportation and Utility Lines section of this Chapter. The road and mining endeavors marked on the map are situated
north of the DVTA Study Area, but may indicate that prospects are nearby.

The adjacent 1972 Job Peak 7.5' USGS topographic quadrangle shows another shaft located at the head of Big Box Canyon in T20N R33E Section 12, inside the Study Area, that is most likely associated with mining at Job Peak. However, there is no information in the Churchill County Recorder document inquiry database or land management records for mining in this area. The presence of a mine shaft in the canyon suggests a strong potential for mining prospects dispersed throughout the surrounding landscape as well. In addition, since the mercury mining location is unknown, it is possible that remains of the mercury mining operation, such as the remains of the aerial tramway and/or a platform for processing machinery, may be present in the area, but it is not known if they are within or outside the proposed Study Area boundary.

Mountain Wells (Mountain Well, La Plata, Chloride) Mining District

The DVTA Study Area surrounding Slaughter and Elevenmile Canyons in the Stillwater Range is almost entirely encompassed by the Mountain Wells Mining District. Tingley's (1998) Mountain Wells Mining District boundary encompasses La Plata Canyon, Black Knob, and Elevenmile Canyon just southeast of Table Mountain down to the flats of Dixie Valley. The Mountain Wells District was organized after silver was located on the east side of the Stillwater Range in 1862. By 1863, the La Plata mining camp began to take shape with constructed stone buildings, drawing a great deal of attention from prospectors and east coast businesses. In 1864, La Plata was briefly named the Churchill County seat from 1865 to 1868; it even hosted a post office from April 1865 to November 1867 (Frickstad and Thrall 1958). La Plata was, possibly, the largest camp in Churchill County in the mid-1860s (Paher 1970). The Silver Wave Mining Company owned the townsite as well as an adjacent wood ranch (Vanderburg 1940).

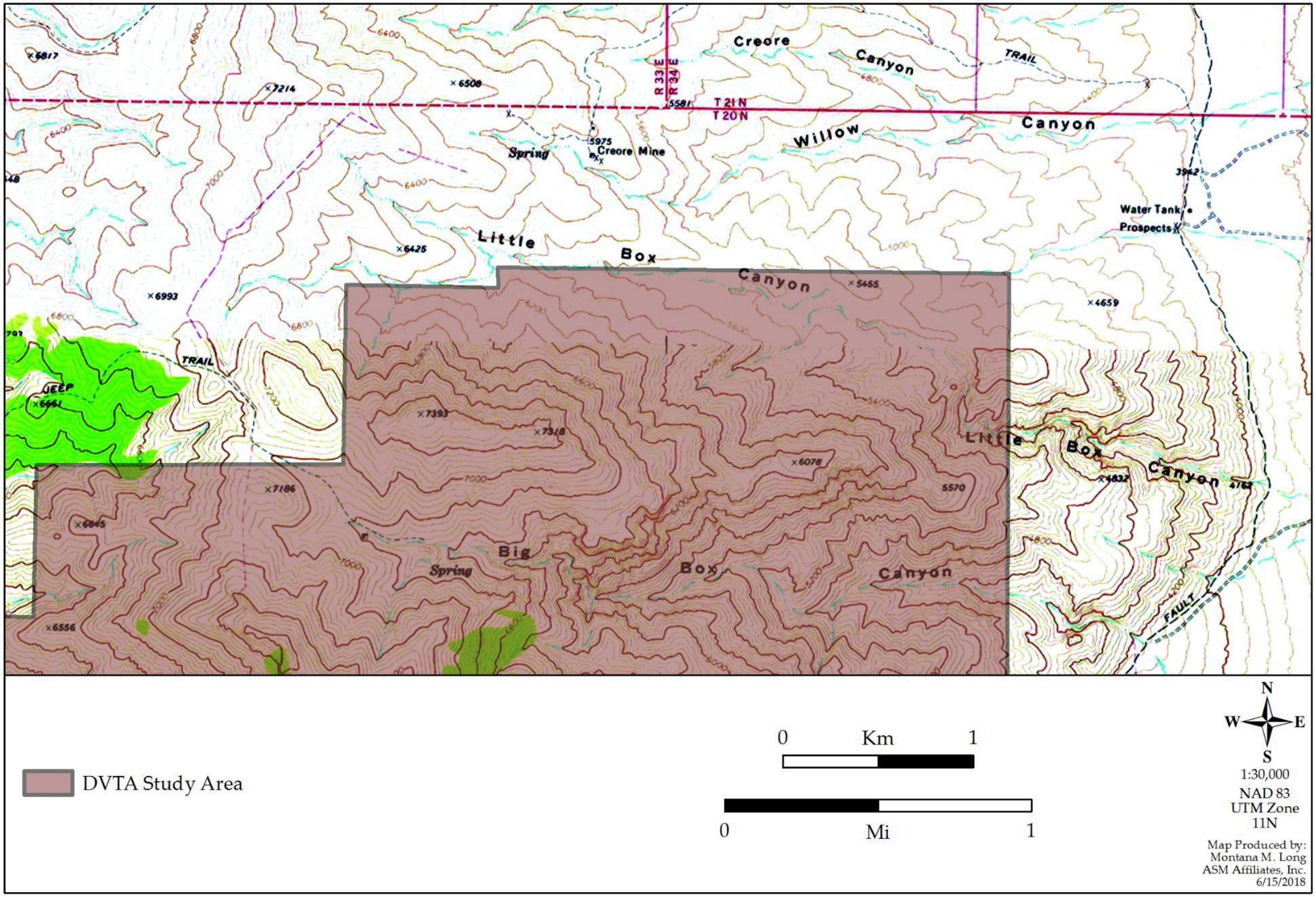

Figure 6-2 Proximity of mining, transportation, and fenceline features to proposed DVTA Study Area.
(1972 IXL Canyon and 1972 Job Peak USGS topographic quadrangles.)

Claims were sold to companies from the east in the 1860s, but the production was relatively low and did not sustain interest. Shortly after the 10-stamp mill was constructed in 1864 at La Plata by the Silver Wave Mining Company, it was moved to Nye County. A second mill was erected in Elevenmile Canyon, but it did not see much production due to the lack of ore (Quade and Tingley 1987). The State Mineralogist's report for 1868 indicated that "the mill was torn down and removed to White Pine" and described the townsite as "desolate" (Nevada State Mineralogist 1869:86). In 1868, with production values in Mountain Wells flagging, Stillwater became the county seat, and a good number of the miners left to participate in the White Pine boom, which effectively drew a close to Mountain Wells's heyday. Schrader estimates the production of the Mountain Wells district during this boom as "several thousand dollars" (Schrader 1947:300).

Small-scale prospecting continued after 1869, and there was a brief boom in 1906 and 1907. In 1906, the *Reno Evening Gazette* reported that "[a]t La Plata, Carter and Brockbank are encountering some very rich ore. They have twelve openings on their claims and the assays run from 80 to 1500 ounzes (sic) in silver, and from $5 to $200 in gold…They had a townsite surveyed last week and four-fifths of the lots are already sold. The new town is named Chloride" (REG 1906). This brief boom is said to have brought in 150 people to the Chloride camp (REG 1907a). Three new mining companies were organized for work around Chloride, including the Bo-Peep Mining Company, the Black Butte Wonder Mining Company, and the Mountain Cedar Mining Company (REG 1907b). Despite the renewed interest, the 1906-1907 boom period did not draw the same number of people or deliver substantial production of ore (Paher 1970). But work continued, and a small amount of silver was shipped out of the district in 1919 and 1920 (Lincoln 1982) and an interest in rare metals drew miners back in the 1920s. In 1927, a man named E. L. Connell was mining at La Plata for cerium, which was used in light bulb filaments, making porcelain and tiles, and mixed in with asbestos (REG 1927). Fluorite was located in the district in 1939, but there are no documented production values (Vanderburg 1940).

It is surprising that there is not more information on the population and mining claims in Mountain Wells given that La Plata was the Churchill County seat for a brief period with a substantial mining camp and townsite. Documents are scarce, likely due to the poor production and short occupation. ASM also could not locate a map of the La Plata camp or associated claims. Paher (1970:95) states that the townsite had a post office, three mills, and business but "[t]here is no evidence to show that a courthouse was built; the county was too small and poor to afford a building." However, the cultural remains of the townsite may provide some data on demography and early political organization in the county, and possibly in the state, for that matter. The historic site of La Plata is located outside the current DVTA Study Area, but within the proposed DVTA withdrawal.

In 1986, Tingley and Quade visited Mountain Wells to take mineral samples and record their observations. Tingley and Quade (1987:58) found that: "[t]he remains of the stone building which housed the 10-stamp mill in La Plata Canyon can still be seen at the old townsite. The site of the old mill in Elevenmile Canyon, southeast of Black Knob Spring…is marked by stone foundations, piles of bricks from walls and old boilers, and fragments of rusting iron and purple glass." They also found that the remains of the 10-stamp mill in La Plata were also visible, but there were no tailings or remains that would help them estimate output or production.

During their visit, Quade and Tingley took two geological samples in the DVTA Study Area, both from T18N R33E Section 3. One sample was taken at the site of a caved-in adit, and the other sample was taken at the site of a narrow prospect trench. The sample locations are located in proximity to the prospects marked in a small drainage east of Elevenmile Canyon and across the canyon from Buckbrush Spring on the 1972 La Plata Canyon, NV, 7.5' USGS topographic quadrangle (Quade and Tingley 1986a, 1986b). These two features are likely historic mining endeavors dating to the occupation of La Plata.

Ruins from the mill in Elevenmile Canyon were originally noted as south of the current DVTA Study Area. This location is on current NAS Fallon- managed lands in the DVTA. The ruins were later updated and recorded as an archaeological site. The recordation details the remains that are present, including stone foundations, depressions, a hitching post, and a refuse deposit suggesting domestic use in the 1870s, but the site has likely been surface-collected by looters (Michel 2014).

Although Tingley's district boundary was drawn as far north as Slaughter Canyon, which runs through the Study Area, there is no indication of any other mining features, apart from the prospects on the west-facing slope above Elevenmile Canyon. It is likely that there are other prospects and historic refuse within the Study Area, given its proximity to La Plata.

Clan Alpine Mountains

The Alpine, Bernice, and Tungsten Mountain Mining Districts are located to the north and east of the proposed DVTA Study Area parcels in the Clan Alpine Mountains, but do not overlap. In addition, no mining features are shown on historic topographic maps within the parcels on the Clan Alpine Mountains. In 1907, S. F. Paliuer submitted an application for water appropriation "on Horse Creek about 3 mi. up creek from Horse Creek Ranch" to be transported to a power plant for use in mining and power (NDWR 1907; Table 6.2). Although the application does not specify the destination, it was likely intended for use for the Wonder Mining District. It should be noted that the diversion location has been documented by NDWR as located in T20N R35E Section 23, which places it within the proposed Study Area, but near Dummy Canyon, about 4 mi. north of Horse Creek. This is almost certainly a transcription error of the location description. Based on the description in the application, it is more likely that the location of the diversion point was in T19N R36E Section 7 or 8, which is about 3 mi. east (upstream) of Horse Creek Ranch and outside the proposed Study Area.

Paliuer proposed constructing a stone dam and diverting the water via flume and pipe to a power plant and then back to the point of diversion. The application was cancelled, and it is not clear if any of the improvements proposed by Paliuer were constructed. If the dam was constructed, there is a strong possibility that the flume and pipe may have crossed through the proposed DVTA Study Area, remnants of which may still be present. In 1910, the Nevada Wonder Mining Company installed a 10-mi. gravity pipeline to bring water from Horse Creek to the Nevada Wonder mine (Vanderburg 1940). Any residual remains of the pipeline would be an important component of the Wonder Mining District. Other than any improvements to Horse Creek specifically related to transporting water to Wonder, it is unlikely that there are mining-related cultural features in the Study Areas along the Clan Alpine Mountains.

Table 6-2 DVTA Study Area Water Appropriation Permit Applications (Mining)

Year	Township Range	Section (Water Source)	Application	Applicant
1907	T20N R35E	23 (Horse Creek)	527	S.F. Paliuer

Bravo-17 Study Area

Portions of three mining districts (Broken Hills, Lodi/Quartz Mountain, and Poinsettia) overlap with the proposed B-17 Study Area. The former two districts are in the northern end, within the Broken Hills, while Poinsettia is further south in Gabbs Valley, covering portions of the Black Hills, and Fissure Ridge.

Broken Hills

Broken Hills Mining District

Prior to its current iteration, the Broken Hills Mining District had been considered part of the much larger Hot Springs Mining District, which included most of the districts in the northern portion of Gabbs Valley. As defined by Tingley in 1998, the Broken Hills district boundary spans Mineral, Churchill, and Nye counties and covers the Broken Hills mining group and the Kaiser mining group in northern Gabbs Valley. James M. Stratford reportedly discovered the Broken Hills mining group in 1905, but did not have adequate resources to mine and develop the site until he returned with his partner, Joseph Arthur, in 1913 (Danner 1992; Schrader 1947). Collectively, they worked the Broken Hills mining claims (Crown Point, Broken Hills, Belmont, and Grand Prize) until 1920 and shipped between $70,000 and $100,000 worth of silver-lead ore out of Fallon and Hazen (Schrader 1947; Vanderburg 1937). The Baxter and Kaiser mines developed around fluorspar deposits concentrated in the Monte Cristo Mountains and became very prolific fluorspar production locations (Tingley 1998). Collectively, the district produced gold, silver, lead, antimony, fluorspar, and tungsten.

Broken Hills Mine Group and Camp

The proposed Study Area crosses the central hub of the Broken Hills mine group and camp and ends just west of the Quartz Mountain mine group and camp (Figure 6.3). In May 1920, Stratford and Arthur sold their property for somewhere between $75,000 and $125,000 to the Broken Hills Silver Corporation (Schrader 1947; Vanderburg 1937). That same year, the Broken Hills camp drew in several hundred people when the district experienced a brief prospecting boom (Schrader 1947). According to Gabbs Valley historian Ruth Danner (1992), buildings were brought from the nearby Wonder Mining District. In July 1920, the Pacific Telephone and Telegraph Company installed a telephone line between Fallon and Broken Hills, and a post office was establish in December 1920 in order to accommodate the rapidly growing population and need for communication. However, by July 1921, investors began to realize that they had paid more for their stock than its actual worth, and interest in the mining claims dissipated. For the year or so that the Broken Hills Mining Corporation was in charge, they had mined approximately $150,000 worth of ore. This was not processed or sold until after they went out of business. In October 1921, the post office closed and residents moved away to seek their fortunes elsewhere (Danner 1992). The location of a rich silver vein at Quartz Mountain in 1925 drew additional miners and lessees back to the Broken Hills area. The Broken Hills post office reopened in 1926 and stayed open until 1935. The newly redeveloped townsite included a Shell Oil gas station, barbershop, pool hall, and second-hand store (Danner 1992).

The boom at nearby Quartz Mountain seems to have incentivized miners and entrepreneurs to look for ways to bring water into the camps. Since the inception of the camps, residents and miners had been hauling water from the Lodi tanks or Holly's Well, 10 mi. to the southeast in Lodi Valley. In 1926, a resident of Broken Hills named C. Craig applied for a water use permit for an underground source at Craig Gulch to supply Broken Hills and Quartz Mountain with water for municipal and mining purposes. However, the applications were all cancelled because Craig did not submit corrected applications (NDWR 1926a, 1926b, 1926c, 1926d) (Table 6.3). In addition, E. Vanderhoff applied for water rights from the Mt. Anne Springs in T12N R34E (outside of the Study Area) to use the water for mining and municipal purposes for both Broken Hills and Quartz Mountain, but the application was later withdrawn (NDWR 1926e).

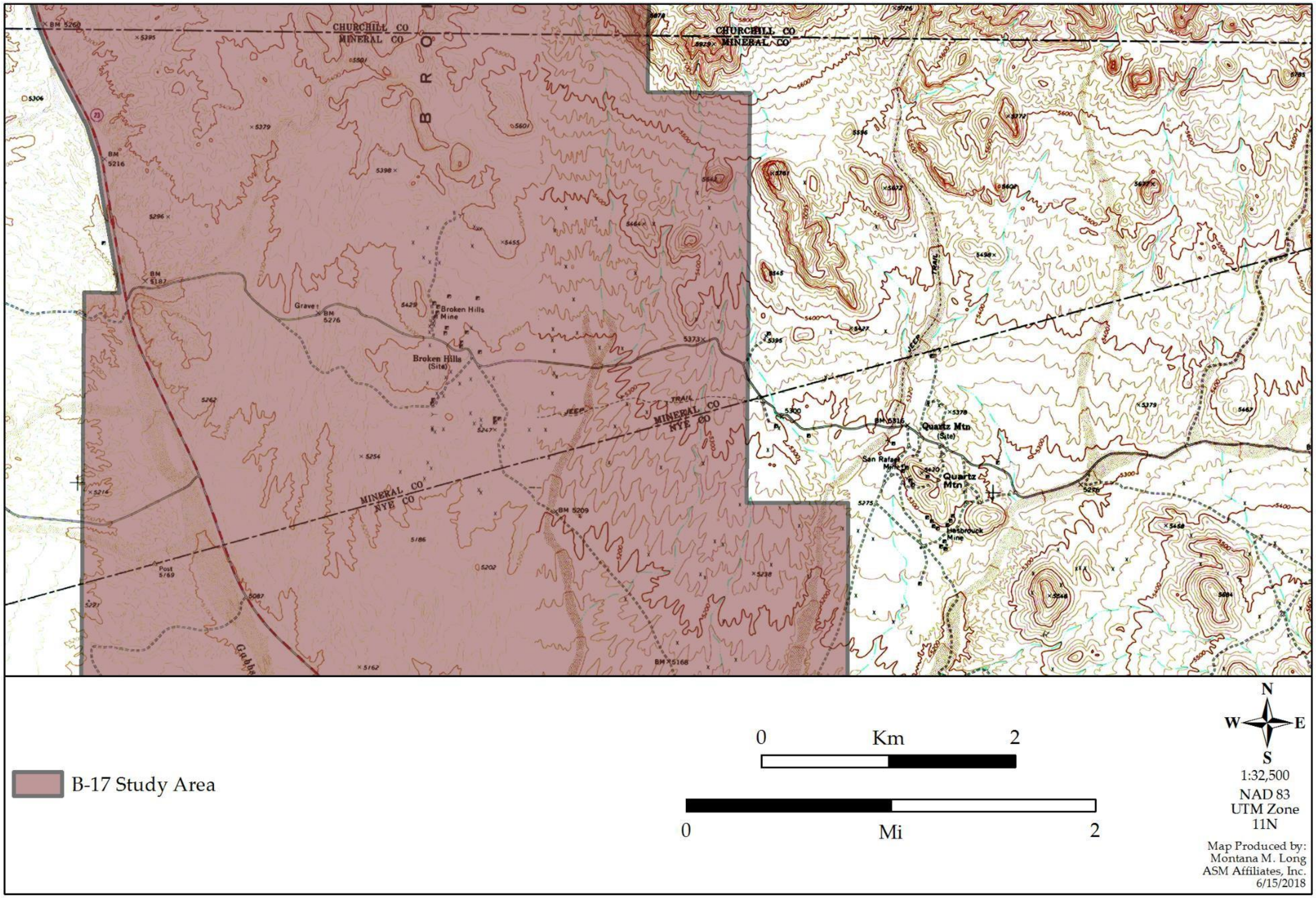

Figure 6-3 Proximity of mining features associated with Broken Hills and Quartz Mountain mines.

(1972 Broken Hills and 1969 Quartz Mountain USGS topographic quadrangles.)

Table 6-3 B-17 Study Area Water Appropriation Permit Applications (Mining)

Year	Township Range	Section (Water Source)	Application	Applicant
1926	T14N R35E	25 (Craig Gulch)	7780 / 7781/ 7782 / 7783 (Cancelled)	C. Craig

Mineral surveys were completed for three clusters of the Broken Hills mining claims in 1926 and 1927. The Broken Hills mining group cluster includes the Calico Quartz Mountain Mines Company's five claims, sequentially named Calico, Calico No. 1-No. 3, and Calico No. 5 (omitting No. 4), which included one adit, one tunnel, four shafts, one trench, and four pits (Figure 6.4). Most location dates for the Calico group are from 1920, with the exception of Calico No. 5, which was located in 1925 (Bruce 1926).

In 1927, two additional clusters of claims in the Broken Hills were surveyed for the San Rafael Development Corporation (Bruce 1927a, 1927b). The majority of housing and the Broken Hills townsite appear to have been situated on the three West Extension claims that were located in 1925 and 1926. In March 1926, the San Rafael Development Company bought these claims for a considerable sum from a man, who died just two months later in his cabin at Broken Hills. The set of three claims (West Extension, West Extension No. 1, and West Extension No. 2) had 20 frame houses, 2 corrugated metal houses, and a corrugated metal garage, as well as 3 shafts (Figure 6.5) (Bruce 1927a). Water still had to be supplied from Lodi, 15 mi. southeast of Broken Hills (Schrader 1947).

Mineral Survey No. 4650 shows several structures in a cluster of mining claims (January, Broken Hills Fraction, Broken Hills Special, Broken Hills Special No. 1 and No. 2). The structures include four bunkhouses, a garage, an office, a cook house, an assay office, a house, an ore bin, shop, store, and engine houses. The claims are identified as having been located in 1920 with the exception of the January claim, which was located in 1925. At the time, work on the claims included two cuts, two trenches, and two shafts (Figure 6.6) (Bruce 1927b).

Mining in the Broken Hills group continued sporadically, and the population waxed and waned. In 1941, the Broken Hills mining camp hosted a school for seven children from Broken Hills, Quartz Mountain, and the Baxter mines. However, once World War II began, the demand for precious metals declined, while there was an increase in production of minerals that would help with the war effort, Mining interest was diverted to the Baxter/Kaiser mines. In 1950, Thomas Wilson described a visit to Broken Hills in the *Nevada State Journal:*

> There was no one in town that Monday morning but it appeared one or two houses were being lived in. Of chief interest to us was the largest building which had one entire side blown out by storms. The building had been a postoffice on one side, and evidently a casino or club on the other. Pigeon holes were filled with old letters and much 20-year-old mail was scattered all through the postoffice section. An ancient phonograph (and?) two old card tables with green oil cloth tops and chairs were all that remained on the club side (NSJ 1950).

It is unlikely that structures are in the same condition as they were in 1950, but there are undoubtedly extensive and discernible refuse deposits and mining-related features present.

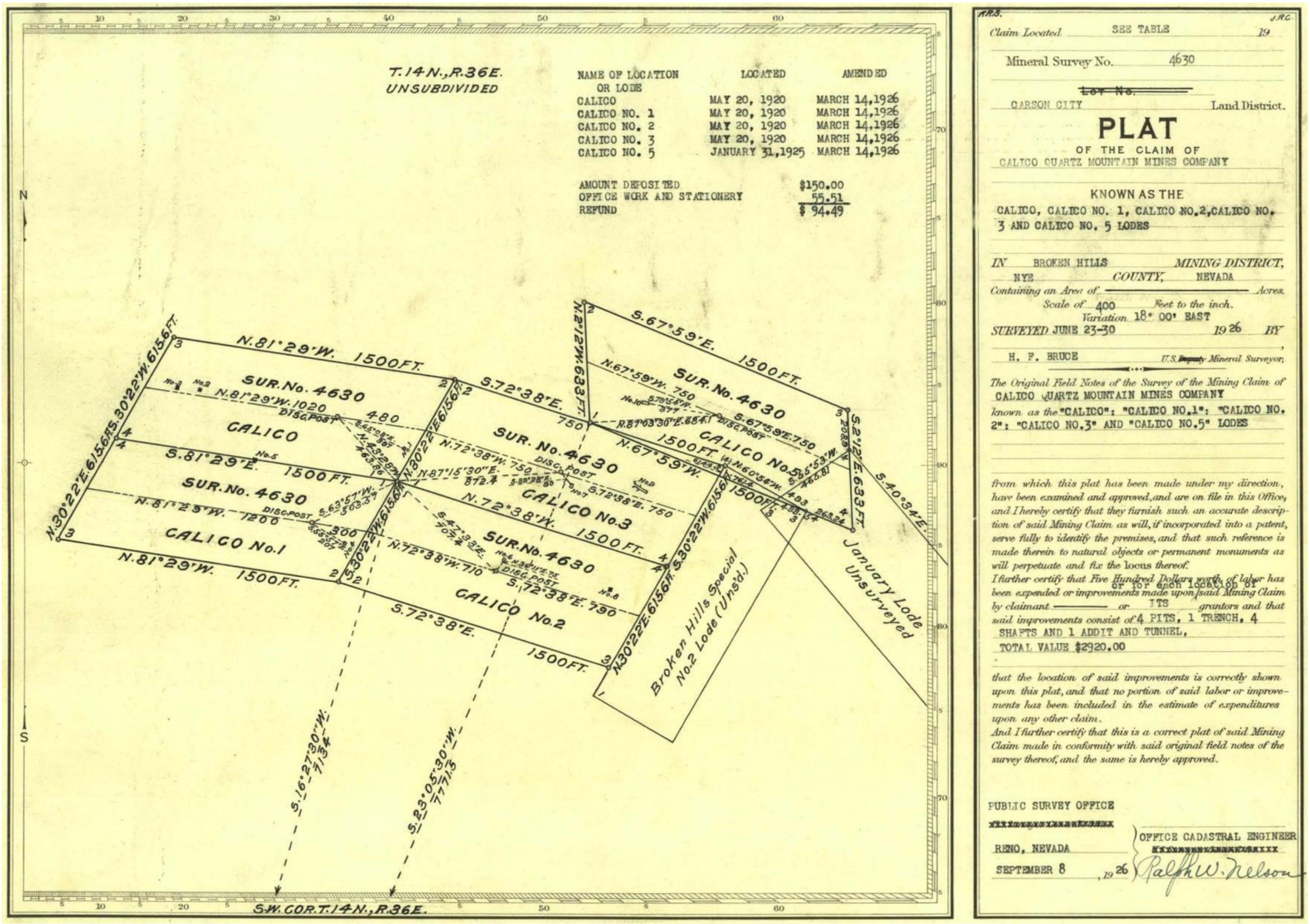

Figure 6-4 Mineral Survey 4630 of the Calico Quartz Mountain Mines Company claims in T14N R36E.

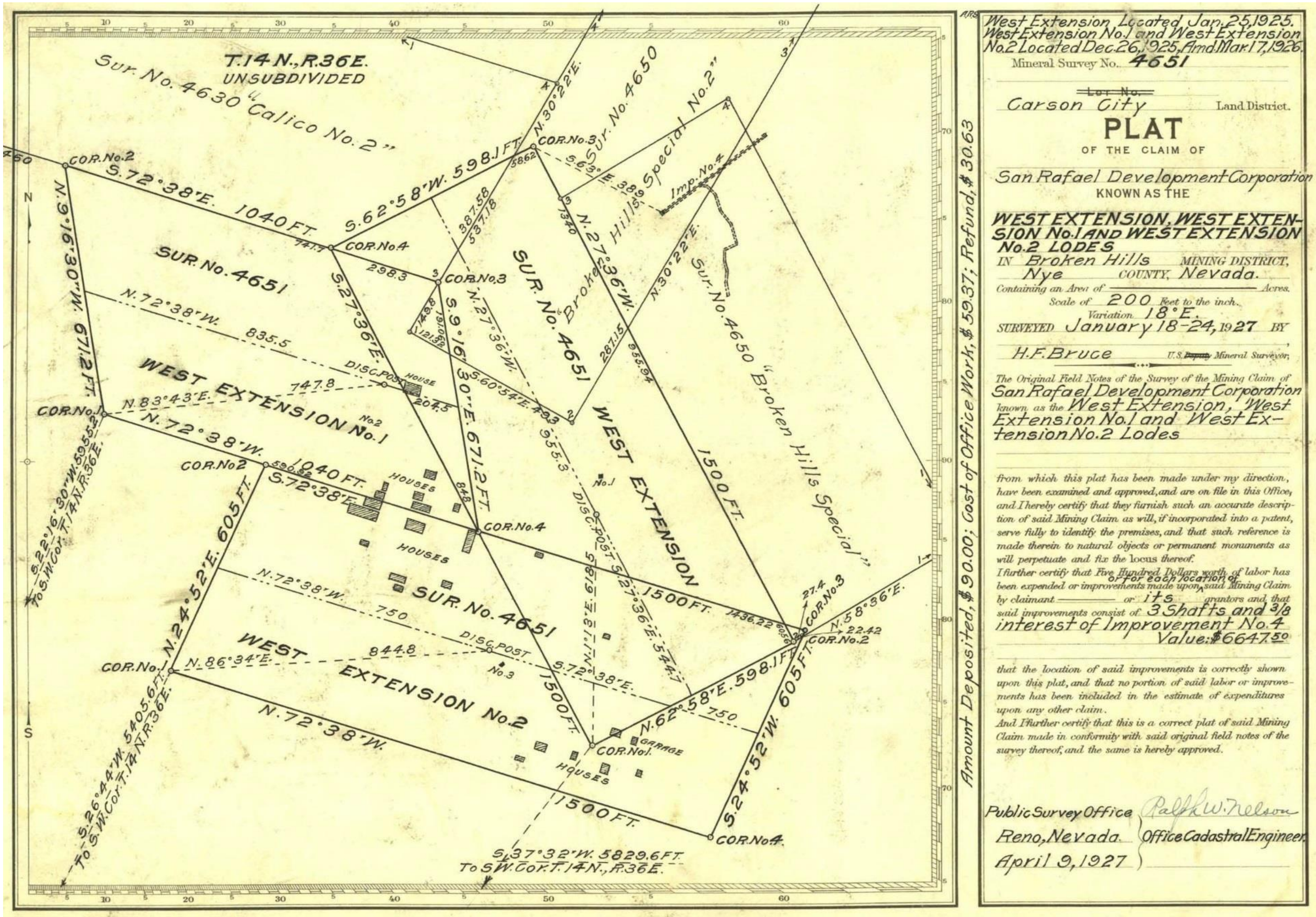

Figure 6-5 Mineral Survey 4651 of the San Rafael Development Corporation Claims in T14N R36E.

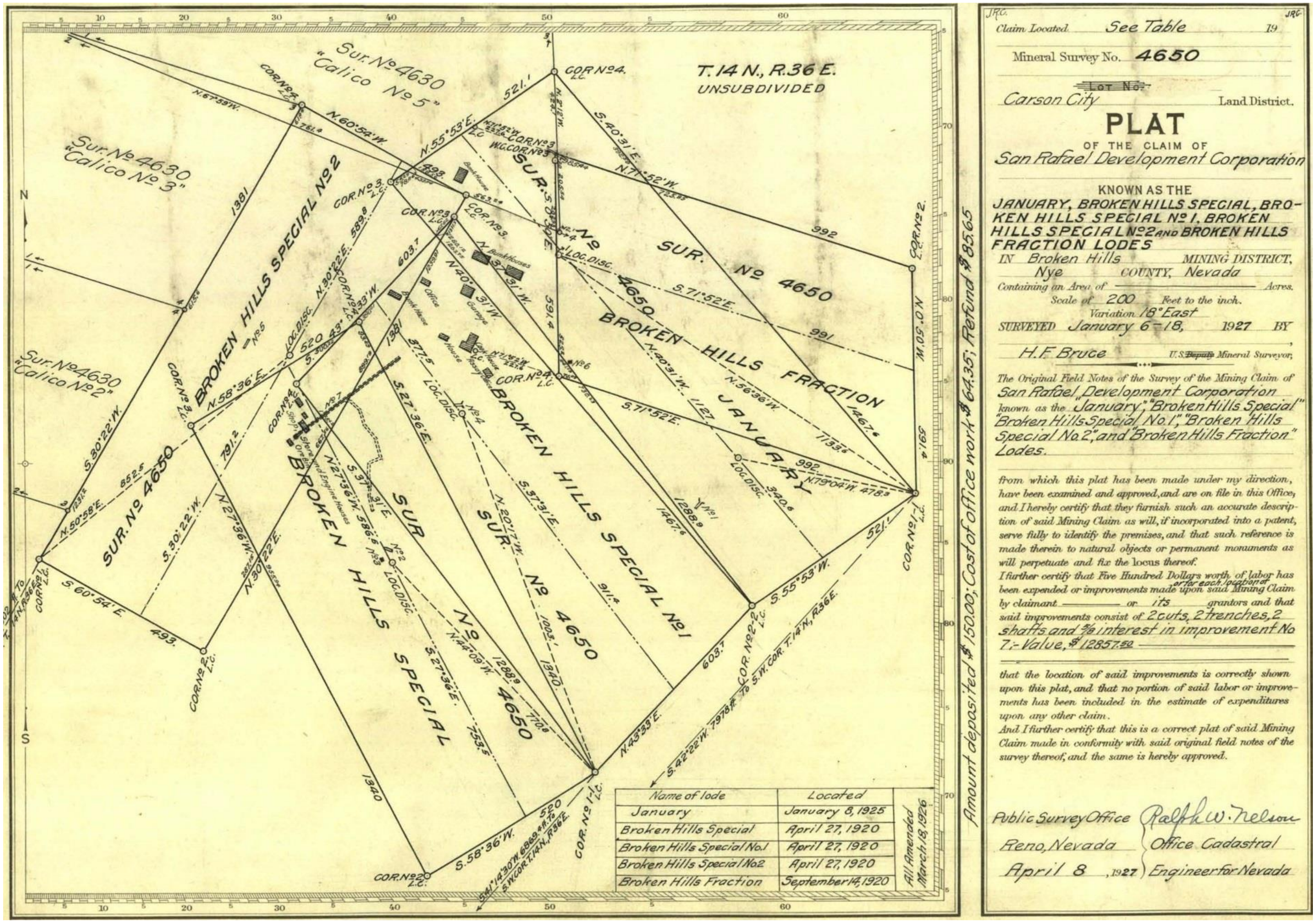

Figure 6-6 Mineral Survey 4650 of the San Rafael Development Corporation Claims in T14N R36E.

The Broken Hills mining complex and mining camp has not been fully recorded, but has an entry based solely on the historical record. Since the site has not been documented to archaeological or architectural standards, any remains would likely require extensive recordation to include any standing structures and mining-related features as part of the Broken Hills mining district. Most importantly, a grave is situated along the road into Broken Hills. There appears to have been at least two iterations of the headstone. In 1971, Danner photographed a marble headstone at the gravesite, which may be the original one erected at the time of burial. When archaeologists recorded the site in 2002, there was no headstone on the gravesite, although the marble base marker is present and matches the photograph taken by Danner in 1971. Photographs online that appear to have been taken by travelers in 2017 show the grave with a wooden headstone with an inscription similar to the original marble headstone.

Baxter/Kaiser Mine Group

The Baxter/Kaiser Mine Group is confined to an unnamed hill on the eastern flank of the Monte Cristo Mountains just west of the current proposed B-17 Study Area in T14N R34E S25, but within the proposed B-17 withdrawal (see Estes et al. 2017). It is included in this discussion because of its association with the Broken Hills mining district and the potential for mining-related resources to span the area between the Broken Hills and Kaiser mining groups. Fluorspar claims were located in the foothills of Mount Annie by Vet S. Baxter in 1922 (Vanderburg 1937). At the time of the location, fluorspar was not in great demand, but the deposit of fluorspar was so pure that “the mine became one of the nation’s leaders in high quality fluorspar” from the 1930s to the 1950s (Danner 1992:153). The mining effort started off small, with only two men working the mines in October 1936 (Vanderburg 1937). By 1941, a claim map of the Baxter mine group shows a row of cabins, a bunk house, a boarding house, four houses, and five mining shafts.

In 1952, the Kaiser Aluminum & Chemical Corporation acquired the Baxter mines and reportedly paid $350,000 for the property. The Kaiser Corporation also planned for two wells to be excavated at the base of the Monte Cristo Mountains (T14N R35E Sections 19 and 31) and water to be piped into the newly renamed Kaiser Mines and mining claims via aqueducts. They also constructed a fluorspar reduction mill in Fallon, which was necessary to process the fluorspar coming from the mines by converting the ore into acid-grade fluorspar concentrate, which, in turn, was used in the production of aluminum (NSJ 1952a, 1957). Accordingly, ease of transport and road quality on Hwy 23 and U.S. 50 between the mines and Fallon were important for both cost efficiency and production speed. Changes to the transportation system in Gabbs Valley are addressed in greater detail in the Transportation and Utility Lines section of this chapter.

Historical documents refer to this group alternatively as the Baxter Mines or Kaiser mines, but they represent the same claim group. Under both owners, the mines had a very successful run and drew a lot of attention for their contribution to the war effort. In March 1957, the *Nevada State Journal* announced that the Kaiser mine ran out of ore, effectively leaving 30 men unemployed (NSJ 1957). The Baxter/Kaiser Mine is said to have produced 6 million dollars in fluorspar between 1928 and 1957 (Bennett and Hoke 1975).

The Kaiser Mine is within the proposed B-17 withdrawal. Recent visits to the area by the authors confirm the presence of multiple structure ruins, one standing structure, shafts and other mining- related features, as well as dense accumulations of refuse. Evidence of modern use includes target practice, grilling, and perhaps illegal surface collection. Given that the Baxter/Kaiser mines were contemporaneous with Broken Hills and Quartz Mountain, and there was a flow of people and resources between the three camps, it is likely that there are mining-related resources in Gabbs Wash between the two properties. For example, a mine shaft, adit, and associated refuse were recorded in the northern section of the B-17 Study Area in 1992 (Mecham 1992). The shaft is shown on the Broken Hills, NV, (1972) and, judging from the refuse, the site roughly dates to the 1930s (Mecham 1992).

Lodi/Quartz Mountain Mining District

The Lodi mining district encompasses the Lodi Hills, at the northeast end of Gabbs Valley, and the western boundary abuts the southern end of the Broken Hills Mining District. The very northwestern portion of Lodi Mining District, as drawn by Tingley (1998), overlaps with the proposed B-17 Study Area in T14N R36E, Section 31. This area of the district is centered on Quartz Mountain, which has been described as its own district, separate from both Broken Hills and Lodi (Tingley and Quade 1986). However, Tingley (1998) included it as part of the Lodi District, and it is so considered for the purposes of this report. As such, this section will provide a general background on Lodi and then focus on work surrounding Quartz Mountain, given its proximity to the Study Area and its close association with the Broken Hills mining district.

Work in the Lodi Mining District initially started in the Lodi Hills, located 1 mi. east of the proposed B-17 Study Area boundary. In 1874, silver-lead ore was first discovered at the Illinois Mine in the Lodi Hills. The Lodi Mining District was established the following year, and by the end of the first operation period in 1880, about $400,000 of ore had been produced (Paher 1970). This first boom is likely when the Lodi water tanks were installed in Lodi Valley (Danner 1992). A second boom began in 1905 centered on the Illinois mine, which resulted in a townsite being laid out at the Lodi Tanks and at the mine site. However, the mine was inundated with water, and work was halted in 1914 (Kral 1951; Paher 1970). For the next few decades, mineral production from the Lodi District came primarily from processing slag, stope fill, and tailings left over from early stages of mining. Interest in the Lodi District reignited in 1944 when tungsten was discovered in the district. By 1946, Nevada had the highest rate of tungsten production in the country (Tingley et al. 1993). The Victory Mine at the southwest end of the district yielded very high production rates of tungsten through the 1950s and early 1960s (Paher 1970).

Discoveries were made on Quartz Mountain in 1920, but extensive work on the claims did not begin until 1925 when a rich silver vein was located (Paher 1970). By the spring of 1926, a townsite had developed with several hundred occupants. Buildings were moved from Goldfield and Rawhide to support the businesses developing in the townsite, including barbershops, general stores, grocery stores, and four cafes (Paher 1970). Both Quartz Mountain and the adjacent Broken Hills District had contemporary booms in the 1920s and, as such, shared socioeconomic resources. Initially, Quartz Mountain miners went to a saloon in Broken Hills to pick up mail or packages, and both camps had to acquire their water from the Lodi water tanks. However, the boom was short-lived, and by the end of 1926, the bustle at Quartz Mountain was over, although their post office remained open until 1929 (Hall 1999).

Quartz Mountain has an assigned KNBR agency number (CrNV-03-2190) based on general knowledge of the mining district (Pendleton et al. 1982). None of the patented mining claims from Quartz Mountain extend into the Study Area; however, the USGS published a map in a 1927 report on the Quartz Mountain District that shows claims across the valley floor west of Quartz Mountain and inside the Study Area (Figure 6.7). No information could be found on these claims, but there are a number of prospects and shafts visible on the Quartz Mountain and Broken Hills 7.5’ USGS topographic quadrangles that span the alluvial fan between the hub of Broken Hills activity and Quartz Mountain (see Figure 6.3). In addition, geologist Peter Hahn authored a report in 1972 stating that he was part owner of a series of molybdenum claims located west of Quartz Mountain, extending into the Study Area (Hahn 1972).

Overall, cultural resources related to mining in the Broken Hills Mining District and the Quartz Mountain area of the Lodi Mining District can provide a great deal of data about small-scale mining operations during the 1920s through the 1950s. Remains of the numerous boarding houses, post offices, stores, and schools (if still present) can provide information on mining life during the Great Depression and World War II. This era of mining history is generally neglected, but has an important role in Nevada history.

Gabbs Valley

Poinsettia Mining District

The northern portion of the Poinsettia Mining District encompasses the Black Hills and Fissure Ridge, south of the Monte Cristo Mountains in Gabbs Valley. It overlaps with portions of eight sections in T12N R34E of the proposed B-17 Study Area, including Fissure Ridge and the eastern flank of the Black Hills. The portion of the Poinsettia mining district outside the Study Area includes the bulk of the Black Hills and spans Gabbs Valley to the south, covering Mystery Ridge at the southern end and the Poinsettia Mercury Mine, for which the District is named. The district was originally limited to a small area around the Poinsettia Mercury Mine but has since been expanded to include scattered mines within Gabbs Valley (Tingley 1998:57). This report provides details solely regarding claims or mining-related features that occur on Fissure Ridge and the Black Hills, areas that are directly pertinent to the proposed B-17 Study Area.

The Black Hills and Fissure Ridge area yielded gold and silver dating back to at least the 1950s but may have been mined as early as the 1910s. The Black Hills were marked as a mining location on the 1957 Walker Lake, NV, 1:250,000 topographic map and this may have been due largely to the mining work by the Bartsas. Several claims were held by Peter and Mary Bartsas on the Black Hills immediately west of the Study Area with location dates in the 1950s and 1960s (LR2000) in T12N R33E Sections 25, 26, and 36, including a millsite. Most of the available data for mining in the Black Hills comes from a promotional document created by Rawhide Mines Inc., which outlined plans to consolidate the Lithia, Rita, and Desperado mines in the Black Hills as the “Desperado Properties” to mine for gold-silver ore.

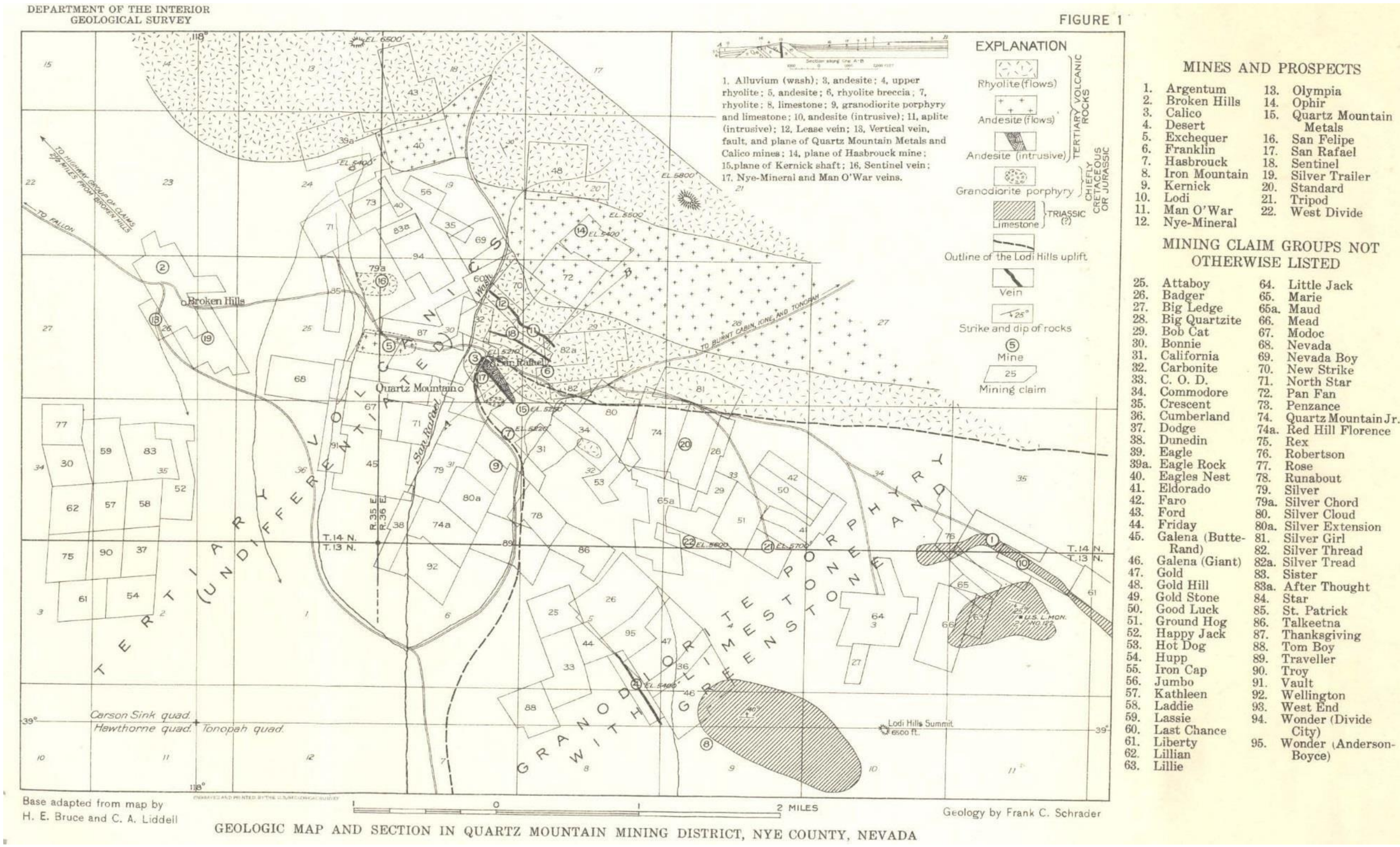

Figure 6-7 Geology and extent of claims associated with the Broken Hills and Quartz Mountain Mining districts (USGS 1927).

The document indicates that the Lithia claims were mined as early as 1911 and were formerly called the "Ringling" claims because of an association with circus people. They produced until Wartime Federal Order L-208 closed unnecessary mines and were acquired and worked by a different owner after the war. The new owner constructed a mill on the site in the 1960s. The Lithia, Rita, New World, and Naugatuck claims were combined into the Desperado Project in the 1980s in order to open them collectively (Rawhide Mines, Inc. 1980). Location dates for their claims, named Lithia, are on file with the Mineral County Recorder, and information in LR200 indicates that prospecting took place as early as 1952 and that the claims were not closed until 2002. No production values are available.

Many mining features are visible on the 1980 Mount Annie, NV, and the 1979 Ramsey Spring, NV, 7.5' USGS topographic quadrangles in the Black Hills on Fissure Ridge, and they likely date to the 1950s through the 1970s. A small hill immediately west of Fissure Ridge in T12N R34E Section 18 has six prospects and one adit recorded on the map. Two shafts are shown on a finger ridge of Fissure Ridge in T12N R34E Section 8. Additional prospects are located on the tip of Fissure Ridge in T12N R34E Section 5. All of these are outside the current proposed B-17 Study Area, but are within the proposed B-17 withdrawal (see Estes et al. 2017). No mining features are mapped on the portion of Fissure Ridge and the eastern flank of the Black Hills that are within the current proposed B-17 Study Area.

Agriculture and Ranching

Following the rush to the Comstock Lode in 1859, the Fallon area began to develop an active ranching and farming industry to grow and raise food for the mining camps (Townley 1998). In order to provide meat to miners on the Comstock, ranchers would drive herds to towns in the mining district, where butchers would slaughter the cattle and sell the meat to camp residents (Townley 1998). In addition, the transportation and communication lines (Pony Express, Telegraph, Overland Stage Company) passing through the area were relatively well established in the 1860s, which required food for travelers and station keepers, and hay and grain for horses. Alfalfa was introduced to Nevada in 1864 and quickly became the staple crop of the Lahontan Valley (Townley 1998). Farms and ranches supplied many of the growing industries in the early stages of Nevada history with meat, milk, and grains. When mining in the Comstock declined in the 1880s, ranchers looked to California to sell their products in order to stay viable (Townley 1998). In the nineteenth century, these ranches and farms were established on existing arable land, leaving lands with no method of irrigation wide open for development if the water problem could be solved.

Irrigation in the Fallon area has always been an issue for ranchers and farmers, who relied on the Carson River and its yearly fluctuations in discharge. Plans for a large-scale irrigation project began in earnest in the 1890s, spurred on by flooding in the 1860s. After the Carson River flooded in 1862, concerned Churchill County residents petitioned to construct a bulkhead that would divert water from the Old River (which ran north to the Carson Sink [Lower Carson Lake]) into the South Branch (which ran south into Upper Carson Lake) (Townley 1998). The diversion was the first attempt to control water flow and divert it for irrigation (Townley 1998). Forty years later, construction began on the Newlands Project, a large-scale system of canals designed to divert water to larger areas of the Carson Desert in an attempt at reclamation of desert lands for agriculture.

The ease of travel to and through the state of Nevada in the early twentieth century increased interest in settlement of areas that were generally considered uninhabitable. Land in Dixie Valley was used for grazing as early as the 1870s; however, it was long thought to be unsuitable for agriculture due to reputed high levels of black alkali in the soil and few opportunities for irrigation (Townley 1998). Nevada began to form plans and develop acts that would support irrigation for crops and the search for groundwater. The October 22, 1919, Pittman Underground Water Act allowed the Secretary of Interior to issue permits to citizens to drill for groundwater on public lands in Nevada. Francis G. Newlands, of the Newlands project, was a main proponent of this Act before he passed away in 1917.

Dixie Valley and the surrounding ranges started to garner greater public attention in the early 1900s. As various mining districts began to grow, particularly Wonder and Fairview, ranchers and farmers looked to settle in Dixie and Fairview valleys. During the early twentieth centuries, artesian wells were developed in Dixie Valley. In 1915, the *Reno Evening Gazette* published an article titled “Take Up Some Land” that urged people to buy land in Churchill County stating: “There are still large tracts of public territory that may be taken up as a homestead or under the Desert Land Act and the young man or woman with a few hundred dollars saved up can go into nothing better than into farming” (REG 1915). The presence of artesian wells began to draw settlers to the valley, and the resulting cluster of homes became the Dixie Valley settlement.

Ranchers were using the Stillwater Range for summer grazing as early as the 1870s (Fowler 1990). However, the Acts that facilitated turning arid lands into properties for farmers, residents, and ranchers also led to overgrazing. In 1934, President Roosevelt signed the Taylor Grazing Act in an attempt to prevent overgrazing on public lands. The Act resulted in six grazing districts being established in Nevada between 1935 and 1951, all of which contain named grazing allotments surrounding the proposed Study Areas (RCI 2016). Ranchers still populate the region, and there are currently grazing allotments in use that overlap with NAS Fallon-administered lands. Grazing allotments in the DVTA Study Area include White Cloud and Mountain Well-La Plata in the Stillwater Range, and Cow Canyon and Dixie Valley along the Clan Alpine Mountains.

Water rights applications, newspaper accounts, and census records were collectively used to provide information on agricultural and ranching endeavors in the DVTA Study Area. For clarity, the section below is divided by mountain range (Stillwater and Clan Alpine) in order to acknowledge the diversity of activities across the ranges.

Dixie Valley Training Area Study Area

Stillwater Range

There was a substantial Paiute community living in the Stillwater, Fallon, and Carson Sink area in the late nineteenth and early twentieth century. Paiute families continued to utilize the Stillwater Range, including parts of the range that are included in the DVTA Study Area, for herding and collecting resources while they worked for local ranchers, and continued entrepreneurial work selling items in Stillwater, Fallon, or at the Walker Reservation (Fowler 1990). Some of the activity was borne out of necessity, since the development of ranches in the 1870s had a drastic effect on resources through sheep, horse, and cattle grazing, as well as leveling cattail growth in marshes to develop ranches and diverting water for irrigation. According to Fowler (1990:53): “Although they were living at Fallon, some 15 mi. from Stillwater and Carson Lake and farther yet from Carson Sink, people still went to these areas to take traditional foods…(Sam Dick) also continued to take his family to the east side of the Stillwater Range for pine nuts, to the area south of Jobs Peak that was his by right.”

Some of the Paiute families ended up working for local ranchers, including the Kent and Freeman families (Fowler 1990). In fact, Fowler (1990:39-40) states that “In the 1870s, an Indian colony grew up on land near the Kent ranch, north of Stillwater, and many families moved there looking for jobs on nearby ranches.” Work for the local ranches varied but also required use of the range:

> Horse and hog hunting were favorite occupations as well. By the 1890s, wild horses had increased in number in the Stillwater Range and the marshes and were competing with the ranchers’ cattle for summer grazing. Indian men in the area were paid a bounty on the horses, and the men sometimes kept the meat for their families. Billy Springer, Sam Dick, and others had a horse corral in Cox Canyon, on the west side of the Stillwater Range.

(Fowler 1990: 48). In an oral history interview, Ira Hamlin Kent states that Paiute men and women from the nearby reservation came to work on the Kent ranch consistently in the early twentieth century. They made up a bulk of the workforce on the ranch even though they only worked during the summer and never in winter (Churchill County Oral History Project 1997).

The Kent family has been ranching in the Stillwater Range for at least a century. Ira Herbert Kent first moved to the Stillwater area in the 1870s from Pennsylvania (Churchill County Oral History Project 1997). Almost immediately, the Kent family began grazing cattle in the Stillwater Range during the summer and in the Carson Sink in winter (Fowler 1990). The Kent family has a long history in Churchill County, with political, social, and economic connections in the area. In addition to ranching, the family had mining claims in the Stillwater Range and conducted retail business in local towns. Ira Herbert Kent opened a mercantile store in Stillwater that later moved to Fallon (Figure 6.8). In addition, Ira's wife, Mary, was the daughter of Churchill County State Senator Charles Kaiser, which undoubtedly gave them some political leverage.

Figure 6-8 Photograph of the I. H. Kent Co. Exterior in the early twentieth century. *(University of Nevada Reno, Digital Collection.)*

The Kent Land and Livestock Company filed several applications for water rights in the southern portion of the Stillwater Range in the 1910s and 1920s (Table 6.4). This area of the Stillwater appears to have been used almost exclusively by the Kent family and the John W. Freeman company for grazing during the twentieth century. In 1931, Charles E. Kent, son of Ira Kent, received a certificate of appropriation of water for the Freeman Creek and Canyon for watering 3,000 sheep, 200 cattle, and 100 horses. The water was diverted from the spring with a pipe into two wooden troughs, each measuring 7 ft. long.

Table 6-4 DVTA Study Area Water Appropriation Permit Applications (Agriculture/Ranching)

Year	Township Range	Section (Water Source)	Application	Applicant
1917	T19N R33E	22/ 23 (Cains Spring)	4518 Certificate 1836	Kent Land & Livestock / John W. Freeman Company / Charles Bailey
1918/1929	T20N R33E	10 (Lyman Canon Springs)	4597 Certificate 1580	Joe Munis / J.P. Aldaz
1929	T19N R35E	12 (Horse Creek)	9178 (Cancelled)	William Barbeau
1929	T20N R33E	12 (Freeman Creek and Canyon)	8834 Certificate 1675	Kent Land & Livestock Company
1931	T19N R35E	12 (Horse Creek)	9428 Certificate 2566	Horse Creek Ranch (Rubert R. Spencer)
1950	T20N R33E	1 (Crehore Basin Spring)	11822	Howard Turley
1979 (1905)	T20N R33E	12 (south fork of Freeman Creek)	V03219 Vested Water Rights	Nina Kent
1979 (1905)	T19N R33E	21 (Wildhorse Spring)	V03221 Vested Water Rights	Ira Kent

In the 1970s, Ira Hamlin Kent, Ira Herbert Kent's grandson, and his wife, Nina Kent, applied for vested water rights on several springs in the Stillwater Range (Table 6.4). Two of these water sources are in the proposed DVTA Study Area along the Stillwater Range. One of the sources is Wildhorse Spring in T19N R33E Section 21, and the other is the south fork of Freeman Creek in T20N R33E Section 12. The application for both sources indicates that they had been used by the Kent family, starting with Ira Herbert Kent, for stockwatering since 1905. In both cases, water was diverted with a spring box and pipe leading to a watering trough. Both applications provide the same historic data for the source to water 1,000 head of cattle from 1905 to 1918; from 1918 to 1941, the water was used for 5,000 sheep and 150 cattle; and from 1943 to 1979 it was used for 600 to 900 cattle. The range was closed for aerial gunnery practice between 1941 and 1943, so the family did not access or use the water source during that time.

Ira Hamlin Kent was interviewed for an oral history project in 1994 and provided information on how ranchers used water rights to establish their own grazing areas (Churchill County Oral History Project 1997). The water appropriation was a crucial way for the Kent family to prevent other sheepherders, who traveled from Idaho to Arizona, from infringing on their grazing lands. Ira Hamlin Kent explained "…the way you controlled the water, you filed on the water and appropriated your spring, under the state law. If you had a spring appropriated, under the state law, you controlled all the grazing within a 3-mi. area of that spring. So, Dad (Charles Kent) appropriated these waters so that they overlapped with one another. If one of these outfits got in on ours, they could have them arrested for trespassing, see." (Churchill County Oral History Project 1997:112). In 1947, Howard Turley applied for appropriation rights at the Crehore Basin Spring (T20N R33E) for stockwatering about 200 head of cattle within the Study Area. His proposed improvements would have included 50 ft. of pipe to a trough. However, the application was denied "…on the grounds that the Approval thereof would impair the rights of Protestant Kent Land & Live Stock Co., and for the further reason that the point of diversion is outside the boundaries of Applicants Turley's range allotment" (NDWR 1950a). Through the water appropriation permitting process, the Kent family was able to maintain large portions of the Stillwater Range exclusively for their grazing use.

The Kent family exclusively used white sheepherders, although Paiutes used to work on the Kent ranch, and travelling Basque sheepherders passed through the area. In his oral history, Ira Hamlin Kent stated that they never used Basque sheepherders, primarily because the Kent family could not communicate with them due to the language barrier. Their two white sheepherders would take two bands (3,400 ewes) of sheep and head into the mountains, Ira Hamlin Kent says that "…according to state law, they can only be by themselves for five days. And so every fifth day, we'd take groceries to them, because they had no way to get groceries. I'd take the groceries out and spend all night, usually, with them, and then come back the next day" (Churchill County Oral History Project 1997:114). When the Kent family were ready to sell cattle or sheep, they would drive the animals to the stockyards and Fallon, where they would then be loaded onto the railroad (Churchill County Oral History Project 1997).

There is evidence of Basque residents running a sheep ranch in the central portion of the Stillwater Range. In 1917, Joe Munis submitted an application for water appropriation at Lyman Canyon Springs (aka Long Canyon Springs and now labeled as Poco Canyon) (see Table 6.4). The water was to be used for irrigating 14 acres, stockwatering, and domestic purposes. Munis planned to build a 40-ft. earthen dam in order to impound the water and then convey it to various places on the ranch via ditches and pipes. The map accompanying the application in 1917 and the map accompanying the certificate in 1919 both show an extensive ranch on the canyon floor that included a house, a corral, a sheep shearing pen, water troughs, cultivated fields of alfalfa and grain, ditches, fences, and several dirt roads (Figure 6.9). A Jose Muniz was listed in the 1910 census as a sheepherder living at Gold Run in Humboldt County. The census lists Mr. Muniz as being born in France in 1885, and in 1910 he was living at a boarding house with several other French sheepherders (U.S. Census 1910). While it is not certain that the man listed in the census and on the water rights application is the same person, given the context of the application and the strong association with a sheep ranch, the name "Joe Munis" and "Jose Munis" on the application (NDWR 1918) are likely variations of "Jose Muniz." In 1929, the certificate of appropriation associated with Muniz's application was issued to J. P. Aldaz (who is listed in the 1920 U.S. Census as a sheep raiser living in Reno with his wife [Pilar] and two children [Eddie and Helen]) (U.S. Census 1920). At the time, Aldaz was running the Commercial Hotel in Reno, which served as a Basque boardinghouse (Echeverria 2000).

Historic and modern USGS aerial photographs show that architectural remains of the ranch are still present in Poco Canyon. Comparing a 1971 USGS aerial photograph of Poco Canyon (Figure 6.10) with a modern aerial, it is apparent that the road to the ranch has been maintained and extended past the ranch an additional 0.1 mi. upslope. In addition, a rectangular area on the 1971 aerial that appears to be a corral is no longer visible on modern aerials, having been covered with a watering trough and used as a watering spot for cattle.

Finally, Charles Bailey received a certificate of appropriation for Cain's Springs in 1932, which is located inside the DVTA Study Area and, more specifically, inside the Study Area encompassing Slaughter Canyon, in conjunction with the Freeman Company and the Kent Land and Livestock Company. In the late 1920s, California Lands, Inc. acquired several dozen ranches in the Fallon area as a result of foreclosure (REG 1929). Charles S. Bailey served as a superintendent for ranches owned by California Lands in Churchill County before he died from a broken back in 1931 (REG 1931), and the certificates must have been issued posthumously. The joint listing on the Charles Bailey certificate may indicate that a nearby ranch may have been purchased by California Land, Inc. Improvements to the spring listed on the certificate included fencing the spring area and erecting a pipe that lead to a metal trough.

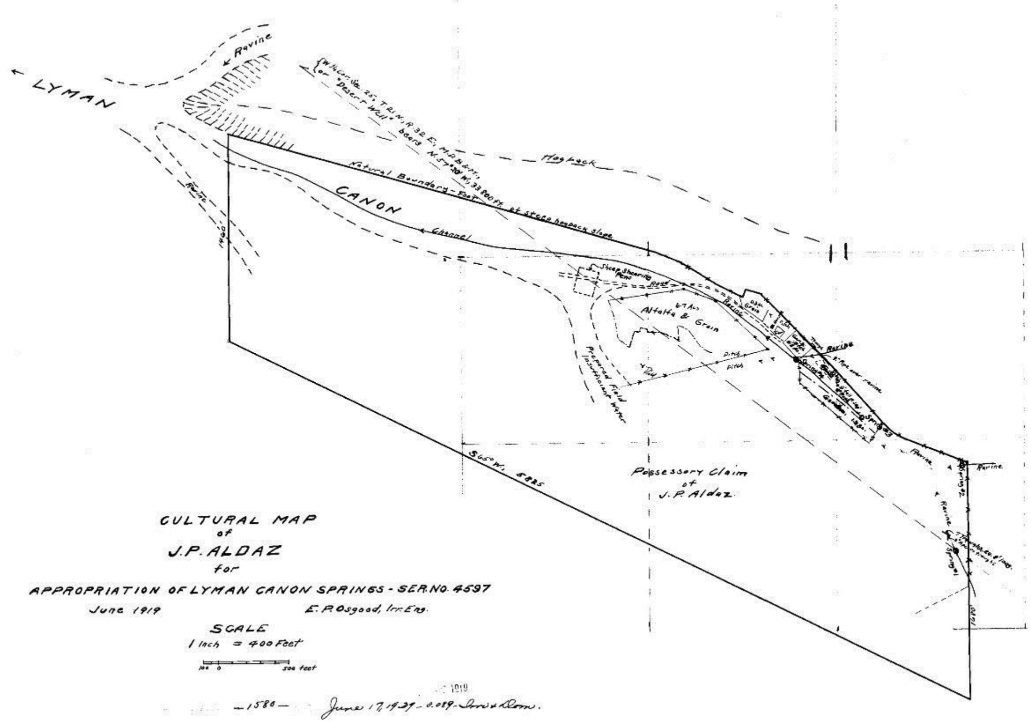

Figure 6-9 Aldaz Water Map accompanying certificate of appropriation for use of water in Lyman (Poco) Canyon (NDWR 1929).

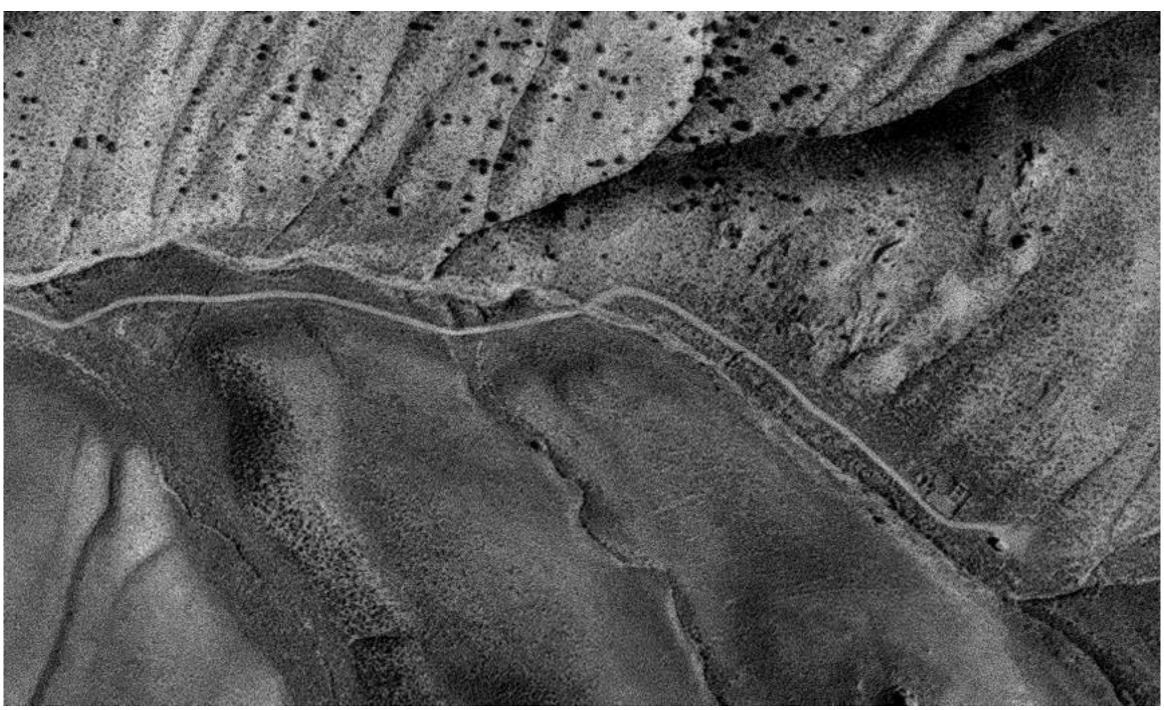

Figure 6-10 1971 USGS aerial photograph showing the remains of the Basque ranch in Poco Canyon.

Clan Alpine Mountains

The Horse Creek Ranch is immediately adjacent to the DVTA Study Area along the foothills of the Clan Alpine Mountains. The water rights application filed by S. F. Paliuer for Horse Creek also references the Horse Creek Ranch, indicating that the ranch has been there since at least 1907. Although the relatively large ranch complex is outside the Study Area, the ranch made use of Horse Creek, which crosses through the Study Area, and filed applications for water rights to the creek. Horse Creek runs through the SW ¼ of Section 12 T19N R35E and is immediately adjacent to the east of Horse Creek Ranch. It has been used historically for stockwatering, irrigation, and domestic purposes for the ranch. William Barbeau submitted an application for water rights in 1929 (NDWR 1933); however, he passed away before he could complete the proposed dam and diversion ditches and the application was denied. He had proposed to construct a small rock dam along Horse Creek in Section 12 and ditches that would draw off the creek. The water was to be used to irrigate 200 acres and water 10 horses and 500 sheep (NDWR 1933). In 1931, the application was resubmitted under the name of the Horse Creek Ranch with the same plans for diversion as Barbeau's initial application (NDWR 1931). The certificate of appropriation was approved in 1941 for irrigation and domestic use and included a map (Figure 6.11). A historic trail runs through Horse Creek (see Transportation and Utility Lines section), and part of the diversion ditches are situated just inside the northern portion of the Study Area. Additionally, the map indicates that irrigation was planned for terraces on the northern and southern edges of the creek. Horse Creek water used to be diverted to the Wonder Mining District, and maps note that the trench for the old pipeline to Wonder was still visible at Horse Creek in the 1930s.

A ranch was noted on the 1931 GLO plat map for T19N R36E just to the south of the Study Area in Section 31. On the GLO, the "Louis H. Danberg Ranch" is noted along with a house, irrigating ditch, and shed that spans Sections 30 and 31. The surveyor's notes indicate "A small ranch is located in Section 31 containing approximately 40 acres under cultivation, is watered from Bench Creek. Most of the water from said creek is piped to Wonder" (Nelson 1915:263). The GLO depicts two roads extending from the ranch, one to Wonder and the other to Middlegate, perhaps showing two important outlets for the resources grown and raised at the ranch.

There are a few previously recorded historic archaeological sites in this area. Historic refuse was recorded in Dummy Canyon in the Clan Alpine Mountains. The cluster of four cans appears to be unassociated, but the site may be related to ranching in the area given the absence of any mining features (Cranston 1987).

Expected cultural resources associated with ranching and agriculture in the Study Areas would include spring modification features such as pipeline and troughs. There may be corrals, ditches, and trails as well as scattered refuse along canyon floors and near springs that are associated with ranching in the area. In addition, there may be some small campsites with associated refuse from sheepherders or cattle ranchers. It is possible that the remains of a Basque sheep ranch are located in the Stillwater Range. The ranch could provide a great deal of information on Basque sheepherding in the Stillwater Range during the first half of the twentieth century. Based on the history of Paiute families in the area, there is also a strong possibility for historic-era Paiute sites and features, including corrals and pine-nut gathering tools and caches. These resources could provide a great deal of information on subsistence and entrepreneurial activities of Paiutes, given the impacts of ranching in the area.

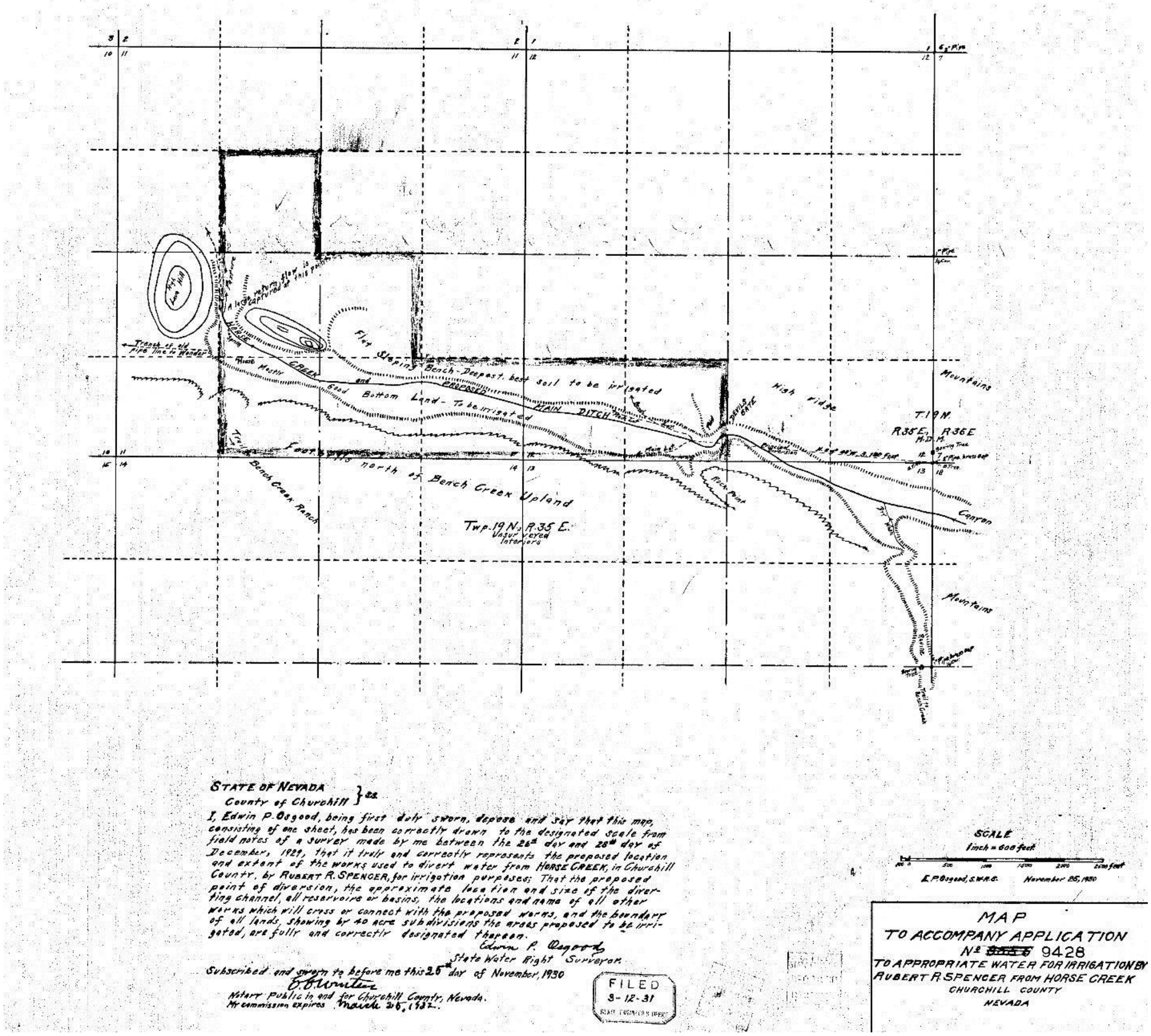

Figure 6-11 Map accompanying application to appropriate water from Horse Creek in 1931 (NDWR 1931).

Bravo-17 Study Area

A study of historic (pre-1969) water right applications within the B-17 Study Area resulted in a list of 13 applications (Table 6.5) for irrigation, domestic use, and stockwatering. They range in date between 1923 and 1967. Most of these applications are for the southern half of the Study Area and rely on underground sources accessed through a well and pumped in to tanks.

Table 6-5 B-17 Study Area Water Appropriation Permit Applications (Agricultural/Ranching)

Year	Township Range	Section (Water Source)	Application	Applicant
1923	T12N R35E	12 (Frank's Well No. 2)	6896 Certificate 1136	Carr, Cornell, & Hesse
1939	T12N R35E	11 (Gabbs Valley Well)	10400 Certificate 2889	J.N. Bryan / W.W. Whitaker
1949	T11N R35E	5 (Derringer Well)	12067 Certificate 3483	W.W. Whitaker
1950	T12N R34E	11 (Upper Phillips Well No. 2)	12139 Certificate 3484	Roy A. and Harry Brown
1950	T12N R34E	28 (Lower Phillips Well)	12140 Certificate 3485	Roy A. and Harry Brown
1961	T12N R36E	6 and 7 (underground water source)	19488 Denied	Alice Young
1962	T12N R34E	28 (underground water source)	20705 Cancelled	Harley Jobe Jr.
1962	T12N R34E	33 (underground water source)	20688 Abrogated	H.H. Holloway
1962	T12N R34E	33 (underground water source)	20704 Abrogated	Harley Jobe Jr.
1963	T12N R34E	33 (underground water source)	21373 Cancelled	H.H. Holloway
1966	T12N R34E	33 (underground water source)	23064 Cancelled	Harley Jobe Jr.
1967	T11N R34E	16 (underground water source)	24113 Cancelled	H.B. Jackson and Howard Farris
1967	T12N R34E	33 (underground water source)	24114 Cancelled	H.B. Jackson and Howard Farris

The applications reflect the use of the Study Area by the Brown family, starting with Roy Brown, who moved cattle between Fallon and Austin. Starting in 1918, Brown worked for the Bell ranching family taking cattle during the winter to Finger Rock (Danner 1992), which is located just 5 mi. south of the Study Area. Roy Brown received certificates of appropriation for the Lower and Upper Phillips Well No. 2, in 1950. Both wells had been drilled in 1947 and Brown improved them both in the same fashion. Each was equipped with a pump powered by a gas engine and a pipe leading to a storage tank that measured 10 ft. in diameter and 8 ft. deep, and then water was piped to circular stockwater troughs (NDWR 1950b, 1950c). The troughs were intended to water approximately 400 head of cattle.

In 1923, E. B. Cornell and R. E. S. Hess received a certificate for water appropriation rights in Section 13, T12N R35E (Frank's Well No. 2) for stockwatering. At the well site they had a pump and an engine, two tanks, pipeline, and a wooden trough used for 500 head of cattle (NDWR 1923). No information could be found for Cornell or Hess, but they were undoubtedly local ranchers.

J. N. Bryan was another regional rancher who owned the Campbell Creek Ranch in Lander County and associated with the Brown family from time to time (Danner 1992). Bryan applied for water rights to the Gabbs Valley Well in 1939 in T12N R35E Section 11. However, Walter W. Whitaker received the certificate of appropriation for use of the Gabbs Valley Well in 1945. The certificate states that Whitaker improved the well with a windmill, gas engine, 40 ft. of pipe, and a 20-ft.-long trough in order to water 500 head of cattle (NDWR 1939). Walter Whitaker was a rancher who served on the advisory board for the Grazing District in 1936 (REG 1936) and had ranching interests in Elko and Churchill County. He bought and sold ranches and cattle and ended up buying the Campbell Creek Ranch from Bryan in the early 1940s. He may have inherited the application for water rights with the sale (REG 1945a).

Whitaker also received a certificate of appropriation for use of the Derringer Well in 1949. The well, located in T11N R35E Section 5 was improved with a windmill, a pump, 13 ft. of pipe, a steel tank 10 ft. in diameter, and a concrete watering trough, all centered on the well that was used to water approximately 300 head of cattle (NDWR 1949). The 1964 Walker Lake, NV, 1:250,000 USGS topographic quadrangle also depicts a corral in this location.

In the 1920s, a group of men from Los Angeles acquired land in Gabbs Valley just south of Rawhide via the Desert Land Act and the Pittman Underground Water Act. They began to drill for water in an attempt to develop artesian wells (Yerington Times 1926). John Muhlhauser also received a land patent for property in T12N R34E Section 28 (inside the Study Area) in 1929 via the Desert Land Act (BLM 1929). Danner (1992) states that Muhlhauser arrived in Gabbs Valley to drill wells for the Californians buying land in the area. He built a dugout house on his property and cultivated wheat, corn, and potatoes. He also served as the caretaker of the Poinsettia mining camp after most of the miners left until he returned to California in 1948 (Danner 1992).

H. H. Holloway and Harley Jobe each submitted applications for water rights for their adjacent properties in T12N R34E Section 33 between 1962 and 1963, but they were all either cancelled or abrogated. Holloway received his property through a swap with the federal government as part of the Taylor Grazing Act. The land he received in the exchange was in T11N R33E, T11N R34E, and T12N R33E with two separate patents in 1956 and 1966 (BLM 1956, 1966). The water applications may have been an attempt by Holloway and Jobe to irrigate the land for farming or ranching. Holloway consolidated land holdings in the immediate area and sold his properties to Gabbs Valley Land, Inc. in 1967. The Gabbs Valley Land properties eventually became the Gabbs Valley Ranch (Danner 1992).

Following the Taylor Grazing Act of 1934, four grazing allotments were created that overlap or intersect with the B-17 Study Area, including Eastgate, Clan Alpine, Phillips Well, and Pilot-Table Mountain. It is likely that these grazing allotments have been in use since at least the 1950s and may retain evidence of grazing by sheep, cattle, and horses. As the applications for water rights indicate, cultural resources associated with ranching are highly likely to be present. Resources would include engineered springs, wells, and stockponds that have been constructed or modified to facilitate stockwatering. In addition, there may be barbed wire fence segments, fenceposts, corrals, and small refuse deposits associated with the temporary campsites of cowboys, vaqueros, herders, etc.

At the north end of the Black Hills in Gabbs Valley, a 2009 cultural resources inventory identified a historic-era well location and homestead site. Based on diagnostic elements, the site was dated between 1904 and 1931 (Malinky and Rhyne 2009). Historic-era refuse scatters sites or components (e.g., CrNV-03-7435 and CrNV-03-7019) and two historic road segments (CrNV-03- 7442 and CrNV-03-7016) are also in the vicinity (Kautz and Malinky 2009). These resources are likely related to the historic ranching economy in Gabbs Valley (see Danner 1992).

Transportation and Utility Lines

Transportation and communication networks have been critical to the state of Nevada, given the vast amount of unoccupied land and the harshness of the terrain that made both travel and communication difficult. However, these networks worked in concert with other industries of Nevada (mining, agriculture and ranching, and military) in a mutually beneficial relationship. Prior to the arrival of non-Native fur trappers, government scouts, surveyors, and emigrants, the lands within the proposed Study Areas were undoubtedly crisscrossed with foot paths and trails used by local Paiute tribes that were subsequently used by non-Natives. In a report of his expedition, Frémont (1845) recounted how he followed existing “Indian” trails through Nevada. As a result, many of the historic transportation routes discussed here may have their origins as Native American footpaths and travel routes. Transportation lines and utility lines are discussed together in this section since they are both indicative of development and infrastructure within the Study Areas.

Dixie Valley Training Area Study Area

Stillwater Range

Dixie Valley likely did not draw many travelers among the early emigrants and expeditions as they were following the Humboldt River or Simpson’s route through central Nevada. Instead, ranching and mining communities were the main impetus for extending transportation and utility lines into Dixie Valley and the DVTA Study Area. Early mining ventures in the Stillwater Range encouraged the development of transportation routes into the range. An 1866 Map of Nevada produced by the GLO shows major thoroughfares on either side of the Stillwater range that connect just south of the Carson Sink and undoubtedly developed due to mining interests in the Stillwater Range (GLO 1866) (see Mining section of this chapter). Miners and ranchers appear to have accessed the upper elevations of the Stillwater Range via various canyon floors from both the west and the east. Given the economic endeavors in the Stillwater Range, it is likely that the canyon floors were in use as least as early as the 1870s to access grazing and mining areas.

The portion of the Study Area spanning T20N R33E and R33½E near Job Peak has historic roads leading up canyon floors to the historic mining areas including the IXL and Job Peak Mining Districts. A fenceline is shown crossing part of Section 12 to a high peak and roughly spans the ridgeline between Little Box Canyon and Big Box Canyon. The fence is marked on the 1972 Job Peak and the 1972 IXL Canyon 7.5’ USGS topographic quadrangles (see Figure 6.2). Poco Canyon passes through T20N R33E Sections 10 and 11 within the Study Area. As discussed in the *Agriculture and Ranching* section of this chapter, Basque sheepherders applied for water rights in this canyon in 1917. The map associated with the water rights certificate shows a road leading out of the canyon and into the ranch indicating that the canyon floor was likely used as a road to reach the upper elevations of the range (see Figure 6.9). The 1969 Cox Canyon and 1969 Table Mountain 7.5’ USGS topographic quadrangles show a telephone line that passes approximately 0.3 mi. outside of the Study Area to the west. Although it is outside of the parcel, it is worthy to note that there was telephone access between this area and the Stillwater townsite at least as early as the 1960s.

The portion of the DVTA Study Area that covers the Mountain Wells area has only one documented historic road on the 1908 Carson Sink 1:250,000 topographic map, leading into Elevenmile Canyon. This road undoubtedly provided access to the La Plata Mining District (see Mining section of this chapter) and may have remained in use by ranchers and recreational vehicles since La Plata was abandoned. On the 1972 LaPlata Canyon 7.5’ USGS topographic quadrangle, a 4WD trail is shown following the entire length of Elevenmile Canyon. The canyon floor crosses the DVTA Study Area in three different sections: the southwest corner of Section 3, T18N R33E; the southern portion of Section 28, T19N R33E; and the center of Section 20, T19N R33E. Given the documented historic use of this area for ranching and mining, it is possible that most of the canyons in this parcel have unrecorded road traces or associated refuse. This would include Wildhorse Canyon, Slaughter Canyon, and Cain Spring Canyon, all of which cross the DVTA Study Area along the eastern flank of the Stillwater Range.

Clan Alpine Mountains

The 1972 Dixie Valley SE, NV, 7.5' USGS topographic quadrangle shows roads that follow the Dummy Canyon and Dry Canyon floors and pass through the Study Area. These roads are not shown on earlier historic-era maps so it is not clear from the archival data in which years the roads were first used. It is also difficult to determine from maps and archival records what destinations these roads may have been used to access within the Clan Alpine Mountains. The likeliest destinations are two springs (Kaiser and Cherry) near the head of the canyons in the upper elevations of the range outside the Study Area.

The 1908 Carson Sink topographic quadrangle does show the complex road network that crosses Dixie Valley converge at a point roughly 2.5 mi. west of Horse Creek Ranch. A single road leads east to Horse Creek Ranch, but there is no indication that this road continues east up Horse Creek Canyon and through the Study Area. The 1990 Mt. Augusta, NV, 7.5' USGS topographic quadrangle shows a road following Horse Creek Canyon, and approximately 100 ft. of this road crosses the Study Area in T19N R35E Section 12. A 4WD road diverges from the Horse Canyon Road and leads up an unnamed drainage to the south. However, there is no documentation that indicates these roads are historical, and the dates of their use would have to be determined through associated refuse.

Bravo-17 Study Area

In the 1860s, John Reese scouted a route between Wellington, in Smith Valley, and Reese River to the east (Pendleton et al. 1982). This route, dubbed Wellington Road, crossed the northern part of Gabbs Valley and served as an important freight road, postal route, and transportation corridor. The Cold and Hot Springs in northern Gabbs Valley just west of Fissure Ridge were an important stopping point along transportation corridors, providing rest for travelers and animals alike. In the 1880s, the stop at the Hot Springs was alternately called Kepler's Station (Danner 1992) or "Woodruffs Hot Spring," as it is identified on the 1886 Parker Map of the State of Nevada (Parker 1886). The Cold Springs are located just 1.2 mi. north of the Hot Springs and provided an opportune watering hole for horses hauling freight across Gabbs Valley (Danner 1992).Wellington Road is shown on the 1884 T12N R35E GLO plat map within the Study Area (Figure 6.12) as the "Road from Downeyville to Hot Springs." In 1877, silver and lead discoveries were made near Downeyville, located just 2 mi. northeast of Gabbs (Paher 1970). The mines yielded lead, silver, zinc, and some gold, and was mined most intensively from 1875 to 1887. During the boom, Downeyville had a post office, stores, saloons, and offices for stage lines and the Wells Fargo express (Paher 1970), making it a hub for communication and transportation in the area. This road appears to be one of very few documented roads that crossed Gabbs Valley in the latter half of the nineteenth century and, as such, was undoubtedly well traveled. By the time the 1909 Hawthorne and the 1907 Tonopah 1:250,000 USGS topographic quadrangles were published, travelers had developed a northern branch of the road that split within the Study Area and provided access to Lodi (Figure 6.13). The northern branch is shown as a 4WD trail on the 1980 Mt. Annie NE, NV, USGS 7.5' topographic quadrangle and likely had fallen into disuse after mining operations at Lodi were temporarily halted in the 1910s (Paher 1970).

The southern road that crosses Gabbs Valley on the Tonopah and Hawthorne maps (see Figure 6.13) heads south from the hot springs crossing between Fissure Ridge and the Black Hills toward Warrens Well. The road splits in two, with one leg headed southeast to Finger Rock, and the other heading east and within the Study Area to a road running north/south that connected Lodi and Mina. This road is still mapped in relatively the same location on the 1979 Mount Annie SE, NV, USGS 7.5' topographic quadrangle.

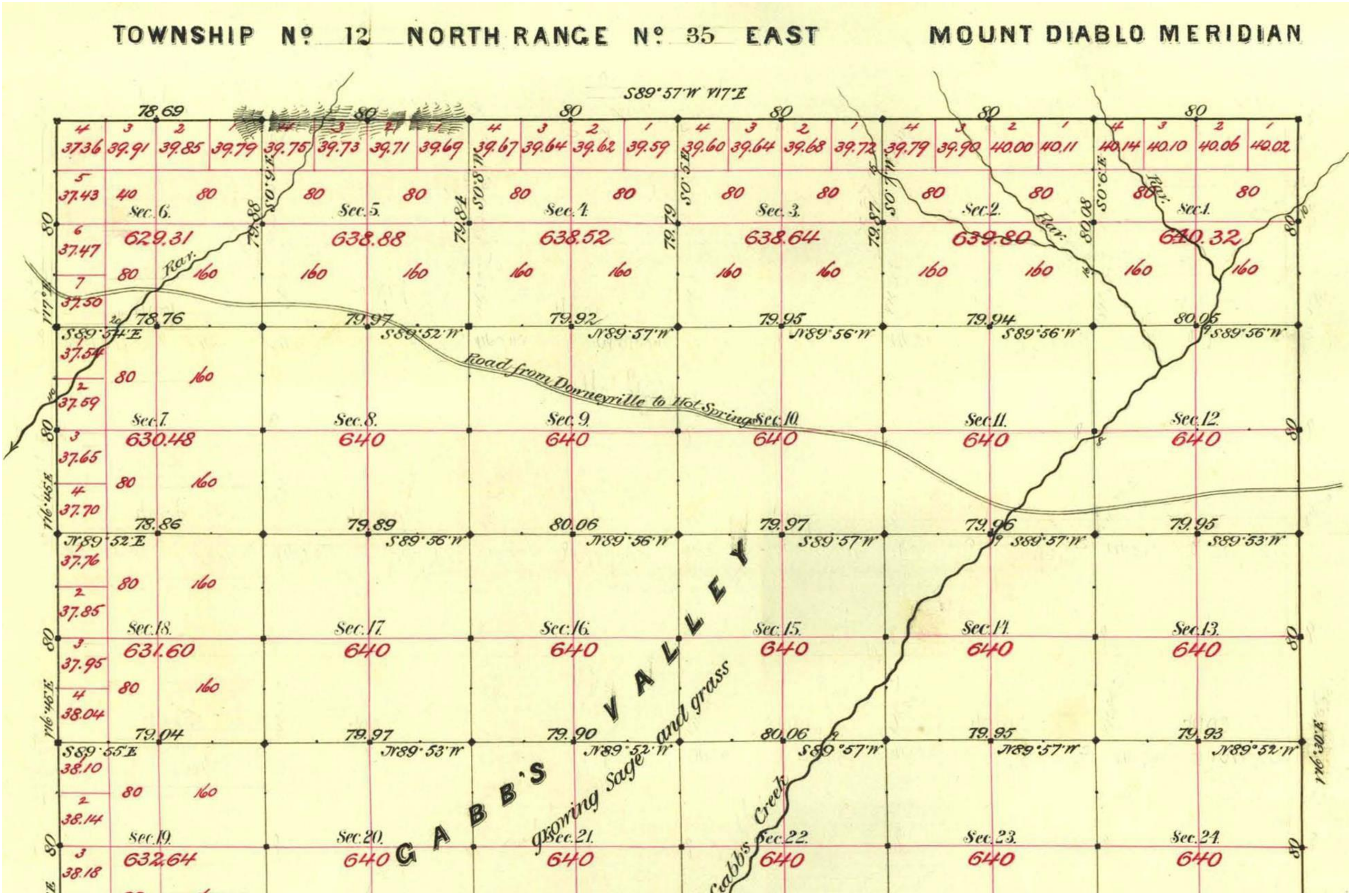

Figure 6-12 1884 GLO of T12N R35E showing the “Road from Downeyville to Hot Springs.”

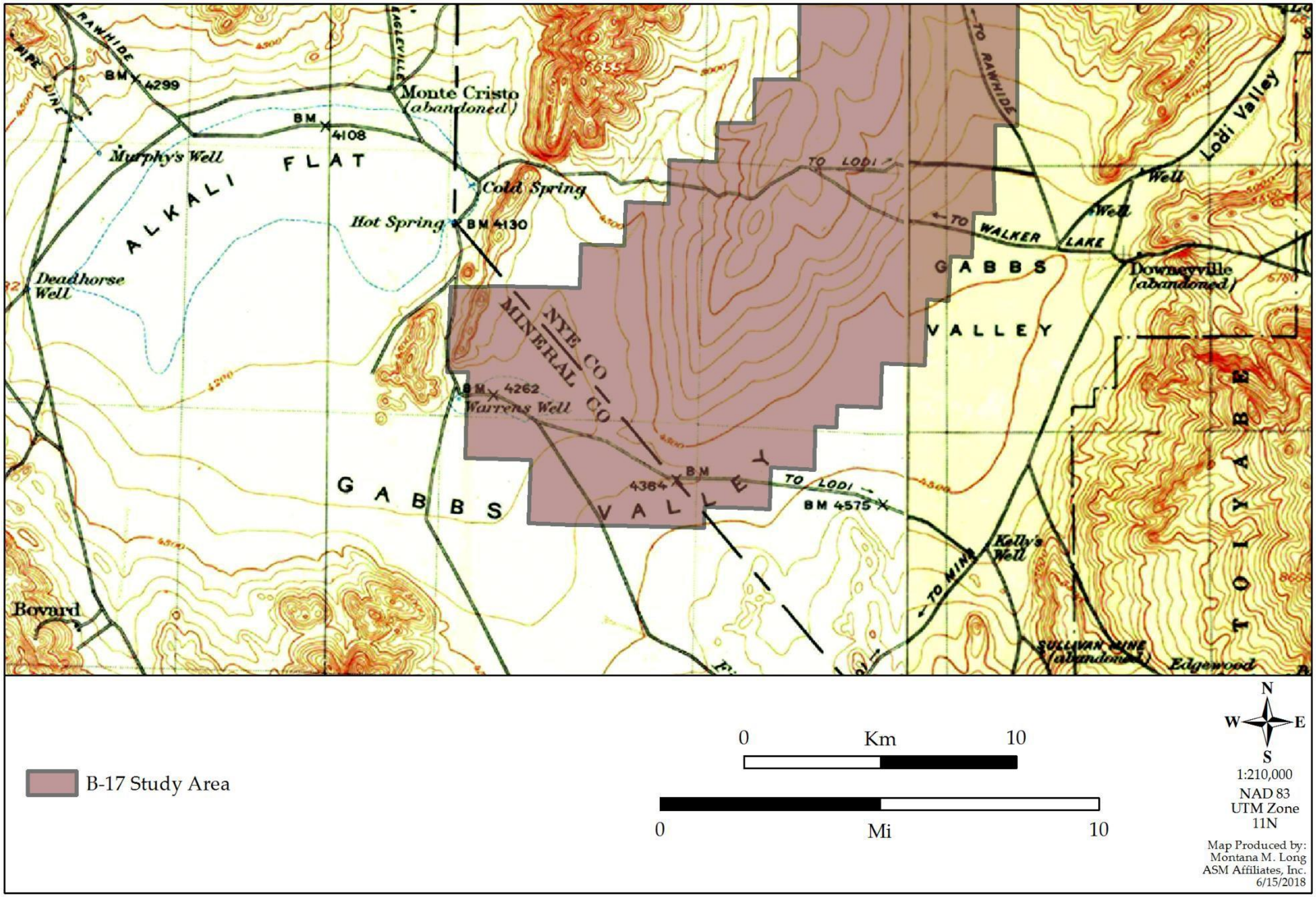

Figure 6-13 Early roads through Gabbs Valley and the proposed B-17 Study Area.
(1909 Hawthorne and 1907 Tonopah 1:250,000 USGS topographic maps.)

A short segment (approximately 300 ft.) of a previously recorded historic road crosses through the northwest corner of T12N R34E Section 19 in the Study Area. The road was recorded as CrNV-03-7442 (26MN1900) in 2009 and updated in 2010 (Brockway 2010). The road was recommended as not eligible for listing in the NRHP. It was estimated to date at least as early as 1884, based on its presence on the 1884 GLO for T12N R34E, and may have once connected with Wellington Road. Refuse along the road primarily dates from 1930 to the present (Brockway 2010).

Mining at Broken Hills, the Kaiser/Baxter mines, and Quartz Mountain served as an incentive for better roads through Gabbs Valley, connecting the mining endeavors to shipping points in Fallon and Luna. The establishment of power lines, communication lines, and roads to the mining camps was provided as an incentive when attempting to draw miners and service providers to the camps; good roads helped reduce the shipping cost for ore. The 1908 Carson Sink map shows a road that roughly follows the modern route of SR 361 as it extends from Middle Gate south toward the Broken Hills and eventually Downeyville. The brief mining boom at nearby Quartz Mountain in the 1920s encouraged auto and truck traffic through the area. As described by Paher "…big trucks shuttled back and forth to Fallon, hauling out ore and bringing in water, supplies, and mail" (Paher 1970:379). In 1926, an assessment of the road system in and out of Broken Hills stated: "Luning is the nearest shipping point but the road to Fallon is said to be much the best. Residents of the Luning section are contemplating the repairing of the road in the hope that the business may be diverted to that town" (REG 1926a). Many of the roads between SR 361 and the mining camps of Broken Hills, Quartz Mountain, Lodi, and the Baxter/Kaiser mines are historic and are shown on the 1948 Paradise Peak, NV, 7.5' USGS topographic quadrangle, and the 1955 Millet, NV, and the 1957 Reno, NV, 1:250,000 USGS topographic quadrangles.

Decades later, the interest in magnesium and fluorspar for the war effort also spurred investment in infrastructure for Gabbs Valley. In 1942, Vet Baxter, who owned the Baxter/Kaiser fluorspar claims, wrote to the War Production Board, and stated that he had been continually maintaining the road from his claims to U.S. 50. He also added that he contributed $573 along with a donation from Churchill County to gravel and straighten 8 mi. of road between U.S. 50 and the turn-off to the fluorspar mines. At the time of writing in December 1942, he stated that his trucks were "…idle because the road has become so bad that I cannot operate the heavy equipment over the road without wrecking the equipment. My truck drivers are now using a Churchill County grader to improve the road so that I can resume operations" (NSJ 1942:8). Transportation to and from Fallon was crucial for Baxter, because he could get the fluorspar loaded onto the railroad in Fallon and bound for California (REG 1933).

Baxter must have reached out to a number of federal and state agencies imploring them to help improve the roads. Gabbs Valley historian Ruth Danner remarked that:

> Vet Baxter, who for years had been urging an improved road from his fluorspar property wrote the Nevada Congressional Delegation in Washington D.C. suggesting that Highway 23 be extended to Highway 50 as part of the nation's strategic defense highway system…U.S. involvement in the war was not serious enough at that time for Congress or the Navy to share Mr. Baxter's sentiments. Their opinions, however, would later change. (Danner 1992:223)

On January 6, 1943, the *Reno Evening Gazette* reported that the war department authorized funds to be used in constructing a highway between U.S. 50 and the present site of Gabbs in order to facilitate "movement of fluorspar from the Baxter mines midway along the route, also for carrying in supplies to the magnesium mines" (REG 1943:5). Ore from the Baxter/Kaiser mines was transported north to U.S. 50, while trucks hauling equipment for the magnesium mines followed Highway 23 (also State Route 23) south to Hawthorne on U.S. 95. SR 23 was later renamed SR 361 in the mid-1970s. The road also had important socioeconomic impacts for residents of both Gabbs Valley and Fallon. SR 361 also provided truckers and travelers with easier access between two major thoroughfares in Nevada: U.S. 50 and U.S. 95. According to Danner:

> Fallon merchants and the fluorspar people had been advocating this road for some time as a means of connecting Gabbs Valley with the commerce of the Fallon area. The road has been improved from Fluorspar to the highway with what limited funds were available, and a relocation survey had been done in the hopes of obtaining federal money for a paved surface. (Danner 1992:238)

The presence of two mines in Gabbs Valley that caused an influx of workers and drew military interest also lead to an investment in air travel. In 1943, 734 acres of land were set aside in Nye County for use by the Civil Aeronautics Administration (CAA) for aeronautical communications and emergency landings. In 1949, the CAA planned on discontinuing maintenance of the field until Senator McCarran intervened. The Senator argued that renewed activity at the manganese mines merited upkeep of the airport. Bonanza airlines also planned to use the airport as a stopover on flights from Las Vegas to Reno (REG 1949b). In 1952, local residents and businesses expressed interest in having the airport transferred from CAA ownership to Nye County so that it could be used for mail services and commercial scheduled passenger flights. The *Nevada State Journal* reported in 1952 that the local mining endeavors and associated population growth provided a strong foundation for the airport:

> In addition to the large and expanding operations of the Basic Refractories, Inc. in mining and calcining large quantities of magnesite and brucite from the extremely big deposits there, several large and very important tungsten projects have developed during the past two years. Two tungsten treating mills are located at or near Gabbs, and the former Vet Baxter fluorspar mine…is located within a near distance of Gabbs…" (NSJ 1952b)

At the time, Gabbs's population was 1,200 people. The Kaiser Company, working out of the fluorspar mines, was also interested in such an endeavor (REG 1952). In 1954, Nye County received a patent to build the Gabbs Airport west of the town (BLM 1954), which is immediately adjacent to the proposed B-17 Study Area's eastern boundary.

It is very likely that remnants of the Wellington road and associated roadside trash are present in the B-17 Study Area. SR 361 has a long, well-documented history of use for mining in Gabbs Valley and improved socioeconomic relationships between Gabbs Valley and Fallon. In addition, many of the smaller, undocumented roads between and within the mining camps are likely historic.

The remaining utilities or transportation routes date to the late 1960s and early 1970s. The right-of-way for the pipeline shown extending through the B-17 Study Area in T12N R34E and T12N R35E on the 1980 Mount Annie NE, NV, 7.5' USGS topographic quadrangle was granted in 1964, and the proof of construction was filed in 1969. Del Vega Street parallels the pipeline and may have been graded as an access road. A right-of-way was granted for a telephone line through the same townships in 1964, but the line does not appear on any topographic maps (BLM 2018). There is a set of 4WD trails in T12N R34E and T12N R35E within the B-17 Study Area, spanning the area between Upper Phillip's Well and Lower Phillip's Well east to Cobble Cuesta. Although the wells are historic, the roads appear to be associated with a 1978 geothermal prospecting project conducted by Al-Aquitaine Exploration Ltd. (Al-Aquitaine 1978).

Military

Nevada has a long history of U.S. military presence dating to the mid-nineteenth century with the expeditions of Major John C. Frémont in 1843 and Captain James H. Simpson in 1859 (see Expeditions, Emigration, and Early Non-Native Settlement section). Fort Churchill, located approximately 50 mi. west of the DVTA Study Area, was constructed by the U.S. military to protect travel and communication routes in the 1860s. However, there is no documented record of military forts, camps, skirmishes, massacres, or movements through the Study Areas between the 1840s and the 1930s. Any association between the military and the Study Areas would have been transitory in nature and, as such, there are unlikely to be cultural resources related to military use of the area prior to the 1940s. Since the 1940s, the Stillwater Range and Dixie Valley have been used by NAS Fallon as supplementary practice areas. Therefore, the presence of military-related resources in the Study Areas would likely date during or after World War II and pertain directly to the resources and operations of NAS Fallon.

Naval Air Station Fallon

This section relies heavily on the review of military history summarized in the NAS Fallon Survey and Evaluation Report (NAS Fallon 2011) and the NAS Fallon History and Cold War Context provided in the Historic Resources Inventory prepared by JRP Historical Consulting Services (JRP) for structures near the B-16 range (JRP 2012). Nevada Military history from 1946-1989 is known primarily for Cold War weapons research, development, and testing, although threat detection and pilot training were also of high importance (NAS Fallon 2011). Nevada drew interest as a possible location for a military installation during World War II. Historian Michael J. Brodhead (1989:271) claims that this was due to Nevada's "inland location, good flying weather, and vast tracts of federally owned, relatively unpopulated desert." In addition, the move may have also been precipitated by the active mining economy and Nevada miners providing needed metals for the war effort, including tungsten for use in armor-piercing shells during the Korean War (Elliott 1987) as well as copper and magnesium during World War II (Coray 1992).

The Fallon airfield was established by the Army Air Forces (predecessor to the modern Air Force) in 1942 in response to fears that Japan would attack military airfields in California following the devastating attack on Pearl Harbor. In response to this hostility, Nevada was uniquely positioned to serve as a location for pilot training and nuclear weapons research and development. Large, relatively remote tracts of land were acquired from miners and ranchers for military use. It was abandoned by the Army Air Forces in 1943 following naval victories in the Pacific, but, shortly thereafter, the Navy took over the site as a Naval Auxiliary Air Station (NAAS) to train pilots assigned to aircraft carriers (Brodhead 1989). The Station was temporarily closed between the end of World War II and the beginning of the Korean War, rendering it inactive between 1946 and 1950. In 1950 and 1951, the Fallon base was leased to the Navy and became an official Auxiliary Landing Field associated with NAS Alameda and served to train both Marine and Navy pilots (Smith and Michel 2013). With the increase in people and specialized training, the base required additional housing, facilities, and other infrastructure. An assessment of structures on the station dating to the Cold War found them to be constructed with "impenetrable" concrete walls built to "withstand a nuclear attack" (Reid Planning 2007).

Construction work in the 1950s involved the renovation of some original buildings and a significant expansion in the size of the built environment at NAAS Fallon, including the addition of training ranges B-16, 17, and 19. Additionally, the use of jet aircraft required that a larger series of runways be built at the station. In fact, a 10,000-ft. runway was extended to 14,000 ft. between 1957 and 1959, a task that required the re-routing of U.S. 50. At the time of its construction, this was the largest Navy runway in the U.S. (Smith and Michel 2013). In 1967, the Electronic Weapons Range was opened in Dixie Valley; it is still in use today. With the threat of war in Southeast Asia growing and the Russian navy expanding, training exercises increased dramatically during the late 1960s and early 1970s. NAAS Fallon was upgraded to a major command (Naval Air Station [NAS]) in 1972, and the base continued to expand into the 1980s. Since

1972, the NAS is focused on final training of Navy pilots before they are deployed to aircraft carriers. The B-20 bombing range was expanded in 1982 with the addition of 19,431 acres, and again in 1986 with the addition of 21,576 acres. By 1987, the Navy had acquired most of the privately held property in Dixie Valley (Smith and Michel 2013).

Nellis Air Force Base, well known for aboveground nuclear weapons testing in the early to mid-1950s, was also a training ground for fighter pilots in the late 1940s. Experimental and strategic reconnaissance aircraft were tested throughout much of the mid- to late twentieth century at Area 51, which has become heavily embroiled in controversy over government secrecy issues. In the 1960s, testing of nuclear weapons was moved underground to eliminate the threat of radioactive fallout and resulted in the operation of the Nevada Test Site. NAS Fallon, however, has primarily been responsible for training fighter/bomber pilots for naval aircraft as well as for electronic warfare training (Figure 6.14). Prior to 1984, NAS Fallon's training regimes were similar to other programs around the country, with the exception of the Semi-Automatic Ground Environment mission, which improved the abilities of enemy detection with radar technology. The arrival of the Strike University in 1984 was also unique for its pilot training program in maneuvers and tactics utilizing "real-world scenarios" recreating "enemy fighters, radar, missile sites, and gun emplacements" (NAS Fallon 2011:81). According to JRP, cultural resources related to the technology, engineering, and design of this program may make them eligible for the NRHP. Accordingly, military-related cultural resources have greater significance if they provide data on specific training regarding, or missions designed for, the Cold War (NAS Fallon 2011).

Figure 6-14 Aerial view of formation of Navy aircraft in the vicinity of NAAS and Fallon, Nevada. (University of Nevada, Reno, Digital Collections.)

During the 1990s, remaining World War II-era buildings at NAS Fallon were evaluated as part of the 1993 Cultural Resources Management Plan (Woodward-Clyde Consultants 1993); one aircraft beacon (designated Building 95) was deemed potentially eligible for the NRHP. An inventory and evaluation of Cold War-era buildings at the Main Station was conducted by the Navy in 1998 (JRP 1998). Potential military-related resources in the DVTA Study Areas are discussed in greater detail below.

Dixie Valley Training Area Study Area

Stillwater Range

The Stillwater Range was used by the Navy for gunnery practices during World War II, and local ranchers did not have access to parts of the range for grazing between 1941 and 1943. In an oral history, Stillwater rancher Ira Hamlin Kent reminisced that the Navy "… had air-to-ground gunnery. In other words, one plane would fly, pulling a target behind it, and then the other plane would come in and shoot at that target. And they were shooting against these mountains" (Churchill County Oral History Project 1997:113). In 1944, the *Reno Evening Gazette* reported that the Navy was primarily using the west slope of the Stillwater range, and ranchers were using the east slope for grazing. The article also offers greater detail about the gunnery methodology: "Gunners in practice are using machine guns at high altitude and the projectiles carry a considerable distance" (REG 1944:15). The article also cites the commanding officer of the Naval Base at the time, Lieutenant Commander M. E. Selby, who floated the idea of consolidating the gunnery ranges that would encompass Dixie Valley where there was a small settlement. In the short term, the Navy leased some of the properties in the Dixie Valley settlement, and when the war ended, the Navy curtailed their gunnery activities while reserving the right to use the land (REG 1945b).

The end of World War II may have lessened any urgency to expand the ranges, and, accordingly, action to purchase Dixie Valley properties was delayed until the 1970s. In February 1973, Captain William Muncie, the commander of NAS Fallon, announced that the Dixie Valley area "…would be used for electronic warfare practice" (REG 1973). Dixie Valley residents had complained about the noise from planes flying overhead, so the Navy moved to purchase properties in the valley. During the ensuing years, the lands were acquired for NAS Fallon through withdrawn lands and purchases from private landowners in the Dixie Valley Settlement area. The existing Dixie Valley Electronic Warfare Range extends north of U.S. 50 to the Dixie Valley Settlement Area, a distance of roughly 30 mi. (Smith and Michel 2013).

Evidence of military activity was recorded within the DVTA but just outside the Study Area in the Stillwater Range. While recording the Elevenmile Canyon Ruins (see Mining section of this chapter) just 300 ft. south of the DVTA Study Area surrounding Mountain Wells, NAS Fallon archaeologists noted that there were "(s)everal military targets (visual cues for aircraft, not bombing targets)…including three ammunition box-and-netting structures and two Jeeps. The boxes are marked 'Air Force' but it is unknown if the Air Force or the Navy placed the targets at this location" (Michel 2014:1). The archaeologists did not offer a date range for the military targets and merely mentioned them as a potential impact to the site.

Clan Alpine Mountains

In the Clan Alpine Mountains, archaeologists recording a series of prehistoric hunting blinds just outside the DVTA Study Area in 1997 noted a "recent component consisting (of) a tobacco tin, shotgun shells, and military rifle shells" (Creger 1997:1). The combination of shotgun shells and rifle shells indicates that the site may have been used for both hunting and military ground training. Overall, military- related cultural resources in the DVTA Study Area might be limited to isolated ammunition shells, ground targets, and/or aerial target fragments.

Bravo-17 Study Area

The Gabbs Valley area does not appear to have the same history of aerial gunnery practice as Dixie Valley to the north. However, the mineral and mining history of the area was of interest to the government for use in World War II. Magnesium proved to be a useful element for use in aircraft to reduce weight and served as a critical component in airplanes and explosives. A British-American company started vigorous magnesium mining in Gabbs Valley in 1941. The boom of the tent camp at the current site of Gabbs spurred the construction of a telephone line and a power line in 1942 (see Transportation and Utility Lines section). A defense contractor, Basic Refractories, Inc., launched a magnesium plant in Gabbs Valley, and ore was hauled to Henderson, Nevada, for processing.

The magnesite production of Gabbs was a considerable contribution to the war effort. The *Reno Evening Gazette* reported that "From 1941 to November 1945, the Gabbs project furnished all the magnesite for the Basic Magnesium plant at Henderson, which plants…produced one-fourth of the incendiary magnesium used by all the allies during World War II" (REG 1949a:13). By 1944, the immediate and pressing demand for magnesium had declined, and the mining endeavor was temporarily shut down.

There is no indication of extensive military training activities in the Gabbs Valley portion of the proposed B-17 Study Area, but the airspace is used extensively by pilots for tactical maneuvers and training. The military association with the Gabbs Valley area is largely tied to the mining of magnesium, fluorspar, and tungsten, which has been thoroughly addressed in the Mining section of this report.

HISTORICAL RESEARCH THEMES

The Study Areas contain an array of historic cultural resources that have the potential to provide data on the following research themes: Expeditions, Emigration, and Early Non-Native Settlement; Agriculture and Ranching; Mining; Transportation and Utility Lines; and Post-World War II Military Activity. These themes, NRHP evaluations, and data needs were largely developed for a previous Class I Overview Report prepared for the FRTC Modernization EIS (see Estes et al. 2017) and are reproduced herein.

Expeditions, Emigration, and Early Non-Native Settlement

The earliest recorded non-Native expedition routes by Peter Skene-Ogden in 1828-1829 and John C. Frémont and Joseph Walker in 1845 crossed near, but not through, the proposed Study Areas. Ogden stayed well north of the DVTA area, while Walker's crew (a split-off from Frémont's party) passed west of the DVTA area as they traveled south through Lahontan Valley. In 1859, Captain James Hervey Simpson was tasked by the government to scout a route between Camp Floyd near Salt Lake City, Utah, and Genoa in western Nevada. The route scouted by Simpson and his team was used by the Pony Express, served as the Overland Route, and became the most direct route for crossing through northern Nevada. This crossing passes south of the DVTA Study Area. Portions of this route later became U.S. 50. This thoroughfare induced people such as Asa Kenyon to settle along the route and provide resources and accommodations to travelers. The settlements of Ragtown and St. Clair emerged in the late nineteenth century, and the town of Fallon grew up and expanded in their wake. This period of expedition, emigration, and non-Native settlement also ushered in a period of tense encounters between non-Native and Native Americans and a change in the socioeconomic environment. The influx of non-Native people had significant impacts on the Native community due to challenges over land and resources. With the exception of the Overland Route, documented activities related to expeditions, emigration, and early non-Native settlement did not take place within the Study Areas, and, as such, resources related to these activities are not expected. Apart from transportation routes, sites related to these activities are often ephemeral and/or subject to looting and other forms of vandalism due to public interest.

NRHP Evaluation

Sites related to the period of non-Native and Native American contact are likely to be eligible for listing in the NRHP under Criterion A for their role in the region's settlement period. Sites that are specifically associated with persons of major importance in national or regional history may be eligible for inclusion in the NRHP under Criterion B. Sites might be NHRP-eligible under Criterion C for their distinctive architectural characteristics or as the embodiment of a type or style that is not well documented in history. Properties meeting Criteria A, B, or C must retain sufficient integrity to convey their significance; for example, most or all their original design/layout must be intact or at least recognizable, along with a variety of buildings and features that illustrate the activities conducted at the property. Sites dating to the mid-nineteenth century that contain information on the expedition, emigration, and settlement period from either a Native or non-Native perspective are likely to be eligible for NRHP Criterion D for their capacity to yield important historical data by addressing scientific or historical research issues that cannot be addressed with archival information.

Data Needs for Expeditions, Emigration, and Early Non-Native Settlement

In order to provide information relevant to this theme, a site would have to exhibit diagnostic artifacts, intact artifact deposits, and/or features with horizontal and vertical integrity clearly associated with expeditions, emigration, or early non-native settlement. Standing structures, foundations, or other remnants of settlement activity, along with historic archives, documents, and maps, can be used to identify locations, names of facilities, and other details. In addition, sites would have to yield remains dateable to the mid-nineteenth century when these activities were taking place in the Study Areas. Any sites that indicate the presence of Native and non-Native Americans in proximity to one another simultaneously could provide valuable data on early interactions in Nevada. This would include Native American sites that incorporate mass-manufactured goods along with other diagnostic items such as projectile points, ceramics, or beads. Refuse deposits specifically associated with Expeditions and Emigration are likely to be extremely rare and probably already picked over for unique artifacts. Early non-Native Settlement refuse may still be relatively intact, depending on its location or distance from that settlement. Refuse from Expeditions and Emigration is likely to be surficial in nature, with minimal stratified subsurface deposits. As such, NRHP-eligible refuse deposits clearly associated with this theme must be in primary depositional context, and contain early identifiable material remains that can accurately date the site within the theme, or provide data relevant to specific underrepresented ethnic or gender communities, social stratification, or demographic profiles. Early non-Native Settlement refuse deposits must also be in primary context, but are more likely to contain abundant and varied refuse that can provide a more nuanced view toward ethnic or gender communities, social stratification, and/or demographic profiles, as well as the potential for intact, stratified subsurface cultural deposits that may provide additional data not represented on the surface. Surficial refuse that lacks variety, or is small and heavily scattered, or surface/subsurface deposits in a secondary depositional context are unlikely to provide data that can address these areas of interest and are therefore generally considered not eligible for inclusion in the NRHP.

Agriculture and Ranching

As early as the 1860s, ranchers and farmers began to settle in the Fallon area to provide resources to miners on the Comstock. By the 1970s, the further development of ranches had a drastic effect on resources through leveling cattail growth in marshes followed by sheep, horse, and cattle grazing and diverting water for irrigation. As a result, the local Paiute community may have had no choice but to work for wages on and around the ranches and farms and continue entrepreneurial work selling items in Stillwater, Fallon, or at the Walker Reservation (Fowler 1990).

The Newlands Reclamation Act of 1902 represents the federal effort to bring water back to the Carson Desert starting with the construction of the Derby Dam in 1903 (Hardesty and Buhr 2001:6). By 1905, the 30-mi.-long Truckee Canal was completed and was providing water to irrigate farmlands in the newly founded towns of Fallon and Fernley. This coincided with the height of mining activity in the Study Areas in the early twentieth century. Ranchers living in and around the Study Areas have also used the lands for grazing by acquiring water rights for springs to water herds of sheep, cattle, or horses. In addition, many of the farmers and ranchers may have been simultaneously involved with mining and other ventures in order to diversify their income and weather economic recessions. Ranching- and farming-related resources may provide information on how ranchers and farmers developed unique local and regional adaptive strategies due to climate, available resources, altitude, and proximity to commercial centers, among many other factors.

NRHP Evaluation

Historic ranches or ranch landscapes may be eligible for listing in the NRHP under Criterion A for their role in a region's settlement and economic development. It is also possible that ranch properties could be eligible under NRHP Criterion B, for their direct association with a person or persons prominent in national, regional, or local history. Complexes of ranch buildings and structures, alone or along with features of a rural ranch landscape (e.g., corrals, irrigation systems) may be NHRP-eligible under Criterion C for their distinctive architectural characteristics or as the embodiment of a type or style that is not well documented in history. Properties meeting Criteria A, B, or C must retain sufficient integrity to convey their significance; for example, most or all of their original design/layout must be intact or at least recognizable, along with a variety of buildings and features that illustrate the activities conducted at the property. To be eligible under NRHP Criterion D, ranch complexes must have the capacity to yield important historical data by addressing scientific or historical research issues that cannot be addressed with archival information.

Data Needs for Agriculture and Ranching

In order to provide information relevant to the theme, a site would have to have an association with the theme, diagnostic artifacts, intact artifact deposits, and/or features with horizontal and vertical integrity. Homestead sites, with ancillary structures such as line camps and/or cold storage units, would offer a great deal of contextual information about the ranching and farming industry and would increase the likelihood of associating the site with a known person or family. Archival research of water rights applications can provide information on modifications to springs, creeks, and streams and how the landscape was utilized by ranchers and farmers. Corrals for holding herds or old fence lines may also be located in the Study Area and might reflect a variety of construction types over time. NRHP-eligible refuse scatters or deposits clearly associated with this theme must be in primary depositional context, and contain abundant, unique, or a variety of distinctive materials associated with specific activities (or activity areas) that can accurately date the site to a specific (preferably narrow) age range contemporary with the theme, or provide data relevant to specific underrepresented ethnic or gender communities, social stratification, or demographic profiles, or exhibit (or have potential for) stratified subsurface deposits that may contain additional data not represented on the surface. In addition to diagnostic mass-manufactured goods, other diagnostic items such as projectile points, ceramics, and beads may help associate Native Americans with the ranching and agriculture industry. Surficial refuse that lacks variety, or is small and heavily scattered, or surface/subsurface deposits in a secondary depositional context are unlikely to provide data that can address these areas of interest and are therefore generally considered not eligible for inclusion in the NRHP.

Mining

Five mining districts overlap with the DVTA and B-17 Study Areas and span nearly 100 years of mining in Nevada. They represent the mining of a multitude of materials including gold, silver, mercury, and fluorspar and represent a variety of mining techniques. While the mining camps of Wonder, Fairview, and Rawhide have drawn a great deal of interest because of their classic boom-bust storylines, length of occupation, significant gold-silver ore production, and stories of colorful characters, the lesser-known mining districts of Job Peak, Mountain Wells, Broken Hills, Lodi/Quartz Mountain, and Poinsettia seem to represent the seasonal efforts of a few individuals that may be otherwise overlooked.

Studies of historic mining sites have generally been conducted within the scope of two major research domains: mining technology and mining communities (Hardesty 1988, 1990; Hardesty and Little 2000). Several different mining styles are present across the Study Areas, ranging from corporate mining to small-scale independent mining. The importance of subsistence mining economies is often underrepresented in the historical record, because it can be difficult to identify evidence of Depression-era mining, or that of other temporary booms, except through archaeological study (e.g., J. Smith 2006). These sites have the potential to yield information on domestic and recreational spaces, which in turn can provide data regarding the internal culture of a homestead or work camp. Segregation of activity areas offers insight into household priorities or the structural hierarchy of a milling or mining company. Considering alterations to the landscape, and how people moved through it with the process or goals of a certain activity in mind, aids in understanding how people used the landscape to their advantage or modified it to suit their purposes.

Recordation of the sites and features within mining districts can provide information on the impact of the various districts on the local and regional economy. The mining districts also appear to represent a wide variety of mining styles. Miners could be local people who supplemented their income with seasonal work at the mines, or they could be miners who came from other counties to take advantage of booms as they occurred. In addition, the archaeology of mining camps and districts can provide a strong corrective element to historical accounts. Reporting on mine production and mining camp booms was notoriously exaggerated and embellished in order to draw the interest of investors, lessees, and commercial ventures to mining claims.

NRHP Evaluation

Individual mining sites or districts of mining properties may be eligible for inclusion in the NRHP under Criterion A for their association with the development of gold, silver, and other mineral extraction/processing in the Great Basin during the nineteenth or twentieth centuries. Furthermore, mining methods and mining camp life in the western U.S. between 1890 and World War II have been under-documented in the historical record due to several factors, not least of which has been a preference among historians and writers for the earlier, more flamboyant “boom” phases such as the California Gold Rush and the Comstock era (Hardesty 1988:6-8). Only recently has the importance of subsistence mining economies, such as those that developed during the economic depressions of the 1890s and the 1930s, become apparent in history. Unfortunately, phases of redevelopment and reuse within historic mining districts typically left few intact remains, even at large sites. Consequently, many mines, mining camps, and mining districts will lack sufficient integrity to convey historic significance under Criterion A. Mines or mining districts specifically associated with persons of major importance in national or regional history may be eligible for inclusion in the NRHP under Criterion B. Those that contain buildings or other intact features that exhibit unique or distinctive types or styles of construction, engineering, or mining/milling technologies may meet Criterion C. Again, such features must have sufficient physical and visual integrity that their structural or technological importance is recognizable and of potential interest to the public. Finally, mining sites or districts that contain key data required to address scientific or historical research questions may be eligible for listing in the NRHP under Criterion D. Such properties have potential to address research domains associated with mining technology and/or mining communities (Hardesty 1988, 1990; Hardesty and Little 2000).

Data Needs for Mining

In order to provide information relevant to the theme, a site would have to have an association with the theme, diagnostic artifacts, intact artifact deposits, and/or features with horizontal and vertical integrity. Property types associated with mining technology are generally the mines themselves (shafts, adits, drifts), along with waste piles (tailings), earthworks and waterworks (roads, ditches, cut banks, terraces), underground workings, extraction equipment and structures (hoists, rails, headframes, ore chutes, conveyors, tramways), and processing features such as arrastras, Chile mills, ball mills, stamp mills, ore chutes/loaders, and amalgamation or cyanide plants. Property types associated with mining communities are essentially camp sites or townsites, including public and residential structural remains, domestic landscape features, and artifact deposits (Hardesty 1988; Hardesty and Little 2000). Archival data regarding methods of production, amount produced, individuals involved at the site, and hierarchical structure can assist in the development of research questions. NRHP-eligible refuse scatters or deposits clearly associated with Mining must be in primary depositional context, and contain abundant, unique, or a variety of distinctive materials associated with specific activities (or activity areas) that can accurately date the site to a specific (preferably narrow) age range contemporary with the theme, or provide data relevant to specific underrepresented ethnic or gender communities, social stratification, or demographic profiles, or exhibit (or have potential for) stratified subsurface deposits that may contain additional data not represented on the surface. Specific areas designated as town dumps for mining complexes may be useful in addressing such areas of interest, as can smaller, self-reliant mining operations, though the data from each is likely to be different in terms of size, scale, and presence of varied materials. Surficial refuse that lacks variety, or is small and heavily scattered, or surface/subsurface deposits in a secondary depositional context are unlikely to provide data that can address these areas of interest and are therefore generally considered not eligible for inclusion in the NRHP.

Transportation and Utility Lines

Communication and transportation networks have been critical to the state of Nevada, given the vast amount of unoccupied land and the harshness of the terrain that made both travel and communication difficult. These networks have also supported and bolstered the major industries of Nevada (military, mining, agriculture, and ranching). Transportation lines and utility lines serve as an indication of the development and infrastructure of ranches, settlements, and mining camps. Prior to the arrival of non-Native emigrants, the Study Areas were undoubtedly crisscrossed with footpaths and trails used by local Paiute tribes, some of which became major routes for non-Native travelers, emigrants, and expedition leaders. In 1859, trails forged by Capt. James H. Simpson on his journey from Camp Floyd to Genoa and back crossed to the north and south of Carson Lake, respectively. Simpson’s route, or adjacent alignments, was used by the Pony Express and later, telegraph and telephone lines paralleled this route. Stations, ranches, and larger settlements eventually grew up along many of these routes as well, including places like Ragtown, Redman Station, St. Clair, and Wild Cat. Although many of these roads were eventually subsumed, they were significant in the development of transportation routes through the Carson Desert and ultimately influenced the selection of the route of the historic Lincoln Highway in the early twentieth century.

The extent to which a road was constructed or maintained and includes supporting structures such as retaining walls, earthworks, and/or culverts could indicate a time or money investment. The Lincoln Highway is a significant transcontinental roadway that crosses south of the DVTA Study Area. The period of significance for the road is defined as its main period of use between 1913 and 1926 (NAS Fallon 2011: 91). Other, smaller roads are present through the DVTA and B-17 Study Areas and are of much less historical significance. In addition to access to water, the availability of transportation and utility lines made a significant contribution to making central Nevada accessible and habitable.

NRHP Evaluation

Transportation routes and/or utilities may be recommended as eligible for the NRHP if they can be shown to have a strong association with events important in history or notable individuals (Criteria A and B), or if their construction incorporates distinctive engineering and/or construction characteristics or techniques, (Criterion C). Lastly, a transportation route in the project area may be recommended as eligible if the route has the potential to yield important information related to our understanding of local, regional, or national transportation networks (Criterion D). Very few constructed roads (or railroads) embody archaeological data or other historical information that are not immediately apparent (Fryman and Kim 2008). However, there are many sites and features associated with a road or transportation system that do have the potential to yield important data not available in the historical record. Like all historic resources, however, historic significance must be accompanied by sufficient physical and visual integrity so that the structural or technological importance of properties is recognizable and is of potential interest to the public. Integrity considerations are particularly applicable to historic roads simply because most roads continue to be used, surface treatments are changed, and alignments get altered over time. While their location (route) remains essentially the same, appearance, alignment, and other integrity factors have often been compromised to the degree that a road or railway grade is no longer recognizable as historic (Buck et al. 2002:65; Fryman and Call 2011:3-19). Some of the transportation routes and utilities in the Study Areas are associated with mining camps and districts and may have to be considered as contributing or non-contributing elements to the eligibility of an associated mining district for listing on the NRHP.

Data Needs for Transportation and Utility Lines

In order to provide information relevant to the theme, a site would have to have an association with the theme, diagnostic artifacts, intact artifact deposits, and/or features with horizontal and vertical integrity. Transportation and utility lines are relatively well documented in historic documents, including maps and aerial photographs. Road systems may include waymarkers (e.g., tree blazes, mail trees or rocks, inscribed rocks), roadside gravesites and campsites, and various types of waystation sites (e.g., toll stations, stage and freight stops) (Fryman and Call 2011:3-19). The construction of early highway systems, such as U.S. 50, also include temporary construction camps as well as habitation sites at roadside stations and communities. Evidence of utilities would include utility poles, insulators, access roads, and potentially refuse scatters or deposits if they contain evidence of utilities-associated cultural materials, such as work, repair, or camp sites. Refuse scatters/deposits associated with utilities are likely to be rare and small in scale. As such, they are unlikely to contain much diverse data that could address questions of interest. Similarly, they are unlikely to have such intensive use as to generate abundant deposits of varied material or create intact, stratified, subsurface cultural deposits. Refuse is far more common near transportation corridors and can be associated with either its initial construction and use or later maintenance and continued use. As such, once the period of significance for either the transportation corridor or utility line is determined, the refuse must fit within that time period to be considered associated. To be NRHP-eligible, then, associated refuse must be in primary depositional context, and contain abundant, unique, or a variety of distinctive materials associated with specific activities (or activity areas, such as work/construction camps, etc.), or provide data relevant to specific underrepresented ethnic or gender communities, social stratification, or demographic profiles, or exhibit (or have potential for) stratified subsurface deposits that may contain additional data not represented on the surface. Surficial refuse that lacks variety, or is small and heavily scattered, or surface/subsurface deposits in a secondary depositional context are unlikely to provide data that can address these areas of interest and are therefore generally considered not eligible for inclusion in the NRHP.

Military (Post-World War II)

During the 1950s, the U.S. began to develop a strategy to combat a growing political and military threat from the Soviet Union. In order to prepare for both attack and defense, the U.S. acquired or modified military bases to suit the new form of aggression. In response to this hostility, Nevada was uniquely positioned to serve as a location for pilot training and nuclear weapons research and development. Nevada Military history from 1946-1989 is known primarily for Cold War weapons research/development/testing, though threat detection and pilot training were also of high importance (NAS Fallon 2011). NAS Fallon has primarily been responsible for training fighter/bomber pilots for naval aircraft as well as electronic warfare training. The Study Areas were used exclusively for training and practice; therefore, research themes would have to be directed primarily to warfare equipment, techniques, and tactics unique to the Cold War period. During the Cold War, the American military had to adapt their warfare strategies and military facilities to respond to nuclear and missile attacks (Reid Planning 2007). In addition, the training was dominated by air-to-ground maneuvers, so common marks of ground tactical training, such as foxholes and shooting blinds, are unlikely.

NRHP Evaluation

Military-related resources may be recommended as eligible for the NRHP if they can be shown to have a strong association with events important in history, such as the Cold War, or notable individuals (Criteria A and B), or if their construction incorporates distinctive engineering and/or construction characteristics or techniques (Criterion C). Lastly, the site may be recommended as eligible if the resource has the ability to yield important information related to our understanding of technological developments, warfare techniques, or the regional and local economy (Criterion D).

Data Needs for Post-World War II Military

In order to provide information relevant to the theme, a site would have to yield diagnostic artifacts, intact artifact deposits, and/or features with horizontal and vertical integrity clearly associated with the post-World War II era. Resources that date within the Cold War era (1946-1989) may include equipment, ordnance, structures, or refuse deposits that can be reliably dated to the timeframe. Archival research may be able to identify locations of dumps or waste deposits, but these are likely to be located on or near the main installation. Historical refuse deposits associated with post-World War II Military use are expected to be rare. Occasional items such as ammunition cartridges, ammunition boxes, or other refuse is unlikely to be considered significant or found in abundance. Similarly, unless a dump is found that contains stratified intact cultural deposits clearly associated with Military use, it is assumed that most Military-related refuse scatters will be considered ineligible for the NRHP.

7. SUMMARY, MANAGEMENT RECOMMENDATIONS, AND CONCLUSIONS

SUMMARY

This document provided an overview of the cultural resource reports and known and potential cultural resources located within the proposed FRTC Modernization EIS Study Areas, which cover approximately 92,315 acres in western Nevada, on lands currently managed by the BLM Carson City District Office and private entities. Records and reports forming the data within this report were collected from the BLM, as well as the Nevada SHPO, NSM, NAS Fallon, and other published resources. This compilation was created with the intent to provide the reader with an overview and synthesis of the type, variability, and range of projects conducted as well as the known cultural resources present, and potentially present, within the proposed DVTA and B-17 Study Areas.

The prehistoric era here is divided into five chronological periods. The Pre-Archaic period (11,500-7500 B.P.) is characterized by very different environmental conditions compared to today; the first peoples in the area were highly mobile, and site functions appear similarly general and unspecialized. With the shift to warming and drying temperatures during the middle Holocene, the Early Archaic period (7500-3500 B.P.) is poorly represented, suggestive of abandonment of the Carson Desert and surrounding areas. While generally true, there is evidence of short occupations that intensify towards the latter end, after 5000 B.P. The Middle Archaic period (3500-1500 B.P.) generally is considered a boom period associated with improved climatic conditions. Village sites become more common, obsidian ranges and perhaps trade/exchange expand, and many more landscapes were utilized. With the shift to the bow-and-arrow in the Late Archaic period (1500-650 B.P.), individual hunting became more common along with explosive rises in projectile point densities. Additional changes in group structure, technology, and resource procurement (including pinyon exploitation) identify this period as very dynamic. The final prehistoric period, the Late Prehistoric (650 B.P. to contact), represents additional changes in landscape use and resource procurement strategies, possibly driven by population replacement by Numic groups.

By the time of contact with Euroamerican groups, the ethnohistoric inhabitants were of Northern Paiute ancestry, living near Carson Lake and along the slough. The Toedökadö (Cattail-eaters) practiced a seasonally semi-nomadic lifeway centered on the marshes and wetlands of the Carson Desert, capturing resources as they ripen and become abundant (Fowler 2002). As Euroamerican settlement increasingly marginalized the Toedökadö, many moved closer to these establishments for food and work opportunities.

The earliest historic-era (Euroamerican) use of the region was primarily for reconnaissance and identification of passageways to the west coast (1820s-1850s). This shifted once valuable ores were discovered and extracted for profit. As mining districts formed and miners increased in number, additional support services sprang up as needed, including larger support towns with stores and post offices, ranches and farms were settled and some developed to help feed the populations, and communications and transportation networks were established. As warranted by world events in the twentieth century, military training and weapons testing became important in the low-population density areas of western Nevada.

To evaluate cultural remains associated with prehistoric, ethnohistoric, or historic-era resources, this document also identified key research themes and data needs. Prehistoric research themes include chronology, settlement and subsistence patterns, toolstone procurement and use, and rock art studies. Additional themes may be warranted as necessary. Historic-era research themes include expeditions, emigration, and early non-Native settlement, agriculture and ranching, mining, transportation and communication, and military. Discussions of each theme and site type were provided with data needs to address the National Register criteria for eligibility evaluations.

MANAGEMENT RECOMMENDATIONS

This document provided a synthesis of the type, variability, and range of resources within the proposed DVTA and B-17 Study Areas of the FRTC Modernization EIS. Cultural resources on lands proposed to be withdrawn will shift management from the BLM to NAS Fallon, but results of compliance projects pertaining to cultural resources on these lands must also be reviewed by the original federal land-manager (BLM). Section 106 of the NHPA, as amended, requires the federal agency to consider the effects of federal undertakings on historic properties (those cultural resources listed or eligible for listing in the NRHP) on its managed lands. This Class I Cultural Resources Overview of the DVTA and B-17 Study Areas of the FRTC Modernization EIS identifies the majority of known resources and previous studies, as well as environmental and cultural backgrounds and research themes necessary for identifying and evaluating cultural resources to aid in future management of the proposed withdrawn lands. This document, however, should not be used as a sole source for background information and location or findings of previous studies in any given area, but does provide an informed overview that should guide researchers following normal literature review standards, procedures, and conventions.

Data Gaps

As part of this Class I Cultural Resources Overview, ASM has identified several areas where improvements can be made in site documentation, data management, and the need for additional studies. These recommendations will help to improve the quality of data and research potential of the cultural resource managers and other cultural resource management firms.

Site Documentation

ASM reclassified all known recorded archaeological sites into defined site types for consistency and to allow for cross-comparisons. Future site documentation would be advised to follow these, or similar, site type definitions to further the process of creating comparable site information. Similarly, and in keeping with the Nevada BLM guidelines and standards (2012), site documentation should include clearly described and enumerated flaked and ground stone tools or other formed artifacts, features, and other recorded site characteristics. Diagnostic artifacts (prehistoric and historic) should be clearly photographed or illustrated and include pertinent measurements for each artifact type (e.g., length, width, thickness, basal width, neck width, axial length, etc. for projectile points). Early site records are often vague in their site and constituent descriptions and should be updated to current archaeological standards, especially unique sites such as rock art, caves/rockshelters, habitations, or those with potential for standing structures such as mines, mills, and mining camps before they succumb to natural processes, illicit artifact collection, or vandalism.

Data Management

As part of this synthesis, ASM completed detailed reviews of previous studies and resources in the Study Areas. This included adding data to blank or incomplete data fields in BLM databases as well as digitization of inventories and cultural resource boundaries in GIS using the map plots provided in the original reports. While this process was necessary primarily for early studies (pre-2000s), it should be followed through on all other properties and studies going forward. This will continue to improve agency databases for use in comparison, research, and resource management purposes. Of note, the Horse Creek Ranch property, located in DVTA, is described in agency GIS files as having been surveyed by Bloomer et al. (1999) as part of BLM report CRR3-2563. This is a mistake, as is their plotting of the inventory. Bloomer et al. (1999:27 and Table 1) clearly note that this parcel was not inventoried by them, but was surveyed previously by Creger (1998), which is available at NAS Fallon as Archaeological Technical Report Series No. 26 (TR-0026).

Additional Studies

More than 99 percent of the land within the proposed DVTA and 98 percent of the land within the proposed B-17 Study Areas has not undergone intensive or even reconnaissance-level archaeological inventory. Many of the surveys were conducted more than a decade ago and may not have been subject to current intensive-level inventory standards. Historic-era resources (such as prospects and refuse scatters) were often dismissed in the 1970s and 1980s as well, indicating that these studies may not have recorded all resources present. In addition, the BLM guidelines and standards require any area not previously inventoried in the past 10 years be resurveyed to account for differences in methodology as well as changes to the land that may have obscured or revealed old and new resources.

While complete coverage of the entire 92,315-acre withdrawal may not be feasible at this time, targeted studies or samples may prove highly effective in identifying high sensitivity areas. The DVTA and B-17 Study Areas encompass portions of several mining districts with little detail on their cultural resource elements or geographic expansion. Targeted studies to further refine their extent may be warranted, especially to those with standing architecture while this is still present. The Baxter/Kaiser mine is a prime example. While it is outside the proposed B-17 Study Area, it is encompassed within the proposed B-17 withdrawal. Recent site visits by the authors identified at least one standing (but leaning heavily) structure, as well as multiple structure platforms. This area, however, also has attracted modern recreationalists using the structure and surrounding area for camping and firearm target practice, and it may only be a matter of time before irreparable harm comes to these archaeological and architectural remains. Similar situations may be present at Broken Hills, Eagleville, and King mines.

Additional studies of the Study Areas will help to further refine the findings in this overview and allow for a more complete understanding of the cultural resources present in the Study Area, providing a useful tool for cultural resource managers as they attempt to balance historic preservation with the ground and aerial training and weapons testing needs of NAS Fallon.

CONCLUSIONS

The proposed DVTA and B-17 Study Areas have generally undergone minimal, targeted cultural resource studies, mostly completed for compliance with Section 106 of NHPA. Large swaths of land within the proposed Study Areas have not undergone any cultural resource studies, and therefore, we know little of the prehistoric and historic uses of those specific areas. However, review of the studies completed to date in surrounding and adjacent areas affords a broad overview of land use patterns, chronology, and intensity of prehistoric and historic use. This Class I overview report has provided an account of what is known as well as what areas lack such detail. The prehistoric and historic contexts herein provide research themes for future studies when recording and evaluating cultural resources for their potential for inclusion in the NRHP. Therefore, this document should be used as a baseline of the current state of knowledge for NAS Fallon land and cultural resource managers to use when considering impacts of federal undertakings on cultural resources and historic properties.

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