A CLASS III CULTURAL RESOURCES INVENTORY OF PROPOSED ROADS AND DRILL PADS FOR THE McGEE MOUNTAIN GEOTHERMAL PROJECT, HUMBOLDT COUNTY, NEVADA

DRAFT

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MANAGEMENT SUMMARY

Chambers Group, Inc. (Chambers Group) was retained by Geothermal Technical Partners Inc. to perform a Class III cultural resources inventory of proposed access road extensions and drill pads. The project area is located on the eastern edge of the McGee Mountain range where the hills meet the western edge of Bog Hot Valley, in Humboldt County, NV. The project area consists of five non-contiguous road segments and nine drill pad locations totaling approximately 89 acres on public land managed by the BLM Winnemucca District Office.

From July 20th to July 22nd, 2010, Chambers Group personnel conducted a cultural resources inventory of the project area. The recordation and inventory resulted in the recordation a single newly identified prehistoric site (CrNV-2-9605) and five isolated finds (CrNV-2-1490 to 1494). The prehistoric site is a small lithic scatter composed exclusively of chalcedony with two formed tools. CrNV-2-9605 is recommended as not eligible to the NRHP under all Criterion. The isolated finds consist of a single prehistoric flake and four pieces of historic debris. All of the isolated finds are categorically not eligible for the NRHP per the State Protocol Agreement between the BLM and Nevada SHPO (2009: Appendix E).

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1.0 INTRODUCTION

Chambers Group, Inc. was retained by Geothermal Technical Partners Inc. to perform a Class III Cultural Resources inventory of proposed access road extensions and drill pads. The project area is located on the eastern edge of the McGee Mountain range where the hills meet the western edge of Bog Hot Valley, in Humboldt County, NV. The project area consists of five non-contiguous road segments and nine drill pad locations totaling approximately 89 acres on public land managed by the BLM Winnemucca District Office.

1.1 LEGAL LOCATION

The legal description of the project area inventoried for cultural resources is as follows:

Township 45 North, Range 27 East; SW¼ of Sec. 14; NW¼ of SE¼ of Sec. 23; NW¼ of Sec. 26; SE¼ of Sec. 27; NE¼ of SW¼ of Sec. 34; NE¼, NW¼, and SW¼ of Sec. 35.

1.2 MAP REFERENCES

USGS 7.5-minute *Alder Creek Ranch, Nevada* (1990) topographic quadrangle
USGS 7.5-minute *McGee Mountain, Nevada* (1990) topographic quadrangle

1.3 DATES OF INVESTIGATION AND PERSONNEL

From July 20th to 22nd, 2010, Chambers Group personnel conducted a cultural resources inventory of the project area. Sean Simpson served as crew chief, assisted by Jeffrey Northrup and Tony Kuhner. Harold Brewer served as principal investigator. Harold Brewer and Jeffrey Northrup prepared the technical report. All maps were prepared by Jeffrey Northrup.

1.4 ACREAGE

The project area for the Class III inventory consists of five non-contiguous road extensions and nine drill pad locations totaling 89 acres (Figures 1.1 and 1.2).

Figure 1.1 Project Vicinity Map

Figure 1.2 Project Area map

2.0 ENVIRONMENTAL SETTING

The project area is located at the northwestern edge of the Basin and Range physiographic province that is typical of the Great Basin as a whole. The topographic system is characterized by north-south trending mountain ranges alternating with parallel valleys. Differences in elevation from the tops of the mountains to the valley floors can be as much as 5,000 feet (1,524 m). Most of the mountain ranges found in the Great Basin are fault block mountains, essentially caused by extension fractures in the earth's mantle. Desert plains and broad basins with interior and exterior drainage and relatively high tectonic and seismic activity separate these ranges (Stewart 1980). The area is one of the driest in the United States, with its major precipitation in the winter months.

The project area lies at the eastern edge of the McGee Mountain range, on the western edge of Bog Hot Valley in Humboldt County, Nevada. The eastern exposure of the McGee range is composed of mostly Miocene rhyolitic ash flow deposits and related alluvium, with some shallow intrusive rocks (Willden 1964). Smaller pluvial lakes and lake-marsh playa systems and associated resources formed in several of the valley-basins near the project area in response to changing Pleistocene-Holocene hydrological conditions. Many geomorphic processes were profoundly affected by the Pleistocene-to-Holocene climatic transition. The trend to a warmer and dryer environment brought about the desiccation and deflation of pluvial lakebeds and distal piedmont areas (Dohrenwend 1987). Deposition of sand sheets and silt- and salt-rich aeolian veneers on the surrounding piedmonts and uplands initiated a variety of changes in geomorphic process. In addition, aeolian silts and salts may have accelerated processes of physical weathering and colluviation on hill slopes during the early Holocene (Dohrenwend 1987).

The model of Holocene climatic sequence developed by Antevs (1948) is generally the starting point of a basic description of climatic change from the end of the Pleistocene to the present. However, it is a rather general description and does not account for other more localized factors that also may have influenced human adaptation in the Great Basin through time, specifically short-term climatic events, variations in seasonal rainfall, and non-climatic events such as volcanic activity, stream diversions, and other like events (Elston 1986:136).

In Antev's (1948) three-part scheme, the Holocene is divided into intervals in which overall climatic patterns were relatively consistent. The first interval is the Anathermal Age, which lasted from 9,000 to 7,000 B.P. The next interval is the Altithermal Age, which lasted from 7,000 to 4,500 B.P. The final interval is the Medithermal Age, which lasted from 4,500 B.P. to the present.

The Anathermal began with a climatic pattern somewhat moister than the current pattern. Rather than a sudden change, this reflects the ending of cooler and wetter Pleistocene patterns. The result was that many of the basins contained remnants of the great pluvial lakes with associated plant communities. Game also made use of this same lakeshore or marsh habitat. This environment was favorable for the occupation of the area by native peoples. As the Anathermal waned, conditions became warmer and drier.

The Altithermal is marked by a period where the temperature was, on average, warmer than it is today. During this period most of the lake remnants and marshes dried up, leaving behind a barren, desiccated landscape. The degree to which this pattern affected specific locales within the Great Basin varied. Some plant communities adapted by moving up in elevation to temperature and moisture zones similar to what had previously prevailed, but much of the moisture-dependent species declined considerably. The change in water availability and the vegetation associated with it undoubtedly had an impact on the availability of game animals.

A return to cooler, moister climate signaled the beginning of the Medithermal. Once again, some of the pluvial lakes held water. Streams and springs began to flow again, and in places, marshes were reestablished. This pattern held for approximately 2,500 years before the conditions became drier again, although not to the degree seen in the Altithermal. Many of the basin lakes diminished at this point, however. At some time in the proceeding one thousand years conditions again moderated and became cooler, and some basin lakes rose again in response. This trend continued into the historic period, with the Great Salt Lake, Pyramid Lake, and Lake Winnemucca all reaching historic high levels in the late 1860s and early 1870s.

Today, the project area is characterized as high desert. Summers are dry and most of the annual precipitation falls in winter as snow or rain, although fall thunderstorms contribute to overall amounts. The upper mountain elevations receive more rain and snow than in the valleys (Gelhaus 1995). The annual precipitation is around 8 inches and average snowfall is 17 inches. Temperatures within the project area range from a low of -12°F in the winter, to a high of 98°F in the summer. Elevations within the project area range from 4,550 to 5,000 feet above mean sea level.

2.1 FLORA

The project area is in an Upper Sonoran life zone, and is dominated by shadscale community vegetation. The shadscale community occurs at elevations below 5,000 feet and dominates the valley bottom and alluvial fans in the project area. Shadscale vegetation community includes shadscale (*Atriplex confertifolia*), pickleweed (*Allenrolfea occidentalis*), sand sage (*Artemesia filifolia*), budsage (*Artemisia spinescens*), 4-wing saltbush (*Atriplex canescens*), saltbush (*Atriplex nuttallii*), rabbitbrush (*Chrysothamnus viscidiflorus*), Mormon tea *(Ephedra nevadensis*), winterfat (*Eurotia lanata*), hopsage (*Grayia spinosa)*, snakeweed (*Gutierrezia sarothrae*), greasewood (*Sarcobatus baileyi*), horsebrush (*Tetradymia glabrata*), galleta grass (*Hilaria jamesii*), Indian ricegrass (*Oryzopsis hymenoides*), squirreltail grass (*Sitanion hystrix*), desert needlegrass (*Stipa speciosa*), and wild buckwheat (*Eriogonum ovalifolium*). Disturbed habitats include non-native species such as cheatgrass (*Bromus tectorum*), foxtail (*Hordeum jubatum*), tansy mustard (*Descurainia pinnata*), and Russian thistle (*Salsola iberica*).

2.2 FAUNA

Animals commonly found in or near the project area include: mule deer (*Odocoileus hemionus*), mountain cottontail (*Sylvilagus nuttalli*), sage grouse (*Centrocercus urophasianus*), blacktailed jackrabbit (*Lepus californicus*), desert cottontail (Sylvilagus audobonii), ground squirrels (*Spermophilus* spp.), kangaroo rat (*Dipodomys* spp.), woodrat (*Neotoma lepida*), coyote (*Canis latrans*), kit fox (*Vulpes velox*), badger (*Taxidea taxus*), black-billed magpie (*Pica pica*), raven (*Corvus corax*), horned lark (*Eremophila alpestris*), Brewer's blackbird (*Euphagus cyanocephalus*), red-tailed hawk (*Buteo jamaicensis*), and northern harrier (*Circus cyaneus*), in addition to several other reptile and bird species.

3.0 PREFIELD RESEARCH

Prior to fieldwork, a literature search of previous archaeological investigations conducted within a one mile radius of the project area was performed and historic documents were examined. Existing contexts related to the project area and listings of properties on the National Register of Historic Places were also consulted. Inventory expectations were compiled from these resources.

3.1 PREVIOUS ARCHAEOLOGICAL INVESTIGATIONS

On July 16, 2010, Chambers Group personnel conducted a literature search of previous inventories within a one-mile radius of the project area. The records search was conducted online through the Nevada Cultural Resource Information System (NVCRIS) database, and at the BLM Winnemucca District Office. A total of eleven cultural resources inventories have been conducted within one mile of the project area (Table 3.1). Three sites and two isolated finds were found to have been previously recorded within one mile of the project area. No previously recorded sites are located within the current project area, although one isolate, CrNV-21-1788, was noted as being close to Pad 8.

3.2 ARCHIVAL RESEARCH

A search of General Land Office (GLO) survey plats, historic topographic maps, federal and state patent records, historical indices, and master title plats was conducted online using the BLM's Public Land Records website and the Nevada Division of State Lands website. No GLO survey plats could be found for Township 45N, Range 27E. No historic resources were indicated within the project area.

Table 3.1. Previous Cultural Resource Inventories within 1 Mile of the Project Area

BLM Report No.	NSM Report No.	Report Title	Author	Date	Sites within 1 Mile (BLM # CrNV-)
2-132(P)	7-66	Earth Power Corp. Co. NOI N2-23-77	D. Simontacchi	1977	None
2-142(P)	7-82	Earth Power Prod. Co. Proposed shallow gradient geothermal test holes	J. Davis	1977	21-748 21-749
2-161(N)	7-48	Earth Power Prod. Co. NOI N2-27-77	N. Smyers	1979	None
2-187(N)	7-62	Earth Power Prod. Co. NOI N2-40-77	N. Smyers	1977	None
2-264(P)	7-95	Earth Power Prod. Co. NOI N2-48-78	V. Dunn	1979	21-1788
2-280(N)	7-192	Earth Power Prod. Co. NOI N2-45-79	V. Dunn	1979	None
2-419(P)	---	Archaeological Reconnaissance of Six Proposed Geothermal Well locations Near Denio, Nevada.	R. Elston	1980	None
2-560(P)	7-370	Cultural Resources Report – Fourth Spring Project	K. Perrick	1981	21-2686
2-833(P)	---	No record available	---	---	21-3016

Table 3.1. Previous Cultural Resource Inventories within 1 Mile of the Project Area

BLM Report No.	NSM Report No.	Report Title	Author	Date	Sites within 1 Mile (BLM # CrNV-)
2-1235(N)	---	McGee Mountain Water Development Project, Nevada Division of Wildlife, Humboldt County	M. Scott	1995	None
2-2114(P)	---	Two Big Game Guzzlers	C. Corey	1986	None

Table 3.2. Previously Recorded Archaeological Sites within 1 Mile of the Project Area

BLM Site No.	State No.	BLM/NSM Report	Description	NRHP Eligibility
21-748	Hu1027	2-142(P)	Lithic scatter	Unevaluated
21-749	Hu1028	2-142(P)	Lithic scatter	Unevaluated
21-1788	Hu2240	2-264(P)	Isolate	Not eligible
21-2686	Hu1563	2-560(P)	Isolate	Not eligible
21-3016	Hu1310	2-833(P)	Lithic scatter	Unevaluated

3.3 NATIONAL REGISTER LISTINGS

The National Register of Historic Places (NRHP) does not list any properties within the project area.

3.4 FIELD EXPECTATIONS

Based on prior archaeological investigations and historic maps for this area, both prehistoric and historic cultural resources were expected. Prehistoric sites within the project area were expected to be mainly small to moderately sized open lithic scatters containing debitage, projectile points, bifaces, possible hearth features and ground stone.

Archival research suggests that the project area may have archaeological remains related to mining, particularly due to the named Painted Hill Mine near the currently proposed project. Features and artifacts associated with the mining theme could include adits or vertical shafts, prospect pits, roads or trails leading to and from mining activities, as well as industrial debris such as shovel, picks, modified pans or barrels, and domestic debris such as can and bottle scatters.

4.0 CULTURAL OVERVIEW

Human occupation in the Great Basin has been documented through archaeological remains, ethnographic studies, and historic documents. The archaeological record within the vicinity of the project area extends the cultural setting to at least 12,000 years ago. Although mostly culturally uniform through time, variations in settlement and subsistence patterns developed within the Great Basin (d'Azevedo 1986:8). Culturally distinguishable groups formed in response to environmental adaptation and also through interaction and exchange with other cultural groups in the surrounding region. Among these later influences were the far-reaching effects of European contact. Further impact to these groups came in the form of European exploration, immigration, and eventual permanent settlement into the area. The following outlines the prehistory, ethnohistory, and history of the project area and surrounding region.

4.1 PREHISTORIC OVERVIEW

The prehistoric overview is summarized from previous archaeological investigations in the region (cf. Heizer and Napton 1970; Bard et al. 1981; Rusco 1982; Thomas 1982; Smith et al. 1983; Elston 1986; Rusco and Davis 1987; Miller et al. 1996; Vierra and Langheim 2002; King et al. 2004; McGuire et al. 2004; McGuire and Hildebrandt 2005). Prehistoric chronology is generally similar throughout the Great Basin, with some regional variation within each sub-area. Excavations at Lovelock Rock Shelter (Loud and Harrington 1929), Humboldt Rock Shelter (Heizer 1956; Heizer and Kreiger 1956), and Leonard Rock Shelter (Byrne et al. 1979), and research at other archaeological sites in the Humboldt Lakes area (Heizer and Napton 1970) and Rye Patch Reservoir (Rusco and Davis 1987) have provided valuable information on the prehistory of north-central Nevada and have contributed to the development of chronological "phases" for the region. The different phases are defined by changes that took place through time in the material culture, accompanied by changes in subsistence strategies. These changes are evident in the artifacts found at archaeological sites across the region. One of the most important temporal indicators in the archaeological record is the projectile point, for which a great deal of typological and chronological data has been collected over the years of research within the Great Basin (Clewlow 1967; Clewlow and Napton 1970; Hester and Heizer 1973; Thomas 1981).

4.1.1 <u>Pre-Archaic (12,000 to 7,000 B.P.)</u>

This period, also known as the Western Pluvial Lakes Tradition, marked the advent of human occupation in the Great Basin. The earliest evidence of the arrival of humans in the region comes in the form of distinctive fluted projectile points (Clovis). These artifacts of the early part of the Pre-Archaic are often associated with exploitation of the remaining megafauna (horse, camel, sloth, bison, and mammoth) at the end of the Pleistocene epoch. These artifacts have been found in Nevada as scattered surface finds, including one projectile point discovered in the Rye Patch area to the southeast of the project area, but to date they have not been found in good association with evidence of fire or fossils of extinct mammals (Jennings 1986:115). Investigations at the Sunshine Locality in Long Valley have revealed Paleoarchaic tools in proximity to faunal remains of a camel and a horse; however, the alluvial nature of the deposits makes a definite correlation between the tools and faunal remains impossible (Huckleberry et al. 2001:308). Within the Winnemucca District, evidence of artifacts and sites dating to the Western Pluvial Lakes Tradition are found most frequently along the margins of the Black Rock Desert, the Carson Sink, Rye Patch Reservoir, and Pluvial Lake Parman at Fivemile Flats (Smith et al. 1983).

Previous researchers have concluded from chronological and paleoenvironmental data gathered from the Lahontan Basin that human use of the region most likely does not predate 11,500 years B.P. (Dansie et al. 1988). Within the Great Basin and north-central Nevada, this period is indicated by the presence of large stemmed projectile points of the Great Basin Stemmed Series which included Lake Mojave, Silver Lake, Parman Series, and Windust projectile points. These points have been found in the Rye Patch area of the Humboldt River (Rusco 1982:62; Rusco and Davis 1987:48-49).

Other diagnostic tools of this period include crescents and several types of scrapers. The relatively sparse material evidence for the later Pre-Archaic indicates that regional population densities were low. Subsistence appears to have been based on procurement of big game, along with some smaller game, and the exploitation of various plant sources along the marshes and remnants of the lakes that filled many of the basins at the end of the Pleistocene (Aikens and Madsen 1986:150; Elston 1986:137). The apparent lack of archaeological sites dating to this time period in the Humboldt Lakes area may be due to the sites being buried under thick alluvium (Rusco 1982:62).

4.1.2 Early Archaic (7,000 to 3,500 B.P.)

Evidence of the transition to the Early Archaic Period first appears in the eastern Great Basin. Research conducted at a variety of sites indicates a shift to a more diverse distribution of habitat exploitation with less reliance on hunting and more reliance on plant resources from a wider variety of ecozones. This change is thought to be a result of climatic changes to a warmer, drier phase (the Altithermal), which resulted in the desiccation of the basin lake remnants and resultant changes in vegetation patterns (Aikens and Madsen 1986:150). Artifactual evidence of the transition is sparser in the western Great Basin. It has been suggested that population was reduced in this area due to the barrenness following the drying up of remnant lakes and marshes during the Altithermal (Clewlow 1968; Elston and Budy 1990:2; Jennings 1986: Figure 2; Thomas 1981: Figure 2). Diagnostic projectile points of this period include the Gatecliff, Humboldt, and Pinto Series projectile points and Northern Side-notched projectile points (Jennings 1986; Thomas 1981: Figure 2). Cores, choppers, bifaces, and scrapers, as well as an increase in the frequency and distribution of ground stone tools, mark this period. King et al. (2004:104-105) note a high diversity and frequency of obsidian sources in the archaeological record during this period, reflecting a pattern usually linked to high residential mobility covering a relatively large geographic area (Basgall and McGuire 1988; Delacorte and McGuire 1993; Delacorte 1997).

The presence of archaeological sites dating to the Early Archaic has been documented to the southeast of the project area, specifically from the Rye Patch Reservoir locality sites (Rusco and Davis 1987). Researchers (Heizer and Krieger 1956; Napton 1969) have postulated a specialized lacustrine or marshlands adaptation to the Humboldt Lakes area involving semi-permanent settlement in lakeside villages during this time period. Differences in the distribution of lithic raw material types, rock art, and ceramics characterize archaeological sites in the Humboldt River basin during the Early Archaic. Elston (1986) notes that valley bottoms near permanent water sources are the preferred location for larger Early Archaic sites, while sites from this time period are scarce in the uplands adjacent to the river valley systems.

4.1.3 Middle Archaic (3,500 to 1,500 B.P.)

The Middle Archaic is marked by the appearance of Elko and Pinto Series projectile points. Milling equipment (handstones and milling stones) also becomes more prominent in the material culture, indicating an increased reliance on processing plant foods. In the earlier stages of the Middle Archaic the climate was warmer and drier than current conditions (Altithermal). Lakes, streams, and springs dried up. In the later stages the climate became more moderate and more like the conditions that prevail today, with an increase in available water over what had existed in the recent past (Medithermal).

Recently, several authors have argued that there was a substantial rise in big-game hunting throughout California and much of the Great Basin during the Middle Archaic based on faunal evidence (Hildebrandt and McGuire 2002; McGuire et al. 2004; McGuire and Hildebrandt 2005), while others have disputed this theory (Byers and Broughton 2004; Hockett 2005). Part of the database for this interpretation comes from excavations at Pie Creek and Tule Valley shelters in Elko County (cf. McGuire et al. 2004; McGuire and Hildebrandt 2005). McGuire and Hildebrandt (2005) focus on a shift from big game hunting for calories to hunting for prestige as a way for men to increase their reproductive success. The hunting of big game was part of a costly signaling behavior advertising their fitness (Bliege Bird et al. 2001; McGuire and Hildebrandt 2005:698). McGuire and Hildebrandt (2005) also hypothesize that the two genders had very different subsistence strategies during the Middle Archaic that led to two very different settlement regimes split along gender lines: the male adults focused on long-distance logistically based, large game hunting and hunting-related activities that may have contributed to a higher degree of toolstone diversity; and the women, children, and older males focused on a "trend toward residential stability" at locations taking "advantage of a wide range of generally lower-ranked but abundant resources" (McGuire and Hildebrandt 2005:705).

Within the Lahontan Basin, the Middle Archaic is marked by a continuation of the patterns that originated during the Early Archaic period (Elston 1986; Rusco and Davis 1987). An increasingly wide variety of foods were consumed and an increased use of local obsidian, as well as feathers, wood, animal hides, and baskets appeared during this period.

Within the central Great Basin, the Middle Archaic is characterized by Gatecliff Series projectile points and may represent a sharp increase in population and the use of upland resources, specifically pinyon pine. Big game hunting still appears to have been an important subsistence strategy, focusing on mountain sheep, antelope, and deer (Elston 1986:142). Quarrying activities at Tosawihi begin to increase during this phase, as well as the use of a greater variety of environments.

4.1.4 Late Archaic (1,500 B.P. to Contact)

The Late Archaic is marked by a warming and drying trend and increased population (Elston and Budy 1990:21). Possibly due to the stress of increased population, several technological changes occurred during the Late Archaic. A major technological change occurred with the replacement of the atlatl and dart with the bow and arrow. Lithic technology also emphasized the production of bifaces and the use of simple flake tools from locally available materials (Elston 1986:145). The Rose Spring and Eastgate Series projectile points generally identify the first part of the period within the central Great Basin, while the Desert Side-notched Series projectile points mark the later part of the Late Archaic (700 B.P. to contact). Unlike other parts of the Great Basin, the use of pottery was never adopted within the vicinity of the project area. Theories about a possible spread of Numic speakers from the southwest during this phase have also been posited (Bettinger 1994), while others dispute the expansion theory altogether (Thomas 1994).

Within the Lahontan Basin area, a wide variety of ecozones and food sources continued to be utilized, and plant-processing equipment became more elaborate. In addition, some of the favored locales from earlier times were abandoned during the Late Archaic. Faunal assemblages from the Rye Patch area to the southeast (Dansie 1982) associated with this time period contain a wider variety of fauna, while a slight shift in emphasis from riparian fauna to desert species was also recorded.

4.2 ETHNOGRAPHIC OVERVIEW

This overview focuses on aspects of nineteenth century hunter-gather life and post-contact history of the region. The project area is located in the traditional territory of the Northern Paiute, or *Numa*. The Northern Paiute, also referred to as the *Paviotsos*, occupied a very large territory prior to Euro American contact. Fowler and Liljeblad (1986:435) describe Northern Paiute aboriginal boundaries as follows:

> On the west, for some 600 miles, the perimeter followed the western edge and occasionally the crest of the Sierra Nevada and the watershed separating the Pit and Klamath rivers from the interior draining northern sector of the Great Basin. On the north, for roughly 300 miles, it continued through an undetermined territory beyond the summits dividing the drainage systems of the Columbia and Snake rivers…The eastern limit of their territory continued from the east side of Mono Lake diagonally north through central Nevada, following in that region the crest of the Desatoya Range. It further coincided approximately with the present Oregon-Idaho state line as far north as the outlets of the Weiser and Powder rivers beyond the great bend of the Snake River.

This area included a large portion of present-day western Nevada. A specific Northern Paiute sub-group is not described for the McGee Mountain, Bog Hot Valley areas, probably due to a low availability of game and resources in this arid region (Fowler 1989). The closest band to the project area was the *Kidutokado* or "marmot eaters", who occupied the area west of Alkali Lake, south to Lower Alkali Lake in California and far north into central Oregon east of Lake Abert (Steward 1939, Fowler and Liljeblad 1986)

4.2.1 <u>Habitation Patterns</u>

Prior to Euroamerican settlement, Northern Paiute families lived a seasonal semi-nomadic life way. Families came together in larger camps during the winter season (Steward and Wheeler-Voegelin 1974). Often these camps were located near pinyon caches (Fowler and Liljeblad 1986). For most Northern Paiute groups, this lifestyle did not change even with the acquisition of horses sometime during the late 1840s to early 1850s (Steward and Wheeler-Voegelin 1974; Fowler and Liljeblad 1986). According to Fowler and Liljeblad (1986:443), Northern Paiute houses were temporary structures:

> The dome-shaped, mat-covered house (kani, nobi) was the most common winter structure for most of the Nevada Northern Paiute groups. A smoke hole was left in the top and a doorway in one side, usually facing east or away from prevailing winds. A fire for cooking and warming was in the center inside. The size of the house varied according to the size of the family, but 8 feet to 15 feet in diameter seems to have been the standard.

Some Northern Paiute winter houses were semi-subterranean. Sometimes families used rock shelters as homes. During the summer, windbreaks or sunshades were sometimes utilized. Other structures constructed included sweathouses (Stewart 1941; Fowler and Liljeblad 1986).

4.2.2 <u>Subsistence</u>

In most of the Great Basin, there was great variation in food gathering activities (Stewart 1939). In most of the areas, which are extremely arid, individual families or groups of two to three related families foraged alone over large areas within a 20 to 30-mile radius. Although they occasionally encountered other families, they did not enter into permanent association with them. Moreover, owing to the uncertain local occurrences of these resources from year to year, these families did not habitually exploit the same areas nor claim ownership of them. In limited portions of the Great Basin, such as possibly some of the river and lake areas of western Nevada, exceptional local abundance and dependable annual occurrence of seeds permitted permanent communities or villages to exist (Steward and Wheeler-Voegelin 1974).

The Northern Paiute lived in a very diverse ecological zone and therefore were able to utilize hunting, plant gathering, and fishing for subsistence strategies. Pine nuts and various seeds, such as those from Indian rice grass and sunflowers were important food resources for the Northern Paiute. Roots and berries from many different plants were also utilized as food items.

Tule, willow, and sagebrush provided materials for clothing and various other items. Tule was used to make house roofs, small rafts, bird decoys, fishing nets, bags, mats, dresses, and aprons. Twined conical baskets and hats, basket caps, baby cradles, seed beaters, and purses were made from willow materials. Men's shirts and women's aprons were made from twined sagebrush bark (Stewart 1941; Steward and Wheeler-Voegelin 1974; Fowler and Liljeblad 1986).

Plant Gathering

A diverse array of plant species were gathered by the Northern Paiute, including several species that produced edible bulbs, roots, seeds, berries, leaves, stalks, and nuts. Species of moss and the inner bark of some trees were also utilized. Seeds and roots were gathered in early spring to late summer, and were the principal activity. Roots and bulbs were taken from the parsley, lily, and purslane families during the spring months (Fowler 1989). These include yampa, lomatium, Cusick's sunflower, balsamroot, spring beauty, bitterroot, sego lily, and wild onion. Pinyon nuts were available to the east of the Humboldt River in the foothills and up the slopes of the Humboldt Range (Fowler 1989).

Grass seeds were collected in the summer months using a stick or seed beater and a conical basket. Seeds gathered included those from the *Cruciferae* family; Indian ricegrass; whitestem blazing star; sunflower; tansy mustard; mules ears; Kuhava seeds; alkali bulrush; cattail and tule; sagebrush; saltbush; goosefoot; seepweed; and tövusi or nut grass. Most seeds were ground on a millingslab, while cattail was reportedly ground in a mortar (Fowler 1989).

Hunting and Fishing

The groups that lived near the project area worked a relatively generalized desert resource base that included birds, and small and large faunal resources. Several species of game were hunted by the Northern Paiute, including deer, antelope, mountain sheep, rabbit, ground squirrels, groundhogs, rodents, reptiles, fish, various waterfowl, marmots, porcupines, grouse, and insects such as grasshoppers (Stewart 1941; Fowler and Liljeblad 1986).

Antelope drives were held under the leadership of an antelope shaman, and were found throughout the Northern Paiute area. Converging lines of humans were used to guide antelope into "corrals" or circles of sagebrush built around mounds of brush (Stewart 1939), and the powers of a shaman were utilized during antelope drives (Stewart 1941). Rabbit drives were held in late fall, usually under the supervision of a special manager. The Paviotoso of Wadsworth, and other areas were invited to participate. In addition to the collective antelope and rabbit drives, the Paiute held communal duck and mudhen hunts (Lowie 1909; Steward 1938; Stewart 1941). These were held in the lakes of the Humboldt and Carson Sinks. Implements such as decoys, tule rafts, nets, and bows and arrows were used. Loud and Harrington (1929) also state that the Northern Paiute went to the Humboldt Sink in the late spring for bird eggs and fledgling ducks. Grasshoppers and fly larvae were collected, dried and pounded, mixed with grass seeds, and baked into cakes (Steward and Wheeler-Voegelin 1974).

Although clearly not a focus in the arid lands surrounding the project area, fishing was very important to the Northern Paiute. Techniques varied depending on the type of fish and its habitat. Fishing platforms, nets, harpoons, weirs, and basket traps were used for river fishing. When fishing in lakes, they used gill nets, hooks and lines, spears, and harpoons (Stewart 1941; Fowler and Liljeblad 1986). Ice fishing was conducted during the winter months (Stewart 1941). These various fishing techniques were used to catch cutthroat and other trout, Tahoe suckers, cui-ui, dace, chub, redsides, minnows, and other fish (Stewart 1941; Fowler and Bath 1981; Fowler and Liljeblad 1986).

4.2.3 Burial Practices, Political Organization and Religion

The burial practices of the Northern Paiute were similar to those of the Western Shoshone. Cremation was practiced; however, it was generally reserved for witches. The deceased might be buried in rock crevices, rock shelters, or on a hillside. Their houses were either torn down or burned and their belongings distributed among their relatives (Stewart 1941; Fowler and Liljeblad 1986).

Northern Paiute religion was based on shamanism. Stewart (1941) listed three ways in which one became a shaman: through dreams, inheritance from a close relative, or by visiting particular rock shelters within Northern Paiute territory. As mentioned previously, a shaman was utilized during antelope drives (Stewart 1941).

Ceremonial activities were few. The only traditional dance was the Circle Dance. Other dances conducted by the Northern Paiute were more recent adoptions and included the Bear, War, South or Exhibition, Crazy, and Ghost dances (Stewart 1941). Steward (1939) notes that the Northern Paiute "lacked ceremonial activity which could unite members of any group, and having no reason in aboriginal times for tribal nationalistic or band warfare against their neighbors they were without military organization." Hostilities with neighbors speaking different languages were sporadic, brought about largely through personal quarrels (Steward and Wheeler-Voegelin 1974). Kelly's (1932) informant told her that in the old days, they had only the boss for hunting. The opinion of most sources is that even in the historic period the chiefs did not exercise great authority. "Each band had a chief (mu'pavi') of sorts, a man of influence who told his people what to do and where to hunt; who entertained visitors at camp; who interviewed a thief and directed him to return stolen property" (Kelly 1932:182).

In 1870, Indian agent Douglas described the distribution and political condition of the Northern Paiute as being scattered within these limits, with no tribal organization, although the Paviotso would congregate in small bands of 50 to 200 under the ostensible leadership of one man, called a captain. However, by 1860 loosely formed bands had appeared throughout much of Northern Paiute territory. These boundaries are unclear, and several occasional small camp groups wandered from band to band and did not winter with any definite nuclear group. Band ownership of the hunting and gathering areas was not recognized (Steward and Wheeler-Voegelin 1974).

4.2.4 Euroamerican Contact

The incursion by Euroamericans into Northern Paiute territories, especially with the flow of emigrants across the Great Basin on their way to Oregon and California, had a detrimental effect on their traditional life ways. Sustained movements of wagons and livestock virtually destroyed the native subsistence resources, particularly seed plants and large game for miles on either side of the wagon roads. Fuel supplies were exhausted and water holes were fouled or drained (Fowler and Liljeblad 1986:456). Some groups withdrew from the region, seeking refuge in Oregon, while others found new opportunities for subsistence by attacking the emigrants and stealing their stock (Steward and Wheeler-Voegelin 1974). Others groups began to attach themselves to ranches and small settlements. After the discovery of gold and silver in the Virginia and Range and elsewhere, depredations increased on both sides until major conflict was inevitable. On May 12, 1860, several Northern Paiute at Pyramid Lake killed 43 members of a volunteer unit sent to avenge a raid on William's Station on the Carson River. A large force from California later routed the groups in several additional battles. Skirmishes continued throughout the 1860s, often with troops stationed at Fort Churchill (Fowler and Liljeblad 1986:457).

As a result of the continued conflicts, lands were set aside for the Northern Paiute people by the federal government starting in 1859. The Pyramid Lake and Walker River reservations were the first to be proposed, and were established in 1874. However, many Paiute refused to be relocated, and additional colonies and small reservations were established throughout the region well into the 20th century. These include the Lovelock Colony, the Pyramid Lake Reservation, the Fallon Reservation and Colony and the Winnemucca Colony.

4.3 HISTORIC OVERVIEW

4.3.1 Euroamerican Exploration and Westward Emigration

The first Euroamericans to enter northern Nevada were fur trappers exploring the banks of the Humboldt River during the late 1820s and 1830s. In 1828, Peter Skene Ogden of the Hudson's Bay Company traveled along "Mary's River," later renamed the Humboldt River. Ogden and his party trapped beaver just above present-day Winnemucca and then proceeded downstream to the vicinity of Mill City. He returned a year later, trapping in what would be Lovelock (Big Meadows). Ogden made a third expedition through the area late in 1829 (Goodwin 1966). In 1833-1834, Joseph Walker, chief lieutenant for Captain Bonneville, led a party of explorers and trappers along the Humboldt River, retracing Ogden's earlier route. When Walker arrived at the Humboldt Sink in early October, an unprovoked skirmish with the Native Americans there resulted in a general distrust of Euroamericans among the native groups (McBride 2002).

The route along the Humboldt River was first used as an emigrant trail in 1841 when J. B. Bartleson and John Bidwell guided a party westward to California. Joseph Chiles, a member of the Bidwell-Bartleson party, returned to Missouri to promote overland travel to California. In 1843, Chiles organized a party guided by Joseph Walker and followed Walker's 1834 route to California. A year later, the Stevens-Murphy emigrant party traversed the route (Bowers and Muessig 1982:18), bolstering the Humboldt River route as a trail to California. In 1845, on his third government sponsored survey expedition, John Fremont led an exploration group into central Nevada. The group remapped and clarified the limits of the Humboldt, Carson, Walker, and Truckee river basins (McBride 2002:9). The importance of the group's passage was the cartographic work that resulted from the explorations, which was later used by numerous emigrants.

The discovery of gold in California caused a mass overland emigration in 1849. By the late 1840s and early 1850s, Native Americans living along the Humboldt River began to significantly feel the impact of emigrant groups and their stock, which depleted their traditional food resources. Hostility between the Native Americans and Euroamericans began to grow. Approximately four miles west of Humboldt House, the route split at a point known as Lassen Meadows. From there, emigrant traffic either went to the Black Rock Desert, through Susanville and Beckworth Pass to California, or went to Fort Churchill, through Carson City, and on to Placerville (Reid and Hunter 1913). The majority of emigrant traffic along the Humboldt River occurred in the 1840s and 1850s, and had slowed considerably by the 1870s with the arrival of the Central Pacific Railroad. One branch of the Emigrant Trail ran along the east bank of the Humboldt from present day Winnemucca to Lovelock, in the approximate location of Interstate 80. After the establishment of French Crossing or French Ford (Winnemucca) at the great bend of the Humboldt in the 1860s, most emigrant travel crossed the Humboldt at that point and used the western trail (Goodwin 1966).

Government sponsored explorations continued, particularly for a viable railroad route between the Mississippi River and California. Lieutenant Edward G. Beckwith led the first survey sponsored by the Corps of Topographic Engineers for a transcontinental railroad route in Nevada (McBride 2002). In 1854, Beckwith entered Ruby Valley, crossed several mountain ranges south of the Humboldt River, and continued west across the Black Rock and Smoke Creek deserts (McBride 2002:10). That same year, O. B. and C. A. Huntington and John Reese followed Beckwith's route through Nevada searching for a direct wagon road between Salt Lake City and California under the direction of Lieutenant Colonel Edward J. Steptoe. Reese was later hired in 1859 as a guide by Captain James H. Simpson to search for a safer route across the state; conflicts between emigrants and Native Americans had escalated along the Humboldt River corridor (Bancroft

1981:75). Simpson's route became known as the Central or Simpson Route. In 1855, Jules Remy and Julius Brenchly traveled to Salt Lake City from San Francisco, passing through Carson Valley across the Forty Mile Desert to the Humboldt River, collecting specimens and documenting plant and animal life (McBride 2002:10).

4.3.2 <u>Transportation Routes</u>

Northern Nevada Roads (1850-1880)

The earliest roads in Nevada were unimproved trails through the desert, many of which were emigrant trails (Due 1999:224). The heyday of early road construction in Nevada occurred between 1850 and 1880.

In 1851, Colonel A. Woodward and Major George W. Chorpenning obtained a contract from the United States to carry mail between Salt Lake City and Sacramento under the name A. Woodward and Company (Angel 1958:103). The mail route, or "Jackass Mail" service, followed along the Humboldt River during the years of 1851 to 1854 and 1858 to 1859. Winter weather difficulties and Native American hostility often made the route dangerous. In the fall of 1851, Woodward and two companions were killed near Stonehouse Station, leaving Chorpenning the sole survivor of the enterprise. After Simpson's Central Route opened, Chorpenning moved his mail line to the route during the winter of 1859-1860. Between 1864 and 1865, the Cutler and Westfield Pony Express, and later the Humboldt Express Company, ran between Star City and Winnemucca. The Humboldt Express Company abandoned operations in 1865 due to increasing conflicts with Native groups (Smith et al. 1983).

The demand for better roads began in the 1860s, when Nevada began to be settled in earnest, and local entrepreneurs taking their cue from California, where toll roads had become common, built and operated more than 100 toll roads and turnpikes in Nevada (Beito and Beito1998:71-72). This period ended the dominance of rough trails as the main transportation routes through Nevada. The flurry of road building was instigated by the increase in the state's population as a result of mining booms, started by the discovery of silver in the Comstock mining district (Beito and Beito 1998:71). Between 1861 and 1864, 55 toll road franchises were issued by the Nevada's territorial legislature (Beito and Beito 1998:74).

As with the early Emigrant Trails, most of the early toll roads focused on east-west travel. The arrival of railroad made some of the toll roads, mainly those east-west routes, superfluous. The Central Pacific also created a flurry of north-south toll road construction, to connect to the outlying communities to towns along the transcontinental railroad. These towns served as trans-shipment points between rail and stage transport and fostered the development of new mining and agricultural communities. The toll roads connected the outlying communities to the fastest and most extensive transportation system in the country, integrating these remote settlements into the national economy (Beito and Beito 1998:79-80).

The Idaho Wagon Route, established in 1862, led from Ruby City, Idaho to Susanville, California. Along this route were several connections that led to the Humboldt Range boomtowns during the height of mining activity in the 1860s and 1870s (Smith et al. 1983). Hill Beachey's Railroad Stage Lines led from Silver City, Idaho in 1865 for the purpose of transporting supplies, mail, and passengers from the Humboldt mines to the newly discovered mines in southwestern Idaho. The stage route passed through Winnemucca to Willow Point Station on the Little Humboldt River. The stage line only lasted two months due to stagecoaches and stage stations being burned by Native Americans. The route was reopened the following year to connect the advancing Central Pacific railhead with the mining camps of the Humboldt Range (Goodwin 1966).

Railroads in Northern Nevada

In 1869, the Central Pacific Railroad was completed. Built along the Humboldt River, the railroad provided a cheaper and more efficient means to transport freight, mining equipment, ore, and livestock (Bowers and Muessig 1982:75). Traffic along the Central Route slowed and refocused towards stations located along the railroad. As mining towns began to prosper, freight and stage companies were expanded to connect the mining districts to the railroad.

The completion of the Transcontinental Railroad in 1869 brought a dramatic shift in the geography and nature of transportation and communication and settlement throughout northern and central Nevada. The primacy of the emigrant trails, the Overland Telegraph Company, and Central Route for long-distance, large-scale passenger travel, staging, and freighting ended with the arrival of the railroad. At this time all east-west freighting, communications, and passenger services were either accomplished by the railroad or, in the case of the telegraph, followed the rail line.

In 1899, the Central Pacific had fallen into financial trouble and sold out to the Southern Pacific. By the first decade of the twentieth century, the Southern Pacific had taken over the former Central Pacific facilities in northern Nevada. Subsequently, the Southern Pacific Railroad constructed new, expanded railroad facilities at many locations, and realigned many portions of the railroad grade in northeastern and northwestern Nevada (Goodwin 2007:68-69; Myrick 1962:29-38, Map).

The Western Pacific Railroad was constructed from 1906-1909, by the Utah Construction Company across northern Nevada through Winnemucca, Elko and Wells. Upon completion in 1909, the Western Pacific Railroad provided northern Nevada with the second transcontinental railroad. Its route in northeastern Nevada often paralleled that of the Southern Pacific Railroad (Goodwin 2007:68-69; Myrick 1962:316-332, 2006; Patterson et al. 1969:195-198).

Road improvements and construction increased with the advent of the automobile. By the 1920s, motorbuses and trucks began to compete with the railroads. Improvements to road construction technology increased during the 1920s and 1930s. Oiled gravel was introduced in 1929, and by 1936 many of the state's highways were paved with asphalt and Portland cement. Interstate 80, formerly known as Nevada State Route 1, first became an automobile highway in 1917, when sections of the old Emigrant Trail and portions of the abandoned Central Pacific railroad grade were combined and used for vehicle traffic. It became known as the Victory Highway in 1920, as U.S. Highway 40 in 1926, and finally as Interstate 80 in 1958. Much of the route was unpaved until 1926.

4.3.3 Settlement

Settlement near the project area was sparse due to the harsh environment which proved unsuitable for agriculture. The town of Denio is located approximately thirty miles north of the project area and straddles the Nevada-Oregon border. Named after Aaron Denio, a rancher and miner who had some business associates with miners moving back and forth from strikes in Nevada and Oregon. He moved with his family to the region in 1885 and eventually opened a trading station. A post office was opened in 1897 with Aaron Denio as its postmaster. The town became a crossroads for settlers and suppliers between Winnemucca and Paradise Valley to Fields, Burns and Willamette Valley in Oregon (Evanoff 2006).

4.3.4 Mining

During 1860, mining activity began with the organization of the Humboldt Mining District. This was followed by numerous other smaller short-lived districts with silver as the principal commodity. Unionville became a focal point of mining activity that peaked in 1864-1865. During the 1860s several mills were constructed along the Humboldt River between Lovelock and Winnemucca with a number of active smelters. When no new large deposits were found and ore quality decreased in the mountains along the Humboldt River, interest declined and little mining activity occurred after the early 1870s.

Mining declined in Humboldt County in the 1920s, hitting its low point during the early years of the Depression. Starting in the mid-1930s, an interest in gold mining resumed, and the Jumbo Mine in the Slumbering Hills mining district and the Getchell Mine in the Potosi mining district were significant operations. Beginning during World War II, and continuing through most of the 1950s, tungsten production became significant in Humboldt County. It was joined by mercury and iron ore, and the “Uranium Boom” of the 1950s produced much prospecting and claim staking but little production. From the late 1960s until the present, mining efforts largely have been focused upon exploration and development of large open-pit, heap-leached mines.

5.0 HISTORIC CONTEXT AND NATIONAL REGISTER ELIGIBILITY

A historic context is a body of thematically, geographically, and temporally linked information that helps discern a property's place or role in history and ultimately its eligibility for inclusion in the NRHP (Little and Seibert 2000). Broad patterns of history (themes) in a specific area or locality (geographic space) are identified within a particular time period (temporal frame). Historic contexts also identify data gaps and help determine what information is significant. An archaeological site has the potential to convey information about history, but that information may not be particularly important to our understanding of the past or contribute new knowledge.

Below is a section describing the NRHP eligibility criteria and integrity issues. This is followed by the prehistoric and historic context developed to assess significance of property types in the project area. No ethnohistoric property types were identified in the project area.

5.1 NRHP ELIGIBILITY CRITERIA

NRHP eligibility recommendations are developed using the aspects of the historic context appropriate to the cultural resources identified during the inventory. Cultural resources are examined to determine significance, based on property type, resources present, integrity, and association with time, space, and themes important to local, state, or national history. Guidelines provided in the *National Register Bulletin 15* (Andrus 1990) stipulate that properties must, as a rule, be at least 50 years old and meet requirements for site significance for listing on the NRHP under at least one of the following criteria:

Criterion A: Associated with events that have made a significant contribution to the broad patterns of our history.

Criterion B: Associated with the lives of persons significant in our past.

Criterion C: Embody the distinctive characteristics of a type, period, or method of construction, or that 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.

Criterion D: Have yield, or may be likely to yield, information important in prehistory or history.

In general, moved properties; birthplaces; cemeteries; reconstructed buildings, structures, or objects; commemorative properties; and properties that have achieved significance within the past 50 years are not considered eligible for the NRHP. However, exceptions can occur where these types of properties are considered significant (Little and Seibert 2000). The criteria considerations are as follows:

Consideration A: A religious property deriving primary significance from architectural or artistic distinction or historical importance.

Consideration B: A building or structure removed from its original location but which is significant primarily for architectural value, or which is the surviving structure most importantly associated with a historic person or event.

Consideration C: A birthplace or grave of a historical figure of outstanding importance if there is no other appropriate site or building directly associated with his or her productive life.

Consideration D: A cemetery, which derives its primary significance from graves of persons of transcendent importance, from age, from distinctive design features, or from association with historic events.

Consideration E: A reconstructed building when accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and when no other building or structure with the same association has survived.

Consideration F: A property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own historical significance.

Consideration G: A property achieving significance within the past 50 years if it is of exceptional importance.

Integrity of a property (how and whether it can convey its significance) is evaluated after the area of significance is established. Integrity includes seven aspects: location, design, setting, materials, workmanship, feeling, and association. These aspects are defined as:

Location: The place where the historic property was constructed or the place where the historic event occurred.

Design: The combination of elements that create the form, plan, space, structure, and style of a property.

Setting: The physical environment of a historic property. Setting includes elements such as topographic features, open space, viewshed, landscape, vegetation, and artificial features.

Materials: The physical elements that were combined or deposited during a particular period of time and in a particular pattern or configuration to form a historic property.

Workmanship: The physical evidence of the labor and skill of a particular culture or people during any given period in history.

Feeling: A property's expression of the aesthetic or historic sense of a particular period of time.

Association: The direct link between an important historic event or person and a historic property. Under D it is measured in the strength of association between data and important research questions.

Assessing integrity requires determining whether or not the property retains the identity for which it is significant. A property that retains integrity may possess several of the seven aspects, as well as the essential features that define why a property is significant and when it was significant. Archaeological sites eligible under Criteria A and B must retain excellent preservation of features, artifacts, and spatial relationships in order to convey important associations with events or persons. Under Criterion C, sites must retain the majority of features to illustrate a site type, time period, method of construction, or work of a master. Overall condition is less important under Criterion D, in which integrity is based upon the property's data potential, as shown by intact or identifiable relationships among artifacts, features, and other elements of the site.

Additional guidelines for assessing a site's significance is provided in the State Protocol Agreement (SHPO and BLM 2005) especially regarding sites of local or state significance, standing structures or ruins, and linear resources. Since linear resources can extend for miles, only a portion of a site may be within a project area, or portions may have been previously recorded and evaluated for other projects. Consequently, linear sites are often evaluated on a segment-by-segment basis. Appendices D and H of the State Protocol Agreement discuss the recording and evaluation of these resources in detail.

5.2 PREHISTORIC CONTEXT

The prehistoric context was developed according to expected prehistoric cultural resources within the project area. Because it is often difficult to directly associate prehistoric resources with an important event or person and many do not exhibit significant physical design or construction, they are often evaluated mainly under Criterion D. A resource is usually not eligible if it cannot be related to a particular time period or cultural group and, as a result, lacks an appropriate context within which to evaluate the importance of the information to be gained. Prehistoric sites that are considered eligible under Criterion D contain data that can address research domains, such as behavioral patterns and chronology.

Three prehistoric themes or research domains have been defined for the project: Chronology, Settlement and Subsistence Patterns, and Lithic Technology. These themes center around research issues that may help illuminate prehistoric occupation and land use in the region and contribute to existing research in Great Basin archaeology. The themes were derived from an assessment of current theory and method in Great Basin archaeology. The geographic limits of each theme are the project area and immediate vicinity surrounding the Jungo Hills Proposed Land Sale project area. Periods of prehistoric occupation and use of the project area may extend from the Pre-Archaic to the Late Archaic.

5.2.1 Chronology

In order to address many research questions it is necessary to have good chronological control. The establishment of chronological sequences is one of the most critical data classes for reconstructing human adaptation to changing environmental, technological, and population factors. Chronological sequences that have been developed for much of the region are currently broad in nature. For example, the Archaic Period spans 5000 to 7000 years, with few internal subdivisions. Thus, many researchers have identified a need to further refine the regional chronology (Lyneis 1982a, 1982b; Kelly et al. 1990; Ezzo et al. 1995; D. Seymour et al. 1996; G. Seymour et al. 1996; Ahlstrom and Roberts 1999:115).

There are several dating techniques that fall under the context of chronological studies and may apply to the project area: projectile point chronology, obsidian hydration dating, radiocarbon dating, thermoluminescence dating, stratigraphic position, and dendrochronology. A number of projectile point types and series have been developed for the Great Basin (e.g., Clewlow 1967; Hester and Heizer 1973; Thomas 1981). While the projectile point sequence functions fairly well on a broad scale, it is not as accurate for defining shorter periods of time. In particular, the chronological development of Elko Series projectile points, as well as the stemmed point and Pinto Series point sequences, require further investigation (Susia 1964; Fowler et al. 1973; Kelly et al. 1990; Lyneis 1982b; Schroedl 1995). Moreover, recent investigations in the Sierran/Cascade Front show that Rose Spring points began much earlier in this region and extend well into the Terminal Prehistoric (King et al. 2004:101-102). Basgall and Hall (2000) have recently analyzed Pinto and Gatecliff Series projectile points by spatial and temporal differences, suggesting that Pinto Series points date earlier. Regional studies are clearly necessary because of variation in the form and timing of projectile points across the area (cf. McGuire et al. 2004:23).

Beck and Jones (2000) have suggested using obsidian hydration and rock weathering techniques on volcanic rock to address chronological questions regarding the Pre-Archaic period. Others researchers also advocate increased horizontal exposure at surface sites to locate datable features (Schroedl 1995), and refinements in temporal assemblage composition analysis (Delacorte 1997).

Chronology Property Types

Sites associated with chronology are those that can provide temporal information and can be represented by any of the site types described above. Sites with the potential to address chronological research issues are those with the potential to provide any of the following: projectile points or other datable cultural material from a single occupation; additional dateable artifacts beyond those found on the surface; radiocarbon samples; stratified cultural deposits; or a sample of obsidian for hydration studies.

Research Questions and Data Requirements

- Does the site contain information that can contribute to our understanding of the chronology of the local area or region?
- Do local periods correspond to regional periods?
- Does the site represent a single occupation or does the site exhibit reuse or reoccupation? If so, does this obscure distinct temporal activities/occupations of the site or are they still discernible?

Datable artifacts or features need to be present at the site. If a site has several temporally diagnostic artifacts suggesting a reuse/reoccupation of the site over time, artifacts concentrations need to be temporally or functionally distinct to be able to provide clear chronological use of the site. Sites containing deposits or materials suitable for radiocarbon dating would be extremely important, as would projectile points and other diagnostic tools found in association with such deposits. Sites with an adequate amount of obsidian may provide data through obsidian hydration studies to refine local chronology. Obsidian projectile points that are typeable are important candidates for obsidian studies, but to be able to refine a site's chronology through obsidian hydration a sufficient sample is needed. Single component sites with a substantial obsidian assemblage in discrete proveniences are ideal for addressing questions relative to chronology. However, sites with sufficient samples but with a highly dispersed assemblage without an adequate context may not provide refined enough information to address chronology.

5.2.2 <u>Settlement and Subsistence Patterns</u>

The study of settlement and subsistence patterns is another critical aspect to understanding and interpreting prehistoric sites. This broad theme is based on the assumption that prehistoric activities were spatially arrayed in direct relationship to resource distribution and landscape elements. Hunter-gatherer land use systems are dynamic, changing in response to shifting environments and social factors such as population growth and movement.

Studies of settlement patterns define the way in which people lived and used the landscape and are a primary component in understanding past life ways. In the Great Basin, settlement pattern studies have been strongly influenced by Steward's (1938) work among ethnographically known populations. Binford (1980, 1982) and Thomas (1983a, 1983b) have provided the basis models for the study of subsistence and settlement of hunter-gather societies. Binford's (1980) model of foraging and collecting hunter-gatherer land use systems figures prominently in Great Basin archaeology as research has attempted to interpret variation in settlement patterns across both space and time (Thomas 1983a, 1983b). These models depend heavily on the characterization of site types (e.g., residential bases, field camps, locations) and detailed assemblage descriptions in order to illustrate what types of settlement systems were in use. The spatial distribution of sites in conjunction with ecological and resource variations can provide information on adaptations in land use patterns over time.

It has been postulated that very mobile populations tend to have functionally specialized toolkits that are highly portable and easily maintained, whereas in more residentially-based systems, one often finds more expedient type tools because there is plenty of time for the completion of specific tasks and there is usually a more reliable and predictable source of toolstone for tool replacement (McGuire et al. 2004:24). If ground stone tools are a frequently or regularly used element of the subsistence system, they will tend to be more formally shaped and will either be portable or cached at regularly re-occupied sites in anticipation of future use (McGuire et al. 2004:24). At sites where they are only infrequently used, they will tend to be unshaped and show signs of only light to moderate use. The caching of ground stone items suggested by McGuire et al. (2004) would depend upon whether it was a frequently used resource location or field camp, as opposed to one used relatively infrequently. Artifacts reflecting the final processing of resources for consumption or manufacture should occur at locations where they are needed and where hunter-gathers can anticipate using the tools such as at base or field camps. Curated portable multi-purpose tools such as projectile points and bifaces should be found in a variety of locations since they would be frequently carried as part of a mobile toolkit. These items may be discarded at locations if they are lost or irreparably broken, or they may be taken back to base or field camps and discarded after unsuccessful repair attempts or when the artifact has been worn out.

Studies in the Humboldt River Basin have also focused on settlement and subsistence patterns. In the Rye Patch Reservoir area, river terraces, especially when topped by low dunes or sand mantles, with a high density of artifacts have been characterized as settlement areas or camps (Rusco 1982:65). Excavations at these larger archaeological sites have yielded a considerable amount of fauna and flora remains, and stone, bone, and shell artifacts. Exploitation of wetland, valley riparian, and desert scrub resources are evident. The remains of brush houses with small interior hearths, adjacent outside cooking fires, secondary trash disposal areas, and other adjacent activity areas suggest semi-permanent or long-term settlement (Rusco 1982:66).

Paleoenvironmental and ecological studies in the region have focused on such topics as the relative importance of pinyon or wetlands resources, the presence of long-term settlements in the Humboldt River Basin, and the extent to which it may be dependent on a particular resource base. In addition, the nature of paleoenvironmental change and the extent of adaptation to environmental change have been used to explain temporal variation in the archaeological record (Rusco 1982:69). These studies have shown that differences exist between settlement and subsistence patterns in the Humboldt Lakes area and the Reese River Valley. Research in the Rye Patch area and along the Humboldt River basin suggests a possible riverine adaptation during the Late Archaic. At present, insufficient data is available to determine if the apparent variation actually reflects the archaeological record as a whole or is simply due to an inadequate study sample.

Settlement and Subsistence Patterns Property Types

Property types associated with settlement and subsistence include a wide variety of sites that can include single component lithic scatters to complex sites containing a variety of artifacts and features. Sites addressing questions in this research domain may include those containing data about site function and resource use. The variety of tool types within the assemblage can offer data about the types of resources being targeted while general floral and faunal resource information can be obtained directly from cultural features.

Research Questions and Data Requirements

- Do sites in the area reflect high or restricted mobility?
- Do sites reflect short or long term stays and is anticipated return reflected in assemblages at sites?

- To what extent does the patterning of resources (water and plant foods) affect prehistoric land use patterns?

- Are there discernible regional or local patterns of land use?

- Do different site types occupy different landscapes and does this change over time?

- Does the site exhibit persistent use, reflecting the importance of certain parts of the landscape for specific resources, or does it reflect a more *ad hoc*, less planned use?

- Do sites in the area reflect a shift in hunting patterns through time (e.g., are pond/marsh fauna associated with Elko and Rosegate points, and riparian fauna associated with Rosegate and later contexts)?

- Do sites indicate a seasonal occupation, on the basis of plant and faunal data?

Datable sites with large, moderate, and small assemblages containing at least one tool and some lithic debitage are needed. Sites containing ground stone, facilities such as hunting blinds or tool caches, or spatial patterning would also help elucidate these issues. Sites should contain a sufficient quantity and variety of cultural material to unambiguously define a site function and/or to place the site within an appropriate classification system and land use model. Information regarding site location and function would help address these questions. Where the site is located on the landscape (ridge versus valley bottom), the type of vegetation zone, and the type of resource that was being exploited may provide general patterns about land use adaptive strategies and provide crucial data for prehistoric site location predictive models. Comparative data from numerous site types would be helpful.

Sites used over a period of time for similar functions represent a persistent use of an area, as opposed to a small flake scatter on an alluvial fan that would exemplify *ad hoc* use. An examination of the array of contemporaneous sites within the project area in terms of structure and function may reveal broad patterns reflective of cultural landscape that may show either consistent use or variability over space and time.

5.2.3 <u>Lithic Technology</u>

Lithic technology addresses the procurement and use strategies of toolstone. Because knapped and ground stone are the most visible components in the prehistoric archaeological record, numerous studies have been conducted on the acquisition and production of stone tools. The analysis of lithic assemblages can address research issues pertaining to cultural affiliation, site structure and function, settlement and subsistence patterns, human mobility patterns, technological aspects of lithic production, and raw-material procurement. Generally, it is believed that shifts from dart to arrow technology are associated with intensification of resource use and population increases which led to a reduction in mobility.

Lithic debris provides direct evidence of past technological activities and through the study of raw material and tool types it can provide evidence of material acquisition and trade, as well as activities and site functions that can be used to address other research questions (cf. Andrefsky 1998). Other relevant research issues under this topic include the nature of ground stone procurement and use (Ahlstrom and Roberts 1999:119), the lithic reduction strategy and process (D. Seymour et al. 1996; G. Seymour et al. 1996), whether specific lithic tool kits can be identified (Ezzo et al. 1995:137–139), whether site function can be assessed from debitage assemblages (Kelly et al. 1990), and the nature of lithic quarry production (Fowler et al. 1973; Kelly et al. 1990).

Several lithic sources are located relatively near the project area and have visible differences that can tentatively be used to identify the source at archaeological sites. Known obsidian sources include Mt. Majuba and Oreana, located south of the project area, the Double H/Whitehorse, Paradise Valley, Hawks Valley, Badger Creek, Massacre Lake/Guano Valley, Long Valley, Mosquito Lake, Coyote Spring, Pinto Peak, Bordwell Spring and Fox Mountain, Brown's Bench, Ferguson Wash and Butte Mountain sources located east of the project area (Amick 1997:97-99, Dames and Moore 1994, Hauer 2005:72-77, Hughes 1989, Nelson 1984, Wilkerson 1985, Young et al 2008). The majority of obsidian recovered from sites in the Rye Patch area was from sources to the northwest and southwest (Rusco and Davis 1987). This led researches to hypothesize that the use of the Rye Patch area was part of the seasonal rounds made by groups centered either to the north or south of the area (Rusco and Davis 1987). A comparison with sites identified within the project area would be helpful in answering questions of mobility patterns and trade within the region. The sourcing of non-obsidian artifacts, such as cryptocrystalline silicates (chert), might also address this research topic. Chert sources in northern Nevada include Tosawihi, Texas Springs, Rancho Grande, IIlipah, Hog Ranch, Long Valley, Buck Mountain, Cherry Creek Range, Pony Springs, and Butte Mountains (Beck and Jones 1990:238-239, Moore 2009:60-66, Moore 1995). Some known sources of chert in central and eastern Nevada include Tosawihi, Maggie Creek, Elko Hills, Mahoney Canyon, Roberts Mountains, and Buckhorn sinter. Another research issue pertinent to this theme is the question of whether obsidian is preferred over chert. It has often been implied that the utilization of non-obsidian materials is more common for expedient tool types or when obsidian is not readily available (Miller et al. 1996:12).

Jones et al. (2003) identify a wide-ranging pattern of logistically organized quarry and toolstone use for the Pre-Archaic. The work of McGuire et al. (2004:24-25) at Pie Creek and Tule Valley shelters, as well the research of others in the Great Basin, suggests three broad patterns of the organization of lithic technologies during the Early, Middle, and Late Archaic periods. During the Early Archaic, relatively great use was made of prepared cores manufactured from any readily available material. Although such cores were transported between sites within relatively broad settlement systems, such an emphasis on cores provided considerable flexibility in settlement by avoiding the need to stop at specific quarries on a carefully scheduled basis (McGuire et al. 2004:25). Jones et al. (2003) have observed a shift in mobility patterns through time within the central Great Basin using obsidian sourcing and hydration data. In general, they found that during the Pre-Archaic and Early Archaic Periods, groups were highly mobile, utilizing a wider variety of lithic sources.

During the Middle Archaic, there was a strong reliance on large, standardized bifaces that were produced at a number of regionally prominent chert and other toolstone quarries (McGuire et al. 2004:25). These quarries, with the notable exception of Tosawihi (Elston and Raven 1992:166), were only sporadically used before and after this period, and use often focused on the production of other kinds of tools (Gilreath and Hildebrandt 1996). These bifaces were frequently transported hundreds of kilometers from these quarry sites. In fact, the data show that the bifaces were used until they were replaced at the next available quarry source located within the annual settlement round (Delacorte and McGuire 1993; Delacorte 1997). Middle Archaic subsistence-settlement systems were wide-ranging and well organized "with highly mobile groups traversing hundreds of kilometers up and down valley corridors" (McGuire et al. 2004:25). During the Late Archaic, populations appear to have traveled over much smaller areas. Bifaces played a smaller role and prepared cores disappeared, replaced with a core-flake technology and expedient flake tools (McGuire et al. 2004:25).

Lithic Technology Property Types

Property types related to this theme include quarries, lithic reduction locations, and sites that have artifact assemblages with visually distinct toolstone derived from local and regional sources. Sites with good chronological control can provide information about changes in lithic technology over time.

Research Questions and Data Requirements

- What is the spatial organization of lithic production at each site?
- Can the tool and debitage assemblages be used to identify site types and/or site functions?
- Can changes in mobility strategies through time be identified by comparing the representation and lithic reduction strategies of local and non-local toolstone sources?
- Are there specific shifts in lithic procurement strategies through time associated with the exploitation of upland areas?

Sites that demonstrate lithic procurement, technology, and use strategies can address these data sets. The identification of raw material, reduction strategies, and tool types at sites would be extremely helpful.

5.3 HISTORIC CONTEXT

Evaluating the significance of an archaeological site must be considered within the context of that site. The following section discusses the contexts that are applicable for the types of historic sites recorded during the current project. The following discussion of research domains incorporates information specific to property types found in the project study area and presents data requirements developed to facilitate the evaluation of these resources for nomination to the NRHP. The historic research domains that are relevant to the Project study area are: Mining and Mineral Exploration, Ranching and Settlement, and Transportation.

5.3.1 Mining and Mineral Exploration

Mining is recognized as one of the main factors that promoted widespread travel and settlement in the relatively barren landscape of the West. Mining provided an early focus for economic development and settlement in Nevada, which would have progressed much more slowly without mining. Within the Yerington Mining District, copper mining was a primary focus, and continues to be a highly significant economic activity in the region today. The history of Nevada mining is often seen as a series of “island mining colonies”, characterized by boom and bust cycles. These “island colonies” are seen as connected to both national and international economic networks (Hardesty 1988).

Typically, an appropriate chronological period for the historic context of mining ranges from initial discovery to decline or abandonment. Since development of mining resources evolves through several phases, they can be repeated or abandoned at any point. Depending on the capacity of the resource, mining properties often display a number of features from different periods; the history of mining districts is rarely limited to one boom and bust cycle. The Yerington District has seen several periods of production, beginning with the onset of mining activity in the 1860s, and continuing intermittently until modern times. One of the most significant periods of mining within the district was during the 1910s, when the Yerington District experienced a mining boom focused upon copper production (Hulse 1998; Lincoln 1982).

One of the most important research issues for mining and mineral exploration is that of mining technology (Hardesty 1988). The technology used by corporate mining companies was often well documented, but small-scale mining techniques used by individuals were not. Small mines used “low-tech” methods often worked by a claim owner-operator or a few partners (Hardesty 1988:22). Control was centralized and decisions were based on the individual’s experience and immediate needs. At small-scale mining sites, new methods, materials, equipment, and technology may be absent, but techniques and innovations maximizing individual efforts should be present. This may reflect the limited finances of a marginal owner-operator. Salvaged equipment or feature patterning at small mines or mills may also reflect labor maximization, demonstrating a specialized series of steps or sub-systems that streamlined operations (Hardesty 1988:18).

Mining and Mineral Exploration Property Types

The archaeological remains identified at mining sites usually fall into two categories: that which is related to mining processes and the remains related to habitation at the mining site (Costello et al. 2007). The *National Register Bulletin* 42 (Noble and Spude 1992) defines property type categories that reflect the major processes associated with mining activities. These categories include mine exploration, mine development and use, related resource types, and mining landscapes. Each of these property type categories is described in detail below. Costello et al. (2007) provide an in-depth historic context and archaeological research design as it relates to hard rock and placer mining in California, which is also applicable to mining sites in Nevada. This historic context relies heavily on Costello et al.'s descriptions of hard rock mining property types, particularly surface workings, waste rock dumps, shafts and adits, and underground workings.

Mine Exploration

Mine exploration properties have been minimally developed. Mining properties resulting from exploration may have been subsumed by later development and may retain little of their original appearance. These resources may range from the well preserved to badly deteriorated, abandoned properties with nearly intact features or only traces such as leveled building pads or scatters of mining or industrial refuse. Properties related to this aspect of mining include: hand-dug prospects or trenches, waste rock dumps, tailings, bulldozer cuts, trash dumps, claim markers, discovery posts, cairns, claim papers in tobacco cans, mining debris, equipment and/or tools, isolated cans or bottles, small campsites (individual or base camps for organized prospecting parties), and camping equipment.

Surface Workings

Some of the oldest evidence of hard rock mining in Nevada is in the form of surface vein workings (Hardesty 1988). Such workings usually consist of prospect pits with adjacent quarried rocks or exposures of uplifted strata of rock. Typically, prospecting tools included picks, bars, and shovels, and in larger operations, wheelbarrows and ore cars to move ore and waste rock. An exposed vein was then followed down into its outcropping. The sides of these excavations are usually uneven as digging ceased at the limits of the ore (Costello et al. 2007). Waste rock was then conveniently disposed of near the workings. A crusher was required to pulverize the ore to release the desired minerals, which in the Yerington District is copper, found in the mineral chalcopyrite. This might have been a small stamp mill or other facility which was often located near the vein workings or next to a source of water with the ore transported to its location (Costello et al. 2007).

Waste Rock

Waste rock is perhaps the most visible evidence of underground or surface workings related to hard rock mining. In following a vein, the majority of excavated rock is that surrounding the ore, and this waste rock is discarded at the opening to the mine, shaft, or adit, and is allowed to accumulate downhill, in a gravity formed mound or dump (Costello et al. 2007). Piles of waste rock indicate the location of uphill shafts and adits, which may be caved in and not easily identifiable. The size of the pile may reflect the extent of the underground workings. However, this should be viewed with caution as waste rock is often used for roadbeds and other improvements as well. Waste dumps are visible as unnatural contours on hillsides and for the lack of soil development and vegetation. Mines that operated for a long time often incorporated waste rock dumps into later development, terracing them for placement of buildings or other facilities (Costello et al. 2007).

Mine Development and Use

Sites created during this phase may include properties developed by individual owner-operators, lessees, or partners, with small-scale mining and milling features, or may consist of properties that resulted from intensive, large-scale corporate development of ore bodies. The condition of these resources may vary from very good to badly deteriorated and abandoned buildings. Corporate mining might have produced major remains such as buildings and structures varying from nearly intact feature complexes to traces such as leveled building pads or scatters of mining or industrial refuse. Small-scale mining sites generally represent examples of “low-tech” mining. Low technology lode mining refers to the use of small prospects and adits to access the ore, and hand drilling, picking, and windlass to extract the ore at relatively shallow depth (McCabe and Mackey 1998:24).

Sites and structures associated with mine development and use include: small exploratory mines, shafts, portals, adits, assay offices, concentrating plants, mills/mill equipment and machinery, crushing plants, sorting houses, offices, change rooms, head frames, hoisting works, power/boiler plants, electrical plants/substations/transformers, compressors/compressor plants, tipples, ore bins, blacksmithing areas/buildings, carpentry areas/ buildings, smokestacks, warehouses, and storage sheds.

Shafts and Adits

The entrance to an underground working is called a portal, and opens into either a shaft or an adit. This provides access to the lode, and while shafts are sunk down into the ground from the surface, either vertical or on an incline, adits are driven horizontally into hillsides. Shafts and adits vary according to the size of mining operation and the nature of the surrounding rock. Portals will often be identified by their associated waste rock piles. Shaft-like openings that do not have any associated waste rock may be air vents or daylight stopes, where ore excavations break the surface. When cut into a stable surface, shafts are typically square while adits may have a curved ceiling. Where the surrounding rock is unstable, square shoring is used to reinforce the sides.

Shafts and adits require mechanisms for removal of underground waste rock and ore, and the remains of these facilities are commonly present around the openings. Adits most often have ore cars running on tramways, or dirt paths for wheelbarrows on smaller operations. Shafts require a hoisting device to raise the excavated material. Small shafts may operate with hand-run windlasses, while larger operations require head frames with cables, buckets, and drum hoists (Costello et al. 2007). Footings for head frames straddle the shaft opening and remains typically consist of concrete bases topped with metal plates ore bolts. Adjacent to these would be similar footings for the hoist drum. Hoist power was provided by animals, steam, water, fossil fuel, and later electricity. Evidence of the power source may include massive boiler footings, a compressor, or engine mounts (Costello et al. 2007). The openings to deep shafts were usually collared with timbers and planks or concrete after the 1880s.

Mining Community Property Types

This property type deals with the domestic residential activities of the miners, the mines’ support staff, and their families. Although often marked by impermanence, mining-camp residents created a distinct community (Douglass 1998), which is essential to the study of the mining site. Resources related to mining-site residences are generally found integrated within or adjacent to mineral operations (Costello et al. 2007). Residential property types must be distinguished by the presence of domestic artifacts, distinctive domestic features such as hearths or baking ovens, or identification as residence-related in historical documents. Domestic structural remains include earthen pads, foundations, dugouts, and chimneys or ovens. Domestic artifact deposits located on mining community property types are characterized by a horizontal scattering of discarded items typically found around a dwelling, and is one of the most common types of domestic artifact deposits on rural mining sites.

Remains related to habitations are usually not visually prominent, and commonly consist of small perimeter foundations or structure pads, often with dimensional lumber, nails, window glass, and brick fragments, remnant landscaping, and domestic artifacts such as ceramics, consumption and personal items (Brereton 1976:286-302).

Mining Landscapes

Historic mining landscapes include domestic features such as workers' housing and mining and milling technological cultural resources and represent a whole that is more than simply the sum of its parts. Mining landscapes are a form of rural historic landscapes which are geographical areas used historically by people and shaped or modified by human activity, occupation, or intervention. They demonstrate a concentration, linkage, or continuity of land use areas, including vegetation, buildings, structures, roads, and waterways as well as natural features. The term "rural" is defined as a "vernacular" landscape in contrast to a "designed" landscape. Vernacular landscapes evolve from repeated human use over a period of time, a process that transforms nature into a human creation. Historic landscapes are identified by their spatial organizational patterns, concentration of historic characteristics, and evidence of historic development. Key research questions concerning mining landscapes reflect the processes and components that created visible patterns.

Research Themes

Several pertinent research themes have been developed relating to mining, and are summarized herein. Each research topic includes various questions that are instrumental in advancing the knowledge base and to aid in the evaluation of mining sites. Historians and historical archaeologists have contributed to bodies of literature on mining technology (Hardesty 1988, 1990, 1991, 1998, 2002; Hardesty and Little 2000, Bailey 1996). Key scientific mining research domains elicit important research questions for site investigations, and are applicable under Criterion D. Although sites may contain information related to the research domains, the site data must contribute to gaps in current knowledge, provide alternative theories or explanations, or relate to established research priorities.

Technology

This research theme addresses the mining process itself including technological development, regional diversifications, and spread of technologies (Costello et al. 2007:57). Noble and Spude (1997) advocate interpreting the layout of industrial feature systems to clarify the nature and sequence of industrial development, with an emphasis on the identification of variability and change in the study of mining technology and mining landscapes. They suggest looking at "conditions under which innovations in mining technology take place and are accepted or rejected" (Noble and Spude 1997). The persistence of older and simpler techniques in the face of more modern technologies is another interesting topic under this theme. Synthesizing archival and archaeological resources is extremely beneficial to understanding the history of complex mining sites with various phases of activity. Historic mining archaeology is best approached by combining relevant data derived from both archaeological and documentary records.

The first step in recording a site where mining activities are visible is to identify what techniques were used. The remains provide clues to these processes, and from this foundation a story of the site can be developed. Archaeological sites containing features of poorly documented practices offer particularly valuable data. Individual and small-scale miners, for example, produced few documented technical records. Older technologies often persist well beyond their initial popularity, often because they are simple and inexpensive to build and can be operated by a single miner (Van Bueren 2004).

Mining site researchers have also focused their attentions on Depression-era mining. The low-tech methods used during the Gold Rush were also practiced by Depression era miners and ranchers looking sporadically for ore (Costello et al. 2007). In California, evidence of depression-era gold mining sites depicts a lifestyle characterized as "self-sufficient poverty", where small-scale lode mining was conducted. Such sites are generally poorly represented in the archival records, and demonstrate the renaissance of simple technologies requiring little investment.

Research Questions

- What level of technology is represented at the property?
- Is there evidence of innovation at a mining or milling complex that streamlined the operation?
- Are innovations evident that might have maximized the work of an individual or a small labor force, or are mechanical devices or inventions used to replace people?
- Is there evidence of the latest or most advanced technology or equipment available at the time being used?
- Are there recycled materials salvaged from other mills and put to use for purposes other than those for which they were originally designed?
- Do unique spatial arrangements demonstrate unusual kinds of tasks, or simplified and streamlined systems or subsystems of mining?
- During what time period (or periods) was the mine worked?
- How did mining processes change through time on the site?
- Are the technologies older than those common during the time period that the site was active?
- Is there evidence of specific ethnic/cultural groups associated with the mining remains?
- Is there evidence operators or workers lived near a mine or mill, such as tent flats, dugouts, or structures?

Mining sites with enough structures and equipment remaining to address the types of technology used and adaptations in technology over time are needed to address the research questions listed above. Sites must also be datable, with enough diagnostic material to place the site within a chronologic context. Most importantly, the first and last use of the site, and major periods of occupation/use must be identifiable. Mining districts that experienced more than one boom or bust period or had a longer period of operation than others may provide information about the evolution of mining technology to extract and process the same type of ore over time.

Mining Households and Communities

This research topic attempts to provide a detailed history of a mining community or individual. It deals with a landscape-based contextual approach driven by a series of general research issues to reconstruct the history of a mining camp. A great deal of literature has been produced regarding specific mining camps and miners, and can be applied to the archaeological record. Historical archaeology contributes depth to the culture histories of particular individuals or groups when a site's material remains can be linked to the actual people who worked and lived there.

Early miners were typically transient and their dwellings frequently left only faint traces. Small leveled pads on the hillsides may be the only visible remains of tent locations and stone hearths the only indications of dwellings. Artifact deposits are also sparse. Desert miners often lived near distant water sources and walked to work. More permanent mining habitations left a greater artifact record, with multiple remains of structures that have a greater potential for artifact deposits. Research questions that can be addressed by these habitation sites include consumption practices, consumer behavior, commodity flow availability and range of goods, and comparisons with urban deposits.

Research Questions

- What activities/events took place at the site?
- Was there one occupation or many?
- Was settlement exclusively associated with mining?
- What time period(s) are represented? What was the duration of occupation?
- Is temporal variation evident within loci or features?
- Who lived on the site and did the demography change through time?
- Is variation in population groups (e.g. family, groups of men, single, class or ethnic segregation) evident within households?

Archaeological mining sites with features that are distinguishable as habitation areas are needed to address these research issues. Some mining operations were large enough that entire towns developed around them, while areas that were minimally prospected may have small temporary habitation structures located next to the operation. In order to address issues related to consumer behavior and product availability, a site must contain trademarks and brand names, ceramic vessels for economic scaling, food containers, cooking and eating utensils, tableware, personal items, domestic goods, and faunal and floral remains. These items are indicators of consumer choices and supply networks (McCabe and Mackey 1998:29).

Ethnicity and Ethnic Relations

Under this research theme, multiple facets of ethnicity and discrete culture groups in a mining context are examined. Historical archaeology has long focused on race and ethnicity in relation to mining. Groups or individuals are examined, to provide valuable contextual information related to the variety of ethnic, racial and national groups that make up a mining community. Research questions pertaining to ethnicity focus on whether ethnic groups adapted to the dominant culture, or maintained traditional cultural patterns. The following research questions are adapted from Costello et al. (2007).

Research Questions

- Are there archaeological markers of an ethnic/cultural group occupying the site?
- Is there documentary evidence of ethnic cultural occupation of the site or the vicinity? Is there a historic context for the presence of this group and identification of their immigration and work history?
- Is there other evidence of this ethnic group in the vicinity or region? Was the site isolated or part of a community?

- What is the time period of occupation and were there multiple occupations of the site?
- Were the site occupants independent workers or employed by a mining company?
- How did the miners organize themselves? How was space organized: e.g. sleeping, cooking, and work areas?
- How does the evidence for ethnic groups on this site compare to similar sites?
- What continuities of traditional culture are evident? What has been adapted from the dominant Euroamerican or other cultures?
- Can households be classified as typical of the western mining camp within the low technology or "prospector structure" (i.e. small size, mostly adult males, little variation from one household to another)?

Data needed to address issues related to ethnicity and ethnic relations include archival sources such as census records, trademarks, brand names, the presence and absence of artifacts associated with age sets, gender, ethnic groups; and the quantities of household debris indicating house size.

Evaluation of Mining Sites Under Criterion D

The mining and mineral exploration context and research design provided above gives a context with which to evaluate a property's research potential under NRHP Criterion D. However, sites can also be determined eligible under other criteria. Under Criterion D, a mining property's significance is dependent upon its ability to provide important data, measured by its potential to contribute to research themes. In order to determine which research themes can be addressed by a particular property, archaeological data and archival or documentary records must be available. An isolated prospect shaft with an associated waste rock pile will have little to contribute to complex research themes. For most simple mining sites, (i.e. isolated mining features with no associated debris or structures) the appropriate documentary research and site recording necessary to identify and record the site "exhausts the research potential of the resource" (Costello et al. 2007: 101). Large mining sites with extant foundations, surface workings, and corresponding mining records, photographs and maps will have much more to contribute to the research base. These sites may require more detailed documentary research and field studies in order to recover important site information (Costello et al. 2007: 101).

According to Costello et al. (2007), "mining sites with domestic artifacts require an additional level of analysis. Many of the research questions listed above focus on the site's residents, and information on these people may be found in their household refuse. The association of the site with specific population groups may be determined by an analysis of these remains. Particularly for sites that are poorly documented, the domestic deposits may be the primary source of this information. Also, as mining technologies are generally not easily datable, data on when poorly documented sites were active may come solely from the refuse of its inhabitants."

5.3.2 Ranching and Farming

Nevada's agriculture historically fluctuated with its respective mining districts, and hence there are no distinct chronological periods of agricultural growth. As a general rule, from the 1860s until the end of World War II, agriculture in the state was dominated by livestock (cattle, sheep) that was supported by farming of feed grasses (alfalfa, hay). Other crops (vegetables, dairy) sustained local mining populations, and fell off accordingly. The trend from the early twentieth century has been a decrease in the number of agricultural units and an increase in the size.

Modern agriculture was one of the first commercial enterprises developed in Nevada, dating back to the early 1850s. The earliest settlements were built along transportation routes, which followed watercourses as much as possible, and provided hay and cultivated grasses for emigrant travelers. Nevada's arid environment dictated, and restricted, settlement to the primary rivers and richer valleys. The onset of repeated mining bonanzas after the 1860s encouraged agricultural development in marginal areas or valleys previously left unexplored for the purpose.

Nearly every valley in Nevada has received some form of agricultural development, especially ranching. Even some of the most arid or remote areas (such as playas and salt flats) frequently are occupied with open range cattle. The areas near springs are most active, followed by the foothills and lush valley bottoms. Ranch settlements generally tend to hug the valley edges at the base of the foothills. Mountain terrain usually receives the least agricultural impact. Early ranchers and farmers claimed natural meadows and water sources, especially valley springs. They cut grass for beef and dray animals, then leveled, plowed, planted, and irrigated fields below springs or along creeks. Crops included barley or other grains, and alfalfa was raised after 1880. Vegetables, potatoes, dairy products, pork, fruits, and other perishable foodstuffs were common on farms close to mining populations. Many farmers and ranchers raised range cattle and sheep, but as drought and competition for markets and grazing lands increased in the late nineteenth century, they began to fence their fields and enclose springs (Bowers and Muessig 1982).

In the twentieth century, agriculture and ranching gradually stabilized (except for the downturn of the 1930s), due largely to improved transportation allowing access to distant markets and less dependence on the fluctuating mining economy. Available water and restrictive use of public land continues to be a limiting factor on agriculture's growth.

Ranching and Farming Property Types

Property types associated with agriculture include farms, ranches, dairies, or any combination of farming and ranching activities, including residential properties and other structures, land-related properties, and ancillary properties. Residential properties (permanent and temporary) will consist of houses, bunkhouses, line shacks, portable residences (sheep camp wagons), and campsites. Other structures associated with agriculture-related properties include barns, sheds, pens, coops, corrals, loading chutes, feed lots, hay derricks, shearing pens, feed storage, slaughterhouses, outbuildings for various activities, developed springs and water catchments, water conveyance systems, dams, reservoirs or ponds, water troughs, windmills, line camps or cabins, seasonal herd-tending camps, trash dumps and scatters, and arborglyphs. Land-related properties are pastures, fields, rangelands, and demarcation of these, such as fences.

Research Questions and Data Needs

- Can evidence be found reflecting adaptation in ranching or farming techniques to local climate and market conditions?
- Is there evidence of early efforts at plowing, irrigation, or fencing?
- Do ditches, developed springs, or stock ponds exhibit early technology, such as sluice gates or stonework, or other evidence reflecting their history and use?
- Are there trash scatters directly associated with ranching activities? If so, what do these deposits say about isolation, product availability, ethnic affiliation, agronomy, or husbandry in the agricultural desert?

- Do any items indicate the presence of women and children, or is there evidence of several males working cooperatively?

Sites with features and artifacts that reflect agrarian practices from a particular period and contain limitations on function, such as specific farming implements, fencing techniques, or water improvements are needed. Sites should contain features or artifacts that may indicate the specific types of operations and the ethnicity or gender of the people utilizing the land. Large refuse deposits may yield information about the demographics of the ranchers or farmers. These deposits may possibly indicate consumer choices, the use of local and imported materials, and the degree of dependency on trade networks.

5.3.3 Transportation

The earliest transportation corridors were developed by fur trappers and explorers. These routes led to further exploration of the region and eventual settlement. The routes varied, depending on the terrain, floods, erosion, ruts, and rocks, thus creating a network of overlapping, slightly rerouted segments. These variations continued as the paths gradually evolved into trails, wagon roads, highways, and railroads. Mining discoveries precipitated growth throughout Nevada starting in the 1850s with the Comstock Lode, and followed in the 1860s by Austin, Hamilton, and later Ely. As mining grew so did settlement and, consequently, traffic increased. New roads were built and old roads were improved for heavier loads. Completion of the Central Pacific Railroad in 1869 spurred construction of new circulatory systems to the mining areas and new settlements. Railroads were built to mining areas to connect with the transcontinental railroad.

Trails are pathways that are developed over years by use. They may be old, providing access for aboriginal users of an area, or may be trails used by undomesticated animals in the vicinity. They tend to be relatively narrow and exhibit the fewest modifications to the natural landscape and the lowest level of labor in their construction. Some of the these routes later became wagon roads that were heavily used, although many keep the term “trail” in their various designations (i.e., Spanish Trail, Overland Trail). Wagon roads accommodated larger vehicles, namely wagons and stages, in addition to the continual use by pedestrians, pack animals, and horses. The majority of wagon roads simply developed from use, without formal design or construction considerations. In few instances the road was built and/or improved through discrete capital investment by stage, freight, or mail companies, or toll road enthusiasts, with the intent of profit from their expenditure. Industrial centers such as a large mining operation or mill may have also improved roads to transport raw material.

In the early twentieth century the introduction of the automobile brought about changes in road engineering, settlement patterns, and economic or trade patterns. Many of the existing wagon roads were adapted into the automobile road system. As automobile usage grew, so did an active county, state, and national highway program. However, the increasing use of automobiles did not immediately change the local transportation system, nor did the presence of cars produce the immediate abandonment of wagon and horse travel in the region.

Transportation Property Types

The historic routes of the trails may be accurately identified through a combination of archival research using primary sources, such as overland travel journals and diaries, and archaeological investigation of the trail corridors. Archaeological evidence of historic trails in desert areas include trail swale, minor improvements, wagon wheel ruts in earthen tracks or grooves and polishing on rock surfaces, and an associated debris or artifact path that denotes its passage. The Oregon-California Trails Association (OCTA) has developed a classification system for identifying and mapping trails that is particularly applicable to the route of the Overland Trail throughout the Midwestern plains and the high desert areas of the west.

Other evidence of transportation systems may consist of all components relating to their construction, use, and abandonment. These include roads, tracks, tramway towers, or traces showing rudimentary construction, road cuts, rock retaining walls, culverts, bridges or fords, temporary construction and/or maintenance camps, abandoned construction equipment, and roadside dumps and debris.

Research Questions and Data Requirements

- Do physical characteristics of the transportation system provide information concerning its construction and maintenance?
- What materials and techniques were used to build and maintain the system?
- Do work camps exist and if they do, what are they able to tell about construction techniques and the workforce?
- Is there any evidence of modification to the route, such as efforts made to modify a wagon road so that it could accommodate automobile traffic?
- Is there any evidence of realignments to the route to avoid areas impassable when wet?
- Can roadside debris answer questions about use of the road or habits of the travelers?
- Is there evidence regarding the kinds of products and merchandise transported?

Transportation routes should show evidence of materials used and any remains of engineered features, such as culverts, bridges, drainage ditches, and safety signage. Abandoned segments may provide information about the maintenance of the route. Segments with associated debris that can help denote the primary, and secondary, use of the route would help address these questions. The debris may indicate types of products transported along the route, the modes of transportation (wagon versus automobile), and whether the route was strictly used for a solitary purpose, such as accessing a mine, or if a variety of travelers used the route as an opportunity to gain access to other areas. Artifact assemblages with datable material fitting into a tight time frame would also help define when the route was traveled and if its use changed over time. Evidence of stations, campsites, or other stopping points could also help inform on the use of the transportation system.

6.0 INVENTORY METHODS

The background research conducted for this project was used to compile information about the prehistory and history of the project area. Additionally, information gained from the literature search was used to help identify previously recorded sites and form expectations about site density in the project area. General Land Office (GLO) plats and other historic maps, historical indexes, and land patents were also consulted prior to the fieldwork to identify potential historic resources. No GLO map was found for Township 45N, Range 27E.

The new Class III inventory project area was inventoried to BLM Class III standards, as defined in the BLM Cultural Resources Inventory General Guidelines (BLM 1990). The project area was examined by means of a pedestrian survey, with transects no more than 15 meters apart. Coverage was completed using cardinal transect techniques, either surveying east to west or north to south. When cultural resources were encountered, the crew transected the immediate area at closer intervals to identify the extent of the discovery and locate any associated artifacts or features. Archaeological sites were defined as any two or more archaeological items within 30 meters of one another. Single features, such as cairns, prospect pits, or water troughs that did not have associated artifacts would have been recorded as isolated finds. If necessary, sites were followed beyond the extent of the project area and fully recorded to properly describe and evaluate the resource.

A *Thales Mobile Mapper* GPS unit with sub-meter accuracy was used to map and record site and isolate locations. GPS-generated data also provided an accurate sketch map for each site. All identified prehistoric tools were given an artifact number and all were mapped with the GPS unit. For sites with more than ten flakes, debitage was not individually mapped.

Each site was photographed, providing at least one overview of the site's setting. Temporally or functionally diagnostic prehistoric artifacts were photographed in addition to being described. These artifacts include, but were not limited to diagnostic projectile points, pieces of ground stone, and bifaces. Historic artifacts were typically described and mapped, but usually not photographed.

No shovel probes were conducted to test the depth of cultural material at the sites. Instead, visual inspection of soil deposition was weighed with the surface manifestations of the cultural material and amount of integrity to make a judgment about potential depth. Areas with bedrock outcroppings, ridge tops, or on eroding side slopes were presumed to have limited potential for cultural depth. No cultural materials were collected during the inventory.

Sites were evaluated based on their ability to meet the four NRHP criteria. The sites were not associated with important events (Criterion A) or with important individuals (Criterion B), and did not demonstrate distinctive characteristics of a type, period, or method of construction,(Criterion C). Therefore, the sites were only evaluated based on their potential to provide additional information important to prehistory or history (Criterion D). Sites with a large diversity of artifacts including temporally diagnostic indicators were usually recommended eligible for inclusion in the NRHP. Sparse lithic reduction sites or historic debris scatters unassociated with a theme were usually recommended not eligible. Sites with temporally non-diagnostic obsidian artifacts were examined to determine if a large enough sample (approximately 30 flakes or more) was at the site to provide additional accurate information through hydration and sourcing studies. If the site lacked a sufficient sample, it was usually recommended not eligible unless it had other cultural remains that could address research issues.

7.0 INVENTORY RESULTS AND NRHP RECOMMENDATIONS

The field investigation resulted in the identification and recordation of a single archaeological site (CrNV-2-9605) and five isolated finds (CrNV-2-1490 to 1494). [redacted]

[redacted]

NRHP Recommendation: [redacted]

Table 7.1 Results of Inventory

[redacted]	[redacted]	[redacted]	[redacted]	
			[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Figure 7.1 Site and isolate location map

8.0 MANAGEMENT RECOMMENDATIONS

From July 20th to 22nd, 2010, Chambers Group personnel conducted a cultural resources inventory of the project area. The recordation and inventory resulted in the documentation of a single prehistoric site and five isolated finds. The site is a compact lithic scatter consisting of debitage and two core/bifaces from the same material, a brown/white chalcedony. The site is recommended not eligible for the NRHP under all Criterion. All sites determined not eligible for inclusion in the NRHP do not require further treatment.

The isolates consist of one prehistoric obsidian flake and four historic artifacts; three cans and an amethyst glass medicine bottle All of the isolated finds are categorically not eligible for the NRHP per the State Protocol Agreement between the BLM and Nevada SHPO (2009: Appendix E). Sites determined not eligible for inclusion in the NRHP do not require further treatment.

If Geothermal Technical Partners keeps the impacts within the surveyed project area boundaries, the project undertaking will have no effect on cultural resources.

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APPENDIX A: SITE RECORDS

The following section is confidential and not for public release.

If site forms are not attached, they are available on file at the BLM Winnemucca District Office to qualified professionals.