Prehistoric Foraging Strategies in the Piute Valley of Southern Nevada

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PREHISTORIC FORAGING STRATEGIES IN THE PIUTE VALLEY OF
SOUTHERN NEVADA

By

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ABSTRACT

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By

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The Piute Valley of Southern Nevada is an incredibly diverse but arid zone in the eastern portion of the Mojave Desert. Most of this diversity can be attributed to the elevation shifts ranging from the Colorado River basin to the peaks of the surrounding mountain ranges. These peaks and valleys provide a multitude of resource zones in which prehistoric hunter-gatherers could provision themselves throughout the year. For this thesis I have used archaeological survey, paleo-climate models, life-sciences data and ethnographic research to perform an in-depth land use analysis of prehistoric forager adaptations to this challenging but life-sustaining environment.

Recent investigations completed by the University of Nevada Las Vegas (UNLV) and the Public Lands Institute (PLI) have provided an abundance of data concerning prehistoric life-ways in this region. Using this research, available literature, and data in respect to the Piute Valley I have tested a model based on general foraging theory for Great Basin populations developed by Roth et al (2006). This model individually analyzed archaeological sites over a vast area based on settlement patterns, resource availability, and climate change throughout the Holocene. I have used Geographical Information Systems (ArcGIS) to synthesize the data and gain a holistic understanding of the land use patterns exhibited in the Piute Valley.
ACKNOWLEDGEMENTS

It is nearly impossible to mention everyone that has helped or contributed to the successful completion of this thesis. I would like to start by thanking UNLV for providing an academically conducive environment for inter-department research and personal enrichment. The UNLV Anthropology department staff, faculty, and fellow graduate students for being such great people, and for running an excellent program where students and faculty are able to research exciting projects and maintain a healthy academic esprit de corps. From the Walking Box Ranch Project I would like to thank Jean Cline, Alex Roy, David Yoder, Sarah Hill, Elizabeth Toney, and Sean Neiswenter for their excellent research and previous work, which helped to build this thesis. I would like to thank my committee members for their guidance and patience while I worked through this daunting task. I would especially like to thank my advisor Dr. Barbara Roth for being an excellent mentor, and believing in me to help with her projects such as the WBRP and the excavations in the Mimbres region. Her guidance has helped me build a strong foundation in archaeology, and provided many memorable moments. The National Park Service, and my supervisor Leah Bonstead, provided many resources including time, technology, and a renewed love of archaeology which helped me to finish this thesis. My mother has been a source of stability in my life throughout this process. I would also like to mention, with an enduring love, my better half Kelly Fessler. Her dedication to her studies and my desire to impress her, ultimately led to the completion of this thesis, and got me working toward my graduation again.
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CHAPTER 1

INTRODUCTION

Interactions between people and the environment has been the primary research topic for the Great Basin since anthropologists first came to study the region. These ethnographers and archaeologists were interested in the native cultures that were still present on the landscape and how they managed to utilize such a seemingly inhospitable terrain.

There are several definitions of the Great Basin, but the ethnographic Great Basin is by far the largest and hardest to define. The earliest researchers to arrive grouped the Native Americans based on similarities found between the tribes. “The Great Basin is one place where the match between language and culture is nearly, though not quite, perfect” (Grayson 2011: 33). These similarities were based on multiple factors such as the language, cultural backgrounds and subsistence pursuits. The geographic range of the ethnographic Great Basin takes up a large portion of the western United States, stretching from central Oregon and Idaho to southeastern California and from Lake Tahoe to the Great Salt Lake (Figure 1).

John Wesley Powell, Julian Steward and many other ethnographers contributed the majority of the descriptions concerning Native American lifestyles between the tribes of the region. Their observations came to be described as the Desert Culture by Jesse Jennings, following his excavations at Danger Cave in the mid 20th century (Rhode 1999). In this paradigm, humans were described as small familial bands that traversed the environment, relying on a variety of resources in a generalized foraging pattern.
utilizing everything from small seeds to large game. This culture was thought to have been so successful that once it was adopted by prehistoric foragers it lasted until documentation by Steward in the 1920’s and 1930’s (Beck 1999). Many anthropologists, though, showed that there were many cases of specific adaptations both in time, and in certain regions where the lifestyle was very much different throughout the Great Basin. Later, with the advent of processual archaeology, researchers began to look at specific
changes in cultures and what circumstances may have brought about such changes (Beck 1999).

In this thesis, using previously collected data, interdisciplinary inferences, and field research, I have examined a specific region of the Mojave Desert that lies within the ethnographic Great Basin. The Piute Valley lies just south of Las Vegas around the town of Searchlight, Nevada. It is a vast arid landscape with many varied ecological zones that has provided sustenance for native groups throughout the Holocene. Despite this potential, the area has had little archaeological investigation. “The archaeological record of the Mojave Desert is very rich, highly varied, and relatively uninvestigated” (Sutton 1996: 245). This greater lack of understanding of the Mojave Desert is the same for the Piute Valley. Save for limited Cultural Resource Management (CRM) projects, archaeological investigations in the Piute Valley of southern Nevada have been relatively non-existent (Roth et al 2006). In 2005 the University of Nevada Las Vegas (UNLV) in cooperation with the Public Lands Institute (PLI) began a broad range interdisciplinary study of this region (Cline et al 2008). These investigations have produced a large amount of data that has yet to be extrapolated into a comprehensive analysis of prehistoric foraging strategies specific to this ecological zone.

This thesis will help to expand the knowledge of the region by synthesizing the data provided in the Walking Box Ranch Project. The WBRP developed by the PLI and UNLV opened up the valley to an unprecedented level of cooperative investigation. This interdisciplinary project gave each of the involved disciplines (archaeology, geo-sciences, life sciences and landscape architecture) access to ideas and expertise that would not normally be available to researchers. Archaeological interpretation with knowledge
gained from these fields helped expand our knowledge of prehistoric life-ways in the valley.

As a member of the archaeological team since the beginning of the project I have been granted access and insight into the study of the valley from many aspects and disciplines. In this thesis, I use data collected by others and myself on the research team to develop a regional understanding of prehistoric foraging behavior in the valley. By identifying resource zones and archaeological sites within them, we can begin to build an expansive picture of human adaptation. I will also use regional and Piute Valley paleoclimate models to cross-reference with diagnostic artifacts found on archaeological sites to help enhance the resource availability data. These sites and zones will then be analyzed using a settlement pattern model based on general foraging behaviors, and ArcGIS mapping to develop a clearer picture of human adaptive strategies based on mobility and technology used to procure resources. Available ethnographic data concerning foraging groups in similar environs will help to enhance the understanding of the settlement patterns in the region, and provide specific inferences to past adaptive strategies in the region.

Native peoples are often depicted, in Great Basin ethnographic records, as groups struggling to make a life, but these groups had suffered many changes brought by western expansion. It is more likely their response to Euro-American contact than to the environment that created this perception (Beck 1999). Prehistoric populations were well adapted to their environments and knew much about how to use the land. Cultures do change though, and these changes may be based on responses to shifts in either culture itself, or the environment. This thesis serves as a general summary of how prehistoric
humans used the landscape, and what changes in their behavior occurred throughout the
prehistoric occupation of the Piute Valley.
CHAPTER 2

BACKGROUND

Geography

The Piute Valley is a fifty-five mile long area, running north/south, with a width of twelve miles east to west. The valley is located in southern Nevada and southeast California in the eastern portion of the Mojave Desert and the southern area of the ethnographically defined Great Basin (Grayson 2011). There are several north-south trending mountain ranges that surround the Piute Valley. The Nevada portion is flanked on the north by the McCullough and Highland mountain ranges, on the east by the Newberry Range, and on the west by the Castle and New York Mountains (Figure 3). The southern portion of the valley is demarcated by the conjoining of the Piute Wash and Colorado River near Needles, California.

Figure 2. Research Area Overview.
The research area for this thesis is restricted to the Nevada portion of the Piute Valley. A small strip of land due east and just outside of the valley that flanks the Colorado River, and more recently the shore region of modern Lake Mojave, was also incorporated (Figure 3). This landform is not geographically part of the Piute Valley, but it was likely an important part of the regional subsistence adaptation, as noted in the ethnographies of the Mohave people (Stewart 1969), therefore it was incorporated in the study.

Elevation for the region ranges from 680 feet above sea level at the shore of Lake Mohave to over 6,800 feet in the McCullough Range. The elevation changes from the Colorado Basin to the uppermost portions of the surrounding mountain ranges provided the prehistoric populations with ample diversity in their foraging pursuits for both floral and faunal resources.

The valley floor is a large alluvial fan that is cut with numerous arroyos that run from the foothills in the west to the Colorado River basin in the east. These alluvial deposits have a low but consistent density of workable stone tool material (i.e. chalcedony and small obsidian nodules) that are often visible on the surface (Cline et al 2008). Casual collection of these materials was the most likely source of stone tool materials for foraging groups, while some quarrying activities took place in specific areas of the valley.

Water availability in the valley comes from several sources. There is the ever-present Colorado River, which would have served as a reliable water source even during the longest of droughts. There are also several extant springs in the McCullough, New York and Highland mountain ranges surrounding the valley that also would have
provided for groups as they traversed their seasonal rounds. Throughout the valley and into the upper reaches of the surrounding mountains, the geo-sciences team of the PLI took note of several vegetated areas that are not currently marked as springs, but as described by the Geo-sciences team may have contained water in the past, or may have served as sources of subsurface water (Cline et al 2008). These potential sources were contrasted with paleo-climate data to determine during what periods they would have likely supplied water. All of the water sources that were noted by the research teams were incorporated into the geo database for this project (Figure 4).

The primary vegetation on the valley floor is Joshua tree (*Yucca brevifolia*) and Creosote bush (*Larrea tridentata*). Other plants, which would have been utilized by native groups, include small grasses such as Indian Rice Grass (*Oryzopsis hymenoide*), saltbush (*Atriplex*), and other low ranked resources. This vegetation zone is often referred to as lower-Sonoran in the Inter Mountain Antiquities Computer System forms (IMACS). Small groves of Screw Bean Mesquite (*Prosopis pubescens*) and reed materials are present along the shoreline of the Colorado River. This portion of the lower-Sonoran is described as the Lake/Reservoir area.

As the elevation rises, and we approach the Upper-Sonoran life zone, further plant resources become available such as Juniper trees (*Juniperus californica*), Prickly Pear (*Opuntia*) and Piñon Pine (*Pinus Monophylla*) in the uppermost mountain ranges, namely the McCullough range. Many of these species are of importance to modern Native American groups, and they would have been gathered regularly by foraging populations throughout the Holocene. Piñon gathering was an important aspect of Native American groups up until ethno-historic populations as noted by B. H. Dutcher in 1893 in his study.
of the Panamint Indian groups, and it is still regularly gathered by elders in modern Native American populations. To the north in the Highland Mountain range at ~3,800 feet lives a holdout population of oak (*Quercus turbinella*) where ground water and acorns would have provided an abundant resource to native groups as shown by the ample rock art in the locale (Cline et al 2008).

There are many species of animals in the highlands and lowlands of the region; some travel large distances, while others are locked into certain elevation zones. The valley floor is an “Area of Critical Environmental Concern” due to the presence of Desert Tortoise (*Gopherus agassizii*), which was an important species for foraging groups in the Mojave Desert (Schneider 1999). Other large faunal species include Bighorn Sheep (*Ovis canadensis*) and Mule Deer (*Odocoileus hemionus*), which roam both the upper and lower elevations. The two species of rabbit in the area, Jackrabbits (*Lepus californicus*) and cottontails (*Sylvilagus auduboni*), are abundant throughout the valley and foothills. Assorted lizards and snakes also abound, and were an important resource to many groups in arid environments throughout the world including groups in the Mojave Desert (Schneider 1988) and aboriginal populations in the Great Sandy Desert of Australia (Cane 1987).

While these are not all of the resources available to prehistoric foraging populations of the Piute Valley, they provide general examples. The geo-sciences and life-sciences portions of the WBRP, which I refer to in the methods section of this thesis, provide more detail on specific resource availability for the region (Cline et al 2008). I have used this source and information in the site records to individually cross-reference
Floral and Faunal Resources

Legend

Figure 5
Floral and Faunal Resources

Scale 1:350,000
Coordinate System - Nad 83
the archaeological sites within the region in the Site Specific Settlement Pattern analysis (Appendix A).

**Paleo-climate Background**

A synthesis of the prehistory of the Great Basin can be found in Donald Grayson’s “The Great Basin: A Natural Prehistory” (2011). This revised edition of his “The Desert’s Past” (1993) goes into great detail about the paleo-climate of the Great Basin and some of its specific regions. In this section, I provide a summary of the Mojave Desert and give the dates of relevant climatic events and phases that would have affected prehistoric populations in the Great Basin. The general timeline and environments are based on Grayson's work, while specifics to the Mojave Desert and the Piute Valley are referenced in further detail.

At the end of the Pleistocene, we see the desiccation of the pluvial lakes that were derived from a moister, cooler climate and the melt from the receding glaciers. These large Pleistocene lakes are mostly dried up by 9,400 b.p. and at this point we enter the Early Holocene (McDonald et al 2003). This period ranged from 10,000 to 7,500 b.p. and was marked by smaller, shallow lakes and marshes throughout the Great Basin (Harvey and Wells 1989). While the majority of the mega-fauna were extinct by this time, large game still roamed in this lush environment. Humans who had been in the area for likely 2,000 years or more hunted game and subsisted off the rich floral and faunal resources spread throughout the Great Basin (Warren and Crabtree 1986).

The Early Holocene was followed by the arrival of the Middle Holocene, which was a complete reversal of the previous climate. The Great Basin during this period, 7,500 to 4,500 years ago, experienced its warmest and driest period, which Ernst Antevs
(1948) described as the Altithermal. The area at this time was so drastically different that tree lines receded, new species moved across the environment, including the arrival of the important pinyon pine, and it is theorized that humans possibly abandoned the most arid portions of the Central Great Basin in response to the heat (Rhode 1999).

After the Middle Holocene the effective moisture of the Great Basin increased, leading to the current phase of the Great Basin climate known as the Late Holocene (4,500 years ago to present). There are three significant events that occur during this period, which may have had an impact on prehistoric populations. The first is a period of increased effective moisture at around 4,000 C. b.p which coincides with the Late Holocene (Huckleberry et al 2001). The second is the Medieval Climatic Anomaly, which was a warmer drier period ranging from 1,100 to 750 b.p. This period is often interpreted as a drought event. Lastly, the Little Ice Age, which is described as a generally cooler, moister period lasted from 600 years ago up until the end of the 19th century (Grayson 2011). Overall though, the Late Holocene is regarded as being very similar to what we observe today in the Great Basin and Mojave Desert.

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<tr>
<th>Climatic Period</th>
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<th>Conditions</th>
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<tr>
<td>Early Holocene</td>
<td>10,000 to 7,500 b.p.</td>
<td>Cool and Moist</td>
</tr>
<tr>
<td>Middle Holocene</td>
<td>7,500 to 4,500 b.p.</td>
<td>Hot and Dry</td>
</tr>
<tr>
<td>Late Holocene</td>
<td>4,500 to present</td>
<td>Warm and Moister</td>
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Table 1. Paleo-climate overview. Un-calibrated.

**Archaeological Background**

The prehistoric periods described in this section are a synthesis of the descriptions and chronologies taken from Warren and Crabtree (1986) and Roth (2012). All dates presented in this thesis represent un-calibrated general periods. Human activity in the Piute Valley is dated back to at least 7,000 b.p. by the presence of two Silver Lake projectile points on a site in the New York Mountains near the California/Nevada border.
(Roth et al. 2006). These projectile points represent the first known groups to occupy the Mojave Desert, known as the Lake Mojave period. This period, which ran from 12,000 b.p. until 7,000 b.p., is marked by a generalized hunting and lacustrine-based adaptation due to the presence of pluvial lakes in the region. This richer environment would have provided contemporary populations with resources that were both higher ranked and easier to process.

After the desiccation of these lacustrine environments (7,000 to 4,000 b.p.) there was a major shift in the cultures of the region, which marked the Pinto Period. In this time frame we begin to see an increase in dependence on seed collection and plant-based subsistence. Milling slicks and other groundstone increase in frequency across the Mojave Desert while evidence for large game hunting decreases. During the Gypsum Period (4,000 b.p to 1,500 b.p.) the generalized subsistence strategy strengthens across the Mojave Desert. Projectile points, split twig figurines tied to ritual behaviors, and obsidian sourcing show interaction and trade with surrounding groups.

The Saratoga Springs Period (1,500 b.p. to 800 b.p.) is distinguished by the introduction of the bow and arrow across the region. Pottery was also developed late in this period and helps to identify these populations in the archaeological record. These technologies, along with other developments such as horticulture and agriculture, allowed for the development of village life in certain areas with abundant water such as the Colorado River, Muddy/Virgin River complex and the Antelope Valley of southern California. Ancestral Puebloan groups from northern Arizona increased contact with local groups by establishing turquoise and shell bead trade networks through the Mojave Desert.
The final period is the Late Prehistoric period (800 b.p. to Contact). Many groups like the Shoshone, Southern Paiute and Mohave people begin to occupy lands that they remained on until contact by western explorers and settlers changed their lives. Archaeologically, we have much greater knowledge of the region with a variety of pottery types and projectile points such as Desert Side Notch and Cottonwood Triangular. Ethnographies documented during the late 19th and early 20th century can help to provide an obscured window into the lives of these peoples.

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<tr>
<th>Specific Period</th>
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<tr>
<td>Lake Mojave</td>
<td>12,000 – 7,000 b.p.</td>
<td>Stemmed projectile points and large game hunting strategy</td>
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<tr>
<td>Pinto</td>
<td>7,000 – 4,000 b.p.</td>
<td>Increased groundstone use and less emphasis on hunting.</td>
</tr>
<tr>
<td>Gypsum</td>
<td>4,000 – 1,500 b.p.</td>
<td>Increased trade throughout southwest and split twig figurines.</td>
</tr>
<tr>
<td>Saratoga Springs</td>
<td>1,500 – 800 b.p.</td>
<td>Introduction of bow and arrow and pottery, agriculture being used to subsidize foraging.</td>
</tr>
<tr>
<td>Late Prehistoric</td>
<td>800 b.p. to contact</td>
<td>Less emphasis on agriculture with regions populated by ethnographic populations.</td>
</tr>
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Table 2. Occupational Periods. Un-calibrated.

The majority of archaeological background interpretation of the Piute Valley has been developed using meager data collected from CRM projects completed during surveys of right of way corridors for roads and utilities, and inferences from similar regions of the Mojave and Great Basin deserts (Roth et al 2006). Research in the Piute Valley is still in the preliminary stages, and past investigations have shown that a majority of the sites are located in the foothills of the surrounding mountain ranges and along the shoreline of the Colorado River (Roth et al 2006). The valley floor is dominated by historic mining and ranching activities with very little in the way of prehistoric archaeology. Most of the prehistoric sites throughout the region are not easily placed within a time period, due to a lack of diagnostics on the majority of the recorded sites. This project seeks to expand upon the current knowledge of the prehistory of the
Piute Valley, first, by expanding the covered survey area of the region, then by researching these sites holistically using data provided by geo-scientists and biologists with an emphasis on understanding the paleo-climate of the region.
CHAPTER 3

RESEARCH DESIGN

In a paper presented at the Nevada Archaeological Association 2006 meeting, Barbara Roth, David Yoder and Elizabeth Toney developed a model of foraging behavior for the Piute Valley to look at seasonal migration. This model posited that prehistoric populations of the valley focused most of their efforts on two resource zones, the shores of the Colorado River in the summers, and the mountains surrounding the valley in the fall (Roth et al 2006). Seasonal migrations would be timed to best capitalize on resources such as mesquite beans and grasses in the summer, and piñon nuts as well as large game in the fall to help prepare for the winter (Grayson 2011).

This model was theorized using two significant lines of evidence. The first is based on the archaeological site location information taken from the Harry Reid Center. The majority of the sites were located in the mountains, foothills, and Colorado River shore area, with only four being found on the valley floor. The authors postulated that the Piute Valley was primarily used as a corridor between the two richer resource zones, and for the most part uninhabited due to a lack of water and other significant resources (Roth et al 2006). Rock art panels may have been used as prehistoric markers for resources in the region.

Secondly, the archaeological and ethnographic record helped to posit this settlement trend based on research on Great Basin populations. The importance and procurement of piñon nuts as well as other upland resources, such as large game, has been well documented by first-hand accounts (Dutcher 1893), along with archaeological data (Zeanah and Simms 1999). The seasonality of pinon nuts is of critical importance,
and the late summer /early fall is when they have to be harvested. “Steward estimated that a family of four people working a good crop for four weeks could gather enough nuts to last them about four months, roughly the whole winter” (Grayson 2011: 36). This is also an opportune time to hunt large game, just before the lean season when the game have fattened up. Most studies on large game hunting though describe it as an opportunistic pursuit, and caloric returns are not based on the fattened game of the early fall (Simms 1985). Lowland resources such as mesquite beans and grass seeds would need to be timed as well, with the late spring and early summer being the optimal time to harvest these resources (Stewart 1965).

For this thesis, the generalized foraging system proposed by Roth et al.’s model was tested. This project incorporates anthropological, geo-sciences and life sciences data to look at resource interaction, group mobility and paleo-climatic adaptations in the Piute Valley. To test this model many sources of information were mined to help build this holistic understanding of the region. The largest contributing data sets came from GIS databases and the information provided in the individual site analysis. “Many if not most GISci applications in archaeology are using GIS to assemble geo-spatially referenced environmental data, create paleo-environmental reconstructions and compare these with the regional distribution of past human settlement” (Kantner 2008: 49). This type of analysis, in concert with established foraging theory (Lee and Devores 1968, Binford 1980, Kelly 1995), and the aforementioned settlement model was used to approach the wide breadth of available data provided by the PLI project and its individual research disciplines.
General Foraging and Settlement Theory

In 1966 the “Man the Hunter” conference opened up anthropology to the nuances of foraging society and how its adaptability and intricacies called into question some of the previously held beliefs of the struggles of hunter-gatherers. “Despite its title the conference introduced anthropologists to the importance of plant food and women’s labor in hunter-gatherer diet” (Kelly 1995: 14). In the mid-twentieth century anthropologists began to look at foraging societies of the world as savvy groups, who had in depth knowledge of both the ecological and political characteristics of their home ranges. There were five key points that Lee and Devore (1968) developed during the conference that helped to define nomadic social structure in a general foraging system in arid environments.

1. **Egalitarianism.** Lee and Devore argued that mobility constrains the amount of property that can be owned, and thus serves to maintain material equality.

2. **Low Population Density.** The food supply indirectly keeps population growth rate and density low so hunter-gatherers live in small groups, coming together seasonally in large aggregations for social purposes. Population is kept below carrying capacity through intentional, conscious controls such as abstention, abortion, and infanticide.

3. **Lack of Territoriality.** Long-term adaptation to resource variability requires that hunter-gatherers be able to move from one region to another, making defended territories maladaptive.
4. **A Minimum of Food Storage.** Since the group is nomadic, and food plentiful relative to population density, Lee and Devore assumed that long-term storage would be unnecessary.

5. **Flux in Band Composition.** Maintaining social ties requires frequent movement and visiting, which also discourages violence since disputes can be solved through group fissioning rather than fighting (Kelly 1995: 15).

These general concepts provide anthropologists with an overarching approach to understanding forager behavior in marginal environments. While many foraging groups follow these patterns, there are some environments that lend themselves to much more complex hunter-gatherer societies. Groups residing in regions such as the northwest coast and eastern woodlands of North America lived in high population, semi-sedentary regions (Kelly 1995). The environments in these regions provided ample resources and negated the need for high mobility foraging systems, and would often congregate people into large population centers. This type of behavior was present in certain parts of the Great Basin as well, including marsh areas and the resource rich Owens Valley (Steward 1938). The five tenets previously listed are best exhibited in marginal environments throughout the world, including the majority of the Great Basin and Mojave Desert. More in depth inferences need to be inferred from ethnographic accounts of regional groups or appropriate analogues to accurately look at behavior and foraging adaptations in specific regions.

The patterns of mobility exhibited by prehistoric populations can help us determine seasonal patterns and other adaptations to the environment. Lewis Binford demonstrated that foraging groups in varying environments adapt to their environments
with generalized seasonal strategies (Binford 1980). While Arctic and rainforest groups moved a great deal in “deserts, mobility is seasonally constrained, especially as the use of stored food during the winter becomes more important, or as the distribution of water sources constrains the movements of desert foragers” (Kelly 1995: 117). Binford also placed hunter-gatherer groups into two settlement systems where he listed them as foragers: who move entire camps to resources, and collectors: who perform logistical forays to collect resources to be brought back to base camps (1980). The settlement patterns of Great Basin hunter-gatherers, in the more marginal environments, are most likely determined based on resource and water availability.

Resource density and placement across the environment can have dramatic effects on foraging behavior and seasonal mobility. The Piute Valley has patchy resources in an arid environment, with water availability limited to springs and the Colorado River. “Given humans’ almost daily need for water, the location of water is often more critical then foraging considerations as a determinant of residential movement in deserts” (Kelly 1995: 126). Water would have been a critical factor for movement (Taylor 1964), but as stated earlier in this chapter, the timing of resources would have been a necessary consideration with the decision to move. With ethnographic analogues from regional groups such as the Shoshone (Dutcher 1893 and Steward 1938) we can infer a mixed settlement strategy, with an emphasis on the collector model for seasonal movements in the region. This inference is based on the presence of seasonal camps, such as winter villages in the pinyon/juniper zones and other seasonal camps located along the river shores (Roth et al 2006). These movements would place the larger encampments near
water resources and other food resources, but the majority of the resources may have been collected with logistical forays.

**Catchment Analysis**

Catchment analysis is the relationship between sites, people, technology, and the resources within a specified geographic range (Vita-Finzi and Higgs 1970). There are many ways to perform a catchment analysis such as circular regions, geographic quadrants, or simple straight line analyses (Roper 1979). When developing resource procurement models it is important to use the most appropriate system, consider the terrain, and use appropriate analogues. In the Piute Valley there are many environmental factors that must be taken into account for catchment models. The environment is arid making food sources and springs patchy across the landscape. "Water...[is] so basic and so vital that the distance to obtain them must be minimized; others are less immediate, are "worth" more, and... gathered from farther away" (Roper 1979: 121). Thankfully there are several analogues in which to develop an appropriate analysis for Great Basin prehistoric foragers. Catchment analysis has been used on many arid adapted groups including the Desert Aborigines of Australia (Cane 1982) and native populations of the Great Basin (Steward 1938).

**Research Questions**

This project incorporates the interdisciplinary data collected through the Walking Box Ranch Project, geo-spatial software and inferences developed using ethnographic data to examine prehistoric forager adaptations in the Piute Valley. I have tested the model developed by Barbara Roth and her team, and examined any changes in the
behavioral adaptations by prehistoric populations over time whether triggered by culture or climate change. To better understand the behavior exhibited by these prehistoric populations, one main research question with three supporting questions were developed for this thesis.

**What type of settlement patterns can we infer in the prehistoric Piute Valley based on site location, chronological data, and function?**

Initial investigations in the Piute Valley resulted in the development of a general foraging model based on the use of two resource-rich zones surrounding the valley (Roth et al 2006). I have expanded on that research model incorporating new survey boundaries and paleo-climate datasets. With these new data I have developed more in depth conclusions on human behavior and landscape utilization. There were many ways to approach these conclusions, but in the Piute Valley I made inferences based on multiple lines of evidence: site structure, resource relationship, and technology. Then these data were compared with paleo-climate models to look for variability in behavior. The conclusions developed from answering this question were enhanced using data collected from the supporting questions that follow.

**A. What is the location and structure of the prehistoric sites discovered in the Piute Valley?**

Archaeological site location data collected both in the field and from databases compiled by government, university and private archaeological reserves was essential to my research. Prehistoric sites, e.g., lithic scatters, rockshelters, rock art sites, tool stone quarries and milling stations, were sought out amongst the literature, available databases and in the field with archaeological surveys. Technology use and settlement behavior
exhibited by individual sites was analyzed to provide insights into resource extraction. The sites were then placed into several categories and mapped onto a GIS dataset to look at the spatial relationship of these sites to other sites, geographic features, and resource zones.

B. What is the relationship of these sites to known floral, faunal and raw material resources in the region?

To answer this question, sites were plotted into an ArcGIS database for analysis and comparison with known resource zones in the valley, as well as resources documented in the site forms. These resources included those previously listed in the background such as piñon nuts, acorns, various raw materials, and faunal resources such as fish and large game. Known water sources such as springs were demarcated in the database as well. The relationship between sites and resources helped to develop a known usage dataset in ArcGIS to compare with current research and appropriate ethnographic analogues. The information gained from this data set provided further insights as to what activities were being conducted at the archaeological sites.

C. Does the archaeological record provide any insights as to how foraging strategies and settlement patterns may have shifted over time due to responses to environmental change?

Humans use many technologies when interacting with their environment, and some of these can be tracked to place archaeological sites in a chronology. Foraging patterns may have remained relatively static throughout the Holocene in the Piute Valley, or they may have shifted with the environment in response to thermal and moisture level fluctuations (Zeanah 2004). With the use of diagnostic tools such as projectile points and
pottery, eligible sites were placed in time periods discussed in the archaeological background. This information alongside the paleo-climate data from the PLI project helped to reconstruct contemporary environments that aided in the interpretation of the archaeological record. The specific components and methods in which sites were analyzed and categorized are fully explained in Chapter 5. A detailed explanation of each individual site is in Appendix A.
CHAPTER 4

METHODS

Literature Review

This research began with an extensive literature review through many disciplines in order to gain a holistic understanding of human behavior and environmental interactions in the Piute Valley. Research included anthropological study into the lives of foraging groups both native and distant from the valley. Relevant inferences from local groups such as the Paiute (Kelly 1976, Knack 2001), Shoshone (Dutcher 1893), Yuman (Forde 1931), Mohave (Furst 2001, Harner 1951, Stewart 1969) and outside groups such as the desert Aborigines of western Australia (Cane 1987, Sontz 1971) and arid-adapted populations of Africa (Kelly 1995) were researched to gain an understanding of how living peoples interacted with arid environments. The social organization, interactions, movements, foraging patterns and novelty adaptive behaviors, like fashioning canteens out of Prickly Pear pads (Taylor 1972), were used to infer how humans coped with such harsh environmental extremes.

Learning what types of resources and foraging behaviors were used by certain ethnographic groups provides a greater understanding for interpreting the life ways of the prehistoric occupants of the Piute Valley. While not every detail can be used to look specifically at Great Basin foragers, general strategies can be used as a guide to develop a more holistic understanding that stretches, chronologically, beyond the ethno-historic groups in the region.
**Previous Site Data Collection**

Plotting the locations and digitizing the descriptions from discovered sites was completed in the beginning stages of the PLI project. The base map was constructed with data provided from the Harry Reid Center, which is the main site record repository in southern Nevada (Figure 6). This included the site records for both historic and prehistoric sites. The site descriptions were often spotty descriptions written many decades. The more recently the sites were recorded, the better the site description tended to be, but often the sites were left with incomplete data. These descriptions are provided in Appendix A. Further data collected in the field, or referenced in the inter-disciplinary portion of the PLI project were added to the ArcGIS database, and are listed in Appendix A as site addendums.

**Environmental Data Collection**

Most of the background data concerning the paleo-climate of the region is from Grayson (2011), but this information only provided an overarching paleo-climate. The geologic and paleo-climate data specific to the Piute Valley has come from analysis completed by the Geo-sciences Department at UNLV, which was included in the PLI report (Cline et al 2008).

The expertise of Dr. Jean Cline and Alex Roy has helped to explain the formation and changes in the Piute Valley and surrounding areas, namely during the Holocene, when humans inhabited the region (Warren and Crabtree 1986). It has also provided me with a thorough review of climate change throughout the Holocene. The geologists utilized many avenues of investigation including literature review, Aster satellite imagery, remote sensing and field observations of morphological features including
bajadas, alluvial fans and desert pavements (Cline et al 2008). Investigations were restricted to the valley floor and McCullogh, Highland, New York and Castle ranges which surround it.

Some investigatory work was completed on the Lake Mohave shoreline with our archaeology personnel as well. This was completed with the help of the geo-sciences team to answer questions concerning the dates of specific geological formations, and what processes may have created them.

The results of these investigations provided the archaeological research team with many insights into specific areas including formation processes, lithic material outcrops, and possible paleo-spring locations (Figure 4). The latter are based on areas of unusually high vegetation, which may also be indices of near-surface ground water. Linking the wetter periods of time with possible past spring locations gave us locations and time frames when these resources may have been available. These data were then cross-referenced with diagnostic artifacts found in archaeological sites. This line of evidence gave us insights into past foraging behavior that was not available with the previously limited understanding of the region, and this has helped to enhance the site-specific settlement model analysis.

The life-sciences portion of the PLI project has provided floral and faunal data on specific portions of the valley. These data packages allowed for the study of certain regions of the valley in seasonal time frames with an understanding of what types of resources would have been available to humans both temporally and spatially. The biologists also completed several forays to count and live trap species in the region, which led to the discovery of several species which were not known to inhabit the region.
(Cline et al 2008). The available species and known areas of habitation have been critical to understanding what resources are currently present and provide insight into what species may have been available to human populations in the past.

Figure 7. Floristic Desert Map. Red Star Indicates Research Area. (Cline et al 2008).
Field Work

In addition to the literature review, several archaeological field investigations were completed to increase the robustness of the data for this thesis.

The first of these was a survey project completed in January of 2005. This project encompassed the entire property of Walking Box Ranch, which took up approximately 160 acres of the valley floor (Figure 9). “Only historical remains were found within the boundaries of the ranch. Historically the valley was used as a center for mining and ranching, and evidence of this is found throughout the area” (Cline et al. 2008: 17). Most of these historical remains were related to activities based in and around the Walking Box Ranch. No prehistoric sites were found during this phase.

The second phase of the project, completed in January of 2007, was the condition assessments of previously recorded select sites within the Piute Valley. This phase was undertaken to fill in gaps in the archaeological records including inaccurate coordinates, incomplete site descriptions and rough artifact counts. Eleven sites were chosen for assessment and many of them had been recorded several decades prior. Only five of the sites were re-recorded, and six could not be relocated. This disparity is due to many problems; including poor coordinates or location data, incorrect plotting by previous researchers, or destruction either through natural or modern human processes.

The five sites that were re-visited had modern GPS coordinates, photos and site addendums appended to them. They were also appended to the geo-database and the site descriptions have been integrated into the site-specific analysis.

The third phase of fieldwork, completed during the spring of 2007, was a test of the land use model wherein the valley floor was predicted to be mostly neglected by
foraging populations. A total of 808 acres was surveyed during this phase of the project.

As expected, no archaeological sites were found on the valley floor, but a modest number of isolates were found.

<table>
<thead>
<tr>
<th>Site Number</th>
<th>Map (USGS 7.5 min)</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>26Ck121</td>
<td>Hart Peak, Calif-Nev.</td>
<td>Re-recorded</td>
</tr>
<tr>
<td>26Ck1153</td>
<td>Tenmile Well, NV</td>
<td>Not found</td>
</tr>
<tr>
<td>26Ck1205</td>
<td>Fourth of July Mountain, NV</td>
<td>Not found</td>
</tr>
<tr>
<td>26Ck1343</td>
<td>Fourth of July Mountain, NV</td>
<td>Re-recorded</td>
</tr>
<tr>
<td>26Ck2952</td>
<td>Fourth of July Mountain, NV</td>
<td>Not found</td>
</tr>
<tr>
<td>26Ck3509</td>
<td>Hopps Well, Nev-Calif.</td>
<td>Not found</td>
</tr>
<tr>
<td>26Ck3635</td>
<td>Fourth of July Mountain, NV</td>
<td>Re-recorded</td>
</tr>
<tr>
<td>26Ck3644</td>
<td>Crescent Peak, NV</td>
<td>Re-recorded</td>
</tr>
<tr>
<td>26Ck3645</td>
<td>Crescent Peak, NV</td>
<td>Not found</td>
</tr>
<tr>
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<td>Hart Peak, Calif-Nev.</td>
<td>Not found</td>
</tr>
<tr>
<td>26Ck4807</td>
<td>Hart Peak, Calif-Nev.</td>
<td>Re-recorded</td>
</tr>
</tbody>
</table>

Table 3. Revisited site results. Taken from Yoder (2007).

In May of 2007 the final field phase of the project was completed in the research area. This project was designed to sample survey the areas with a high probability of sites (Figure 9). Areas such as the foothills and lake shore were selected to identify potentially high use areas in the region. These survey areas were selected based on the presence of resources such as nuts, seeds and large game, and include, active springs, mountain foothills, inactive potential paleo-springs, and riparian regions along Lake Mojave. This project resulted in the discovery of ten sites spread throughout the research area (Table 4).

All archaeological surveys for this study were conducted using east/west or north/south transects spaced at 20 meters using GPS units and compasses. Site recording was completed with IMACS forms for data uniformity and to meet with Nevada State Historic Preservation Officer (SHPO) guidelines. Sites were recorded, mapped and photographed utilizing modern standards for site documentation. Photos and
measurements of diagnostics were taken to document site chronological data. Rock art was documented in the IMACS form upon discovery and was photographed as well. All of these archaeological projects were conducted with a no-collection policy. The no-collection protocol leaves little effect on the cultural resources in the region, preserving the data and environment for future researchers.

<table>
<thead>
<tr>
<th>Site Number</th>
<th>Map (USGS 7.5 min)</th>
<th>Site Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1RB 051507</td>
<td>Spirit Mountain NW</td>
<td>Lithic Scatter</td>
</tr>
<tr>
<td>1LF 051607</td>
<td>Spirit Mountain NW</td>
<td>Lithic Scatter</td>
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<tr>
<td>1LF 051807</td>
<td>Spirit Mountain NW</td>
<td>Lithic Scatter</td>
</tr>
<tr>
<td>1MP 051807</td>
<td>Spirit Mountain NW</td>
<td>Lithic Scatter</td>
</tr>
<tr>
<td>1LF 052107</td>
<td>Spirit Mountain NW</td>
<td>Lithic Scatter</td>
</tr>
<tr>
<td>1MP 052107</td>
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<td>Lithic Scatter</td>
</tr>
<tr>
<td>1RB 052307</td>
<td>McCullough Mountain</td>
<td>Lithic Scatter</td>
</tr>
<tr>
<td>1MP 052407</td>
<td>Highland Spring</td>
<td>Lithic Scatter</td>
</tr>
<tr>
<td>1CB 052907</td>
<td>Hopps Well</td>
<td>Lithic Scatter</td>
</tr>
<tr>
<td>1LF 053007</td>
<td>Searchlight SE</td>
<td>Rockshelter</td>
</tr>
</tbody>
</table>

Table 4. Newly discovered prehistoric sites from all WBR field project phases.

**Data Compilation and GIS mapping**

In the preliminary stages of this project the PLI archaeological team constructed a base map of site locations and referential topographic USGS 7.5 minute maps using ArcGIS to develop an initial observation of landscape use in the region (Roth et al 2006). This map has been expanded using all of the sources detailed throughout this chapter to enhance the analysis of foraging behavior in the valley. The data provided by each discipline were mapped onto the geo-database for easy reference and to help observe patterns between the site locations/types and the resources which were available across the landscape. Resource availability is ultimately based on the climate in the region.
Figure 8
Survey Areas and New Sites

Legend
△ New Sites
PU Survey Areas

Scale 1:350,000
Coordinate System - Nad 83

0 2.5 5 10 Kilometers
Site catchment analysis would be virtually impossible if it were based on anything but modern or recent resource distributions, since maps of past resource distributions are seldom available. However for a variety of reasons, including geomorphic change, climatic change, fluctuations in sea level, and drastic changes in resource distribution with the introduction of modern land use practices, modern data may be highly unreliable. (Roper 1979: 127)

The sites for which diagnostic markers have been noted provide access to climate data to complement the other site specific data, and to develop contemporary inferences on resource availability. The critical components of this analysis needed to develop a holistic understanding of foraging behavior are the inter-site indicators of mobility, specific resources in the region, and inferences that can be made using chronological markers in comparison to known changes in the Holocene climate. The criteria used to analyze the individual sites are discussed in the following chapter.
CHAPTER 5

FORAGING BEHAVIOR ANALYSIS

In order to gain a more in depth understanding of the foraging behavior exhibited by past populations of the Piute Valley, all of the archaeological sites were analyzed, each of them individually, using select criteria based on the sub-questions put forth in Chapter 3. The data used to analyze each site were tallied from the Intermountain Antiquities Computer System (IMACS) categories and site descriptions from pre-IMACS era sites. These data were collected by literature and database reviews by David Yoder in 2005 (Roth et al. 2006) and by archaeological surveys completed by UNLV crews from 2005 until 2007 (Brosman et al. 2012). Individual site results were then studied with all other site data and landscape resource information to test the model developed by Roth et al. and to look at possible shifts in behavior due to change in climate or culture throughout the Holocene. The three questions and their criteria are as follows:

1. **SITE LOCATION AND STRUCTURE**

   *What types of sites have been discovered in the Piute Valley and where are they located in comparison to other sites and geographical features?*

   The location of archaeological sites, based on Universal Transverse Mercator (UTM) coordinates, allows us to easily place sites into an ArcGIS database for quick reference. With the sites plotted, I was able to look at the overall settlement pattern within the valley. I was also able to look at the relationship of sites to one another, and
could begin to speculate on the nature of their positioning in relation to resources and patterns of mobility.

Landform features and their use were based on site descriptions provided in the site records as well as United States Geological Survey (USGS) topographic map plots. Landforms often dictate what types of resources may be available to foraging populations such as collecting grasses on low lying drainages, observing game from vantage points or procuring lithic materials from deflated outcrops. Geographic features may also provide insight as to the groups' range of mobility. Sites that were occupied by more sedentary populations may be located on landforms or in areas that lend themselves to long-term encampments, i.e., places with shelter and locations not at risk from inclement weather such as flash floods. Other landforms such as steep hills and ephemeral drainages would not likely be occupied by long term seasonal encampments.

Descriptions provided in the literature reviews and the IMACS forms helped to infer the function of the sites. These descriptions were based on the features and artifacts associated with the sites. Features such as rock rings, rockshelters, and bedrock milling features are often indicative of longer-term occupation by prehistoric groups. Many of these features take time to create, and show a vested interest in the comfort and activities taking place at the site. Rock rings and cleared circles can be used as possible house circles, storage caches, planters, sleeping circles, as well as many other functions (Blair and Fuller-Murillo 1997). Other features such as hunting blinds with no signs of long-term occupation are indicative of large game procurement, and would not likely be occupied for significant periods of time.
Rock art is often difficult to interpret. Large multi-component sites with available resources and rock art may be inferred as meeting areas on a landscape. Groups from around the region may have come to these sites to gather an important resource and intermingle, utilizing rock art in group ceremonies. Groups residing at the locale for a significant period could have afforded individuals the time needed to create the rock art (Shock 2007). The surrounding environment and relationship to other sites helped to place rock art sites in proper context as well.

An analysis of the ecological setting with respect to such features as the presence (or absence) of a perennial water source, edible flora, and fauna can provide information on associated activities, as well as seasonality of rock art production (Shock 2007: 74).

Sites that are solely rock art, or have minimal extra components, that are isolated in large game resource areas could be associated with ritual activities such as shaman use or hunting magic (Whitley 1994). These sites may be associated with rituals that help to procure large game or other high ranked resources, and may have been created during hunting trips in areas where game is normally procured (Bettinger and Baumhoff 1982). They may also be used as geographic markers to help past populations locate critical resources in the valley and surrounding ranges (Roth et al 2006). By looking at rock art in geographic terms we can use these features to enhance the foraging model.

Artifacts also provide us with information on what types of activities were being undertaken at the site. Groundstone and milling features show us past populations were harvesting lower ranked resources (Bettinger and Baumhoff 1982) while finely worked lithics may be signs of projectile point manufacturing for hunting (Kelly 1995).
Ceramics are often used by groups to prepare meals, store food, and bank seeds for future use. Due to its fragile nature, the pottery is often either stored in key locations or carried only for short distances. Ceramics were introduced into the region approximately 1,500 b.p. and are normally associated with the late archaic populations to the post-contact period (Warren and Crabtree 1986). These later populations were familiar with horticulture and agriculture, and where possible used it as either their main subsistence pursuit, or as a supplement to their foraging returns (Stewart 1969; Forde 1939). Sites that contain ceramics can be associated with more sedentary populations of the forager spectrum or Mohave-like farmers residing along the Colorado River shoreline (Bettinger and Baumhoff 1982, Furst 2001), or they can be used for storage by highly mobile populations such as the Southern Paiute (Kelly 1976).

Mobility in the valley will likely be tied to resource procurement and access to water. As stated earlier in Chapter 3, based on ethnographic reference, foragers of this region exhibit a *collector* emphasis settlement pattern (Binford 1980). Seasonal camps were placed on or near staple resources or water, utilizing logistical forays to collect primary or supplemental resources. For this research design I have placed the sites into two categories, high and low mobility sites. These designations were determined based on site composition and likely function associated with low mobility seasonal encampments or high mobility logistical forays. Larger complex scatters and sites containing habitation features are likely seasonal camps. Smaller artifact scatters with no features indicate small-scale procurement associated with logistical forays. Rock art panels with no habitation features or artifacts can be linked to seasonal migration routes, resource indicators, or magic practice, and would be indicative of higher mobility (Shock...
The ultimate determination on the mobility pattern being inferred from an archaeological site is based on many factors including: environmental factors, available resources, and site composition. These individual site analyses are described in Appendix A.

Site location information, along with site types and mobility determination is an important first step in identifying the nature of the settlement pattern. Information on what resources prehistoric populations were seeking within catchment circles must also be incorporated with these data as well.

2. RESOURCE AVAILABILITY

*Where are sites located in relation to both biological zones and specific resources in the Piute Valley?*

Resource availability was analyzed using several lines of evidence including site forms, ArcGIS and information provided by PLI team members. Site forms include an environmental setting category based on landform, surrounding environmental zone, and specific vegetation in the immediate area. The sites were categorized into the three main overarching resource zones present in the Piute Valley: Upper Sonoran, Lower Sonoran and the shoreline of the modern day Lake Mojave. Information was also taken from the forms based on specifically noted resources present on or near the site. Using these data we can determine what immediate resources would have been available to groups occupying these sites.

ArcGIS data were used to reference known resources in the area, and determine if they were within a reasonable foraging distance. Specific resources across the landscape that were not included in the site forms were noted during field trips to the Piute Valley
by the archaeology, geology and biology teams of the PLI project. These resources include oak and mesquite groves, bighorn ranges, and lithic outcrops; and were added to the geo-database to be cross-referenced with the site locations. Some modern foraging groups travel no more than five kilometers to collect materials, (Kelly 1995) while water-tethered populations such as desert aboriginal populations of Australia are sometimes willing to travel up to fifteen kilometers to collect food for their camp, but beyond this range, the return rates are far too diminished on most resources (Taylor 1972, Cane 1987). Populations in the Mojave Desert are likely water-tethered to springs and rivers, but in the Piute Valley there are a number of springs in the mountains, and the Colorado River is never more than 40 kilometers away. These water sources would help facilitate movement from one resource patch to another, with little to no risk (Kelly 1995). To accommodate the general arid nature of the desert, but the abundance of isolated water sources, I analyzed the region using a ten-kilometer radius as the catchment circle. If any mapped resources fell within the foraging radius, then they were incorporated into the site-specific analysis (Appendix A).

I also examined resource use based on return rankings to help gain insight as to site function and duration of occupation. Higher ranked resources such as bighorn sheep (Ovis canadensis) and Mule Deer (Odocoileus hemionus) would be sought out by all foraging groups. These resources have a low processing time, and a high caloric return and are readily procured by modern foraging populations as well. They also have a variable incident rate, which may require a more mobile foraging population to capitalize on them (Bettinger and Baumhoff 1982). The shoreline of Lake Mojave, for the purposes
of this research design, was given a high resource rank as a region due to the abundance of resources in comparison to the rest of the valley.

General resources require a moderate amount of procurement and processing time and are often thought of as staple foods (Simms 1985). Resources with a longer processing time, and a relatively high rate of return include pine nuts (*Pinus monophylia*), mesquite seeds (*Prosopis glandulosa, pubescens*), acorns (*Quercus turbinella*), and small game like rabbit meat (*Lepus californicus, Sylvilagus audoboni*), migratory waterfowl, and fish like the Bonytail Chub (*Gila elegans*). These staple foods are often seasonal in nature and were harvested by congregations of regional groups to help maximize returns (Steward 1938). Activities such as game drives and winter camps often leave large sites that would be visible in the archaeological record.

Lower ranked resources such as Indian Ricegrass (*Oryzopsis hymenoides*) and Wolfberry (*Lycium pallidum*), with lower returns are abundant in the Piute Valley. These resources have high processing costs, and often low caloric returns. Their advantage is abundance across the landscape and immobility. It is not hard to discover these resources; the biggest concern would be the timing of the seasons. They are also a steady resource when there are few others in the area due to drought or other environmental factors (Bettinger and Baumhoff 1982).

These are just a few examples of potential resources which are found in the area. Table 5 details the high, general, and low ranking resources, their caloric returns, as well as some notes describing their rank placement. Overall if a resource had a caloric return greater than 10,000 per hour then it was ranked as a high resource, 1,000 to 10,000 per hour earned a general resource ranking, and any less would demarcate a resource as low
in rank. These resources were noted on the site forms or in the GIS database, and were analyzed using resource rankings detailed in anthropological literature to look for possible relations to site activity and mobility patterns as well (Simms 1985, Schneider and Everson 1989, Rhode 2001).

<table>
<thead>
<tr>
<th>Resource</th>
<th>Kcal/hr.</th>
<th>Notes</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mule Deer</td>
<td>18,000</td>
<td>Highly prized, with multiple uses.</td>
<td>High</td>
</tr>
<tr>
<td>Bighorn</td>
<td>18,000</td>
<td>Highly prized, with multiple uses</td>
<td>High</td>
</tr>
<tr>
<td>Fish</td>
<td>Varied</td>
<td>High Caloric Return dependent upon fish and season</td>
<td>General</td>
</tr>
<tr>
<td>Jackrabbit</td>
<td>13,000</td>
<td>Caloric return dependent upon single hunt or game drive</td>
<td>General</td>
</tr>
<tr>
<td>Cottontail</td>
<td>9,000</td>
<td>Caloric return dependent upon single hunt or game drive</td>
<td>General</td>
</tr>
<tr>
<td>Ground Squirrel</td>
<td>5,000</td>
<td>Hunted Individually</td>
<td>General</td>
</tr>
<tr>
<td>Duck</td>
<td>2,000</td>
<td>Difficult to hunt, but abundant during migration season</td>
<td>General</td>
</tr>
<tr>
<td>Desert Tortoise</td>
<td>Unknown</td>
<td>Hunted Individually, shells used for many purposes.</td>
<td>General</td>
</tr>
<tr>
<td>Honey Mesquite</td>
<td>5,600</td>
<td>Seasonal in midsummer, used as flour and eaten as pods</td>
<td>General</td>
</tr>
<tr>
<td>Cattail</td>
<td>3,000</td>
<td>Seasonal Variation changes plant use</td>
<td>General</td>
</tr>
<tr>
<td>Acorns</td>
<td>1,400</td>
<td>Leaching necessary if used as a staple</td>
<td>General</td>
</tr>
<tr>
<td>Tansy Mustardseed</td>
<td>1,000</td>
<td>Easily harvested with beaters</td>
<td>General</td>
</tr>
<tr>
<td>Pinyon Seed</td>
<td>900</td>
<td>Easily harvested and stored for winter staple</td>
<td>General</td>
</tr>
<tr>
<td>Shadscale</td>
<td>1,000</td>
<td>Seasonal in midwinter at lower elevations</td>
<td>General</td>
</tr>
<tr>
<td>Wild Rye</td>
<td>920</td>
<td>High caloric return when densely populated near farming</td>
<td>General</td>
</tr>
<tr>
<td>Joshua Tree</td>
<td>Unknown</td>
<td>Pods procured in late spring</td>
<td>General</td>
</tr>
<tr>
<td>Canyon Grape</td>
<td>Unknown</td>
<td>Staple food used for year round storage</td>
<td>General</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>420</td>
<td>Seed beaters ineffective</td>
<td>Low</td>
</tr>
<tr>
<td>Bulrush</td>
<td>300</td>
<td>Higher return in early fall</td>
<td>Low</td>
</tr>
<tr>
<td>Indian Ricegrass</td>
<td>300</td>
<td>Good resource when mass procured</td>
<td>Low</td>
</tr>
<tr>
<td>Scratchgrass</td>
<td>290</td>
<td>Seed beater effective dependent upon season</td>
<td>Low</td>
</tr>
<tr>
<td>Utah Juniper</td>
<td>Low</td>
<td>Seeds sometimes eaten. Wood used for bow production</td>
<td>Low</td>
</tr>
<tr>
<td>Prince’s Plume</td>
<td>Low</td>
<td>Leaves used as bulk green when boiled</td>
<td>Low</td>
</tr>
<tr>
<td>Globemallow</td>
<td>Low</td>
<td>Bulbs and fruit eaten</td>
<td>Low</td>
</tr>
<tr>
<td>Wolfberry</td>
<td>Unknown</td>
<td>Berries used for jelly or eaten whole</td>
<td>Low</td>
</tr>
<tr>
<td>Blue Elderberry</td>
<td>Unknown</td>
<td>Berries used for jelly. Important midsummer food</td>
<td>Low</td>
</tr>
<tr>
<td>Joint fir</td>
<td>-</td>
<td>Used as a tea to cure ailments</td>
<td>Low</td>
</tr>
<tr>
<td>Willow</td>
<td>-</td>
<td>Used for basket production</td>
<td>Low</td>
</tr>
<tr>
<td>Bitterbrush</td>
<td>-</td>
<td>Tea and dye</td>
<td>Low</td>
</tr>
<tr>
<td>Sage brush</td>
<td>-</td>
<td>Wood used for fire, especially in Pinyon Processing</td>
<td>Low</td>
</tr>
<tr>
<td>Rabbitbrush</td>
<td>-</td>
<td>Chewing Gum</td>
<td>Low</td>
</tr>
<tr>
<td>Creosote</td>
<td>-</td>
<td>Teas and medicine</td>
<td>Low</td>
</tr>
<tr>
<td>Arrowweed</td>
<td>-</td>
<td>Shoots used for arrow shafts. Tea for medicine</td>
<td>Low</td>
</tr>
</tbody>
</table>

Table 5. Piute Valley Resource Ranking (Simms 1985 and Rhode 2001)

The IMACS forms and GIS data compiled from the Geo-sciences portion of the PLI project were used to reference information about geological resources such as stone tool material, soil types, and geological morphology. Soil types and geographic features can determine which types of vegetation will be available in the area. The geologists in
the PLI project did a preliminary study in conjunction with the team biologists to look for patterns or anomalies across the landscape (Cline et al 2008). If any of these, which are plotted on the ArcGIS database, were within ten kilometers of the sites, then they were cross-referenced to look for possible resources that may have been exploited by forager groups.

In total these data were used to plot resources into the GIS dataset that were not readily visible to our field teams during our surveys or literature reviews. These resources were then listed in Appendix A, and a determination was made as to whether these were high, general, or low ranked resources. These determinations were taken from research by Steven Simms (1985) and David Rhode (2001). High ranked resources had low processing times and high caloric returns. General resources had moderate processing times and moderate caloric returns. An area that had a combination of high and low ranked resources, for the purposes of this project, was given a general resources ranking. An area like this might only contain the possibility of bighorn encounters, and populations of small grasses. The low ranked resources were items that had a low caloric return or a long processing time such as small seeds. The relationships between sites and resources became much more apparent when laid out onto a GIS map.

IMACS reporting and GIS mapping was also used to help determine what, if any, permanent water resources were available to support long-term encampments. These were be measured to see if they fell within two kilometers of the site, which would provide relative full-time access (Shock 2007). Water sources included springs, rivers, lakes and subsurface water that may have had an impact on foraging patterns if they were exploitable by past populations. There is one noted groundwater source in the Highland
Range that currently supports an oak (*Quercus turbinella*) population, which may have been more readily available to humans in the past. The oak also provided acorns for foragers. The geology team of the Walking Box Ranch project, using remote sensing and aerial photography, plotted high vegetation pockets of the mountain ranges as possible water sources which were not listed as springs on the USGS 7.5’ quadrangles. The distance to these water sources was listed in Appendix A and B. Further inferences will be described in the results chapter.

To look at settlement patterns in past populations, a comparison of the available resources and available water sources was used to determine if the site could have supported a longer-term occupation, or if likely it was a more transient group accessing the resources. These were then listed as High or Low mobility sites in Appendix A and B. Sites were also used to look at the seasonality of resource use. The locations in ArcGIS and the information provided in ethnographic reports helped test the model put forth in this thesis about resource zone migrations.

Resources of the Piute Valley are not static, however, and paleo-climatic changes may have affected their availability to past populations. When available, data to on past resource availability, was examined to address its impact on foraging behavior.

3. SITE CHRONOLOGIES AND PALEO-CLIMATE REFERENCES

*Can sites with chronological diagnostics provide data on changes in foraging behavior due to shifts in culture or climate?*

Surface sites, as a whole, often provide little to no chronological data, because they lack stratified deposits with which to gain a contextual association of the artifacts. Surface sites are often dated using diagnostic artifacts when they are available.
Chronological markers encountered in archaeological sites include projectile points and pottery.

Projectile points are one of the most important tools archaeologists have for identifying time frames for sites in a surface context. These points have been analyzed by archaeologists and cross-referenced with subsurface deposits in available strata, i.e. rockshelters, to place them in a chronological framework that stretches back thousands of years in the Mojave Desert and Great Basin (Warren and Crabtree 1986). On the other hand, pottery, while significant for identifying time periods, only stretches back a few hundred years. The introduction of pottery occurred during the Saratoga Springs period roughly 1,500 b.p. and helps mark a period of agriculture and other cultural shifts, as stated in the background chapter (Warren and Crabtree 1986). Pottery has a limited timeframe in this region of the world dating to when the environment was similar to what we observe today.

While projectile points and pottery can help to place sites in a more precise temporal context, they are rare in this region. If they are encountered, we can then compare these sites to paleo-climate models to more precisely determine what resources would have been available dependent on moisture and heat indexes throughout the Holocene (Cline et al 2008). Paleo-climate models were developed by the PLI geo-scientists of UNLV, and compiled from many sources on post-Pleistocene/Holocene climate change (Harvey and Wells 1989, Huckleberry et al. 2001, McDonald et al. 2003, Nichols et al. 2005, Waters and Haynes 2001). Higher moisture levels with a cooler climate will facilitate the encounter and capture of higher ranked large game resources, while drier climates with a higher effective temperature will favor a foraging behavior.
based on the scarcity of high ranked resources, and the intensification of seeds and other lower ranked resources (Bettinger and Baumhoff 1982, Kelly 1995). Pottery is not only valuable for climate models, but also allows us to infer other avenues of behavior, namely food storage and further expanded trade routes in foraging populations to help subsidize the resource base. Agriculture based populations in this region, such as the Mojave, use pottery as well in storing and preparing food. Each of the sites that provide diagnostic markers were cross-referenced with the GIS database and paleo-climate models to look at what resources were likely sought by these groups.

**Further Thoughts**

Each of these criteria, individually, is not a sole determinant of behavior and must be looked at holistically to make a judgment on the type of behaviors these past groups were exhibiting. Factors such as site descriptions, distance to and ranking of resources, or paleo-climate inferences will help to determine what the individual site represents in terms of foraging behavior, and how the entire foraging system functioned.
CHAPTER 6

RESULTS

In this chapter I present the analysis and synthesis of the data provided by the foraging behavior analysis, using the criteria developed in Chapter 5. Here descriptions of sites based on type and chronology will be discussed with their interactions between mobility, resource ranking, and water. Much of this information was provided by the outside disciplines from the PLI project. The emphasis is on the archaeological component of the project and the specific patterns discovered while looking at the sites and their relationship to the environment.

Overlaying these data on maps in ArcGIS provided information on overall settlement patterns and changes in behavior over time. Throughout this chapter I discuss behavioral trends that emerged during my analysis. These included mobility model results and areas of interest that seemed to be outliers from the initial model developed for this research design.

In total 78 sites across the Piute Valley were analyzed in this project, and the results are expanded in Appendix A. Table 6 shows these data in a much more accessible format. Cross-referencing these data produced several tables for this chapter that display the relationship between the sites. When the sites are plotted onto a GIS database we see an emergent trend of the archaeological sites following a circular pattern along the resource rich highlands and lakeshore of the valley (Figure 9).
<table>
<thead>
<tr>
<th>SITE NUMBER</th>
<th>TYPE</th>
<th>Chronology</th>
<th>BioZone</th>
<th>Landform</th>
<th>Water Distance</th>
<th>Paleo Water</th>
<th>Resource Rank</th>
<th>Mobility</th>
</tr>
</thead>
<tbody>
<tr>
<td>1CB052907</td>
<td>Lithic Scatter</td>
<td>Unknown</td>
<td>Lower Drainage</td>
<td>6.7</td>
<td>n/a</td>
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<td>High</td>
<td></td>
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<tr>
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<td>Lake Drainage</td>
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<td>n/a</td>
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<td>High</td>
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<td>High</td>
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<td>Lake Drainage</td>
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<td>Lake Drainage</td>
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<tr>
<td>1MP052407</td>
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<td>Lower Valley</td>
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<td>1RB051507</td>
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<td>Lower Hill</td>
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<td>Location</td>
<td>Sub-Location</td>
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<td>Overall Behavior</td>
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</tr>
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<td>Lower Drainage</td>
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<td>High</td>
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<td></td>
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</table>

Table 6. Foraging Behavior Analysis Results.
Analysis

To study the archaeological sites and their relationships in the Piute Valley, the data developed in Appendix A were analyzed based on the individual categories such as chronological period, site type, and resource availability. These categories were looked at either individually or cross-referenced with other categories to look for relevant relationships that could provide inferences into prehistoric foraging behavior.

Site Type Distribution

<table>
<thead>
<tr>
<th>Site Type</th>
<th>Number</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>Artifact Scatter</td>
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</tr>
<tr>
<td>Lithic Scatter</td>
<td>16</td>
<td>20.5</td>
</tr>
<tr>
<td>Milling Slick</td>
<td>2</td>
<td>2.5</td>
</tr>
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<td>Petroglyph</td>
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<td>30.7</td>
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<tr>
<td>Quarry</td>
<td>6</td>
<td>7.6</td>
</tr>
<tr>
<td>Residential Camp</td>
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<td>6.4</td>
</tr>
<tr>
<td>Rock Ring</td>
<td>3</td>
<td>3.8</td>
</tr>
<tr>
<td>Rockshelter</td>
<td>19</td>
<td>24.3</td>
</tr>
<tr>
<td>Trail</td>
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<td>1.2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>78</td>
<td><strong>99.5</strong></td>
</tr>
</tbody>
</table>

Table 7. Site Type Results.

In total there were nine separate categories that described the sites of the Piute Valley. Percentages are described only to the nearest tenth so results will not add up to 100 percent at all times. The majority of the sites (75.5%) fell under only three of the nine total categories: rock art, rockshelters and lithic scatters. The greatest number of site types (n=24) were documented as rock art panels. The majority of these petroglyph sites are solitary features across the landscape with no associated prehistoric camps or other signs of occupation. The petroglyph sites do form an interesting circular pattern, and when displayed across the landscape support the model that described rock art as markers along the travel corridor of the seasonal routes (Figure 10 Site Type Map).
The overall migration routes will be discussed in more detail in the Conclusions chapter.

The six remaining categories in total only make up 24.5 percent of the sites in the region. While some of the sites such as the trail (n=1), and the residential camps (n=5) may seem insignificant in the table when displayed on the map, they are an interesting part of the cultural landscape. The sites occupy the resource-rich highlands and lakeshore, and are spread fairly evenly across these regions.

In the Castle Range to the southwest, we see lithic scatters with quarrying activities and rockshelters for occupations. These activities are likely due to the presence of obsidian and other high quality lithic materials present in this region.

The New York and McCullough ranges to the west have a range of sites including rockshelters, lithic scatters, artifact scatters, a trail, and a residential camp. In this region long-term winter encampments were likely inhabited for the collection of pinyon and large game. In this resource-rich region we would expect to see more evidence of occupation, but the lack of data is likely due to the lack of archaeological research completed in the region, rather than an absence of sites.

The Highland Range to the north has many residential camps and rockshelters, as well as rock art indicating a variety of resources present in the region. Acorns, large game, and a multitude of springs would have brought foragers for extended stays. The rock ring sites in the region may be indicative of acorn leaching activities, which would have provided foraging groups with another staple along with mesquite pods and pinyon seeds (Blair and Fuller-Murillo 1997).

In the Eldorado Range to the northeast there is an abundance of rock art panels in the region, but only two rockshelters and a rock ring may show habitation at the lower
aspect of these mountains. In the original model for this thesis, rock art is being viewed as an indicator of resources and migration routes (Roth et al. 2006). In this region the rock art panels are likely travel corridor markers for foraging groups that direct them either to the west or north for richer upland regions.

In the Newberry Range to the southeast there are remnants of quarrying activities as well as rockshelters for habitation. These sites have no other significant resources, or permanent sources of water from which to subsist. This and the other quarrying site located just east of the Highland Range may represent longer-term logistical forays, or may have been in use during a moister period when water was more abundant; we lack data on paleo-springs in the area to evaluate this inference.

Finally along the lakeshore we have very large lithic scatters, but no evidence of encampments, shelters or any other activities. The most reasonable explanation for this lack of evidence for habitation is likely due to the presence of Lake Mojave itself. Before the creation of Davis Dam the river shoreline would have been much lower. The archaeological deposits are likely under the lake, and will hopefully provide an abundance of data on human occupation of the region including, fishing, hunting, horticulture, and agricultural activities.

*Catchment Circles and Resources*

In figure 11 ten-kilometer catchment circles provided boundaries when looking at the relationship between sites and notable resources (Cane 1987 and Kelly 1995). This project also incorporated a measurement of the distance between sites and water
Mesquite
Oak Grove
Mule Deer
Pinyon Pine
Desert Bighorn
Aquatic Resources

Legend

High Resource Sites
General Resource Sites
Low Resource Sites

Floral/Faunal Resources
Spring
Paleo Spring

Figure 12
Catchment Circles and Resource Rank

Scale 1:350,000
Coordinate System - Nad 83
resources (Shock 2007). Roughly 75% of the sites were more than two kilometers from the nearest water source, and no site that could be placed in a specific time period had a paleo-water source closer than a modern source of water. This shows that water may not have been as crucial to populations in the Piute Valley as is normally expected in Great Basin populations (Taylor 1964). This is likely due to its ubiquity across the landscape. Foraging groups of the valley may have always been close to a significant source of water and this would have provided more resource options to incorporate into their seasonal routes. It is interesting to note that no area in the valley is out of the reach of catchment circles, and no area would have been out of reach of any reasonable logistical foray from a permanent water source.

Resources listed on the site forms and within the ten kilometer catchment circles on the GIS map were noted with the individual site analysis, and when summed up were placed into one of three categories: high, general, or low ranked resources. In total 26 sites were ranked with low resources, 23 sites were associated with general resources, and 29 sites were found in high ranked resource areas. This fairly even distribution of foraging zones provides evidence that prehistoric peoples in the region split their time between staples in general areas, high return game in high ranked areas, and low grade seeds as well as lithic materials in low ranked areas evenly. I originally thought that the even distribution of sites may be based on the high amount of rock art sites. If these rock art sites were simply indicating higher-grade resource zones then they may be in low ranked resource areas guiding people to other areas, and skewing the results. This was not the case though as the petroglyph sites had a distribution of 11, 7, and 6 percent in the
high, general and low resource rankings respectively. These rock art sites are being used by foraging groups to indicate various resources across the environment.

Resource Ranking and Mobility

<table>
<thead>
<tr>
<th>Degree of Mobility</th>
<th>Low Resources</th>
<th>General Resources</th>
<th>High Resources</th>
</tr>
</thead>
<tbody>
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<td>13</td>
<td>9</td>
</tr>
<tr>
<td>Higher</td>
<td>20</td>
<td>10</td>
<td>20</td>
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</table>

Table 8. Mobility vs. Resource Rank

One of the more interesting cross-reference analysis is based on the resource rankings of the site and the degree of mobility exhibited within the site. In this table there is a strong correlation of high mobility sites in both high and low ranked resource areas. In a collector system high ranked resources, like big game, would not be sought out by large groups of people resting in game places, but by individual or small hunting parties with the purpose of taking game and returning to camp with the meat (Binford 1980). Low ranked resources such as grasses and small seed bearing shrubs in this region do not lie near significant sources of water. While the group as a whole may incorporate these regions into their seasonal migrations, they would not likely stay for extended periods of time. The lower mobility sites seem to favor the general resource regions, and this is likely due to the presence of staples such as pinyon and acorns that require significant processing times. Fall and winter camps would be set up by groups to capitalize on the storage of these resources, and other resources would be brought in with logistical forays. The ultimate implications of this data set are best summarized in Chapter 7 when detailing out the final interpretations of the migration routes (Figure 14).
Figure 13
Chronology Map

Legend
- Unknown Era Sites
- Lake Mojave Era Sites
- Gypsum Era Sites
- Late Prehistoric Era Sites
Time Period Distribution

<table>
<thead>
<tr>
<th>Site Type</th>
<th>Lake Mojave Period</th>
<th>Gypsum Period</th>
<th>Late Prehistoric Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rockshelter</td>
<td>0</td>
<td>1</td>
<td>13</td>
</tr>
<tr>
<td>Residential Camp</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Artifact Scatter</td>
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<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Lithic Scatter</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 9. Time Period Site Type Distribution

In total only 19 of the 78 studied sites in the Piute Valley had chronological markers to help analyze both their function and contemporary resources. These sites only fell within three distinct time periods in the prehistoric record of the southern Great Basin.

The first evidence of occupation in the region comes from a Lake Mojave period site in the Castle Mountains. The region is arid now, but in the early Holocene there may have been ample moisture in the region that would have provided surface water in the form of Pleistocene lakes which would have supported abundant plants and fauna (Grayson 2011). Humans would have utilized the obsidian resources in the region for the procurement of game, and subsisted off the flora as well. While this is only one site, it does prove occupation of the region occurred during this period.

Throughout the 3,000 years of the Early and Middle archaic there is no evidence of occupation whatsoever. The lack of pinto points in the region may be indicative of a regional abandonment during the warmer and drier Altithermal (Antev's 1948). This would match with some of the data elsewhere in the Great Basin, where abandonment may have been a survival strategy utilized by prehistoric peoples during this period (Rhode 1999). The Great Basin does contain some evidence of occupation by Pinto
groups, but these sites are limited to well watered areas within the Great Basin (Roth 2012: ). There does appear to be ample water within the Piute Valley, but is limited to springs and the Colorado River though, and during the Altithermal the arid nature of the valley may have been inhospitable to foraging groups.

In the Gypsum period we see the beginnings of human re-occupation of the region. There are two sites in the valley that have evidence of Gypsum period occupation, and both of these sites are indicative of lower mobility. These longer visitations were likely based on climate change during the Gypsum period. “The more mesic climate resulted in some lake and spring recharge and is argued to have been associated with an increase in the availability of large game…[and] plant resources” (Roth 2012: 79). With this increase in resources and moisture humans may have found the valley a much more hospitable place and may have set up seasonal camps.

While populations began to visit the valley in the Gypsum period they did not appear to stay for the Saratoga Springs period. The lack of evidence for their occupation may not be available at this time though. Humans in this period in southern Nevada intensified agricultural activities, and the valley floor near the Colorado River may have been ideal for prehistoric groups to set up camps with which to raise crops and trade. Sadly this data set is not available for this thesis.

The Late Prehistoric period has the most comprehensive representation in the Piute Valley, and during this period we see a preference for the occupation of rockshelters. The most reasonable explanation for the propensity of Late Prehistoric sites being identified in rockshelters is based on the artifacts used to identify these sites. The primary diagnostic for Late Prehistoric sites is pottery. It is probable that these
populations were storing foodstuffs with ceramics in rockshelters. It is also likely that populations were using these shelters for a period of time much longer then during earlier periods, but these artifacts are the only diagnostics left behind.

While there may be a large number of sites that we cannot date, the majority of these are rock art sites. All prehistoric groups in the Piute Valley could have used these resource and migration route indicators across the landscape. This of course, would be based on their period of creation though, which we are not able to determine. Overall, the prehistoric foraging groups of the Piute Valley all preferred the same upland and river shore areas, migrating along the same circular seasonal patterns.

*Time Period and Resource Ranking Distributions*

<table>
<thead>
<tr>
<th>Time Period</th>
<th>High Resources</th>
<th>General Resources</th>
<th>Low Resources</th>
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</thead>
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<tr>
<td>Late Prehistoric</td>
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<td>7</td>
<td>5</td>
</tr>
<tr>
<td>Gypsum</td>
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<td>0</td>
</tr>
<tr>
<td>Lake Mojave</td>
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<td>0</td>
<td>0</td>
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</tbody>
</table>

Table 10. Time Period vs. Resource Rank

Knowledge of the specific time period that a site was inhabited was sought out to provide insights into contemporary resource availability. The majority of the sites that had diagnostics fell into the Late Prehistoric period and the environment during this period was similar to what we observe today in the Mojave Desert. Water and food availability would have been very similar to what could be found on the sites today. Only one site had a change in the resource ranking category, and this was the Lake Mojave period lithic scatter. The change in effective temperature and humidity (Kelly 1995), would have provided much more abundant floral and faunal resources at that time period,
giving the site a high resource ranking instead of the low resource ranking it was initially given.

Overall the resource availability was spread out between the three categories (high, general, and low) in an almost even distribution across the Late Prehistoric sites. The other time periods did not have a large enough sample to provide adequate data on contemporary resources and site selection by prehistoric groups. Late Prehistoric peoples seem to be subsisting mostly off general staple resources, and are following the overall collector foraging pattern displayed in the valley.

*Mobility and Time Period*

The overall mobility results show prehistoric peoples adopting a highly mobile foraging pattern. These data need to be sorted out based on time period and site type to gain a more accurate perspective on what type of behavior was exhibited. When these data are compared to their specific time periods, we see a lower mobility pattern being displayed by the Gypsum and Late Prehistoric groups.

<table>
<thead>
<tr>
<th>Degree of Mobility</th>
<th>Lake Mojave</th>
<th>Gypsum</th>
<th>Late Prehistoric</th>
<th>Unknown</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower</td>
<td>0</td>
<td>2</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td>Higher</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>48</td>
</tr>
</tbody>
</table>

Table 11. Time Period vs. Mobility

A full 48 of the 78 sites in this study are high mobility unknown time period sites. But this group is where the petroglyph (n=24) sites are lumped. If they are resource and migration route marking systems, then by default they are part of a singular higher mobility system. This does not necessarily make the settlement pattern of the valley a high mobility *forager* pattern. Instead groups are using these markers to identify locations to set up camps whether in rockshelters, residential camps, or other campsites.
They are also performing logistical forays to return resources to seasonal camps, as described in the collector settlement pattern.

**Summary**

In the initial table form many of the results did not seem to have an obvious relationship with other criteria, but when plotted on the map and cross-referenced with other data sets, we get a much more apparent relationship of the sites in the Piute Valley. Many of these data set relationships reinforced other data analysis throughout this chapter and this will help to strengthen the discussions in the following chapter.

With this overall general analysis complete, a more precise understanding of the region and its use by prehistoric foragers is possible. There are also many conclusions to draw upon on how humans migrated through the southern Great Basin and what adaptations were made as the climate or culture changed throughout the Holocene, specifically in the Piute Valley.
When this research project initially started in late 2005 the potential for a holistic approach to understanding human behavior in the Piute Valley was written into the research design. This research design utilized the expertise of outside disciplines in tracking cultural remains, natural resources, the interactions between the two, and their shifts over time. The geo-scientists with the PLI project detailed the paleo-climate history throughout the human occupation of the valley. It also provided data on contemporary and paleo-springs in the region, as well as stone tool material and other resource locations throughout the valley. The life-sciences section of the PLI detailed what species are available in the Piute Valley, and helped us to understand their adaptations to climate change throughout the Holocene (Cline et al 2008).

This project analyzed and expanded the general foraging model proposed by Roth et al (2006). In this model humans were posited to migrate through the region utilizing the river shore and highland areas based on seasons when resources would be at peak availability. The valley floor was seen as a corridor with little to no occupation.

Known archeological sites and resources of the Piute Valley were mapped into the GIS database and a probable migration route was identified. This assessment is presented in figure 13 as a multi-component map highlighting the resource areas, archaeological sites, primary migration route, outlier areas and their associated extensions of seasonal migration.
Figure 14
Conclusions Map

Legend
- Lithic Scatter
- Petroglyph
- Quarry
- Residential Camp
- Paleo Spring
- Rockshelter
- Higher Mobility Sites
- General Resource Sites
- Lower Mobility Sites
- Low Resource Sites

Scale 1:350,000
Coordinate System - Nad 83
Resource Areas

The major areas that the foraging populations focused on were identified by examining site location in relation to resources. These resource areas can be described as four independent zones. The first is the shore of Lake Mojave, or the past riverine area of the Colorado River. This area provided foraging populations with fish, waterfowl, mesquite, and other edible faunal and floral resources. The second area is the Highland Range, which contains acorns, bighorn sheep, grasses, lithic materials, and springs. The third area is the McCullough and New York mountain highlands. These areas are rich in springs, pinyon seeds and large game. The final area detailed in this research area is the Castle Mountain region, which has few springs, and contains only obsidian, grasses and small game.

These four areas contain archaeological sites that exhibit the appropriate foraging and settlement behavior for the resources distributed in each zone. The regions with higher ranked resources such as the McCullough/New York ranges and the lake shore contain low mobility sites that are representative of long-term occupations. Sites in the Castle Mountain, with its lower ranked resources, consist primarily of short-term occupation sites. The Highland Range has a mix of high and low ranked resources, and the sites in the area include short and long term occupation sites. These areas in total represent a circular region of seasonal foraging activity which surrounds the Piute Valley.

Migration Routes

In figure 13 I have outlined a generalized migration route that would have been used by prehistoric foraging populations. This migration route does not incorporate the use areas, but instead skirts these use areas along the valley floor. This would likely be
an easier path, as opposed to traversing the steep drainages that flank the high resource upland areas. Many of the primary resource zones in the higher elevations appear to be identified from the valley floor by rock art panels located in the foothills. In figure 13 along the posited migration route there are several clusters of rock art that could likely be markers which foraging groups used to identify upland resources that would not be visible from the valley floor. It is interesting to note that the rock art panels do not denote particularly close resources, but when displayed on a map, show routes more than resources (Figure 13). These rock art clusters in combination with resource zone, and archaeological site data give us an overall migration route that seems to run the rim of the valley floor.

The proposed migration route also cuts through the Piute Valley in certain areas where there are no archaeological remains, but as posited in the general foraging model, would have served as an efficient corridor between resource rich zones.

The primary migration route does not always go along the desert floor, especially in the New York Mountains and directly through Lake Mojave. In the New York range, the route goes through an extensive area of foothills that are much lower than the summits, and traverses halfway between the valley floor and high resource upland area. This route seems to bisect the foothill area keeping foraging populations closer to water resources. Along the shoreline of Lake Mojave there are a few large lithic scatters, but no real encampments. In this area the migration route appears to follow the shores of the Colorado River. This is where prehistoric populations would have sought out resources, and there is likely a myriad of foraging and horticultural activities exhibited in the now
inundated archaeological deposits along the original riverine area. I have also outlined three external resource areas that may be reached by branching migration routes.

**External Resource Areas**

There are three possible resource areas displayed on Figure 13 that were not discussed previously in this thesis, or investigated in the research design. The primary zone of interest is located in the southeastern portion of the map and is listed as Grapevine Canyon. This area is an extremely dense region of rock art and floral resources that has attracted populations for thousands of years. Much has been written on this area (Whitley 1996), but I was not able to gain access to primary records for the region. For this thesis I have merely integrated this area into the overall migration route, and introduced it as a possible external branch due to the high amount of water and resources.

In the northeastern portion of the map there are a large number of springs, and what appears to be a migration route leading to them, marked by rock art panels. There are likely many resources in this northern area including plentiful springs, large game, and the meandering Colorado River, which runs parallel to the route.

In the western portion of the map there are a large number of springs just across the California border. This project was confined to the Nevada region, and no primary records or basemaps from the state of California were researched. While this political border may be very real to us, these boundaries did not exist and foragers often do not confine themselves to these arbitrary territories (Kelly 1995). Humans may have used these springs as a useful corridor to resources which may lie deeper in the more arid regions due west, or all of these external migration routes could be part of a much more
elaborate migration pattern that encompasses much more than we are seeing in this single valley.

While the possibility for a much larger migration pattern is very real, it does not take away from the general foraging pattern posited in this thesis by Roth et al. 2006. The archaeological sites of the Piute Valley are located primarily in the resource rich upland and lakeshore regions, while the valley is devoid of sites. Rock art in the region does not identify specific resources, but may serve as markers for general resource areas, and possible corridors leading to these areas. While certain regions of the valley may have been used as a travel corridor, it is likely that vast swaths were either ignored or only reconnoitered for Joshua tree buds, rabbit, and desert tortoise. These activities may not have left much of an archaeological imprint, and may be undiscovered or buried by alluvial deposits. In total it would seem that the general model put forth in this thesis largely holds up with the data presented here. The chronological data can now be used to determine if any significant changes occurred in the Piute Valley due to shifts in the cultures of the prehistoric peoples or the Holocene climate.

**Responses to Climate and Culture Change**

One expectation of this project was a major geographical shift in human behavior over time, dependent on water sources and other natural resources that respond to climate change. Climate shifts would have been severe dating from the end of the cold moist Pleistocene and would have been marked by an overall gradual warming and drying (Cline et al 2008). The most severe change would have been during a period in the Middle Holocene referred to as the Altithermal. This period would have lasted from 7,000 to 4,500 b.p., and was likely a hotter-dryer climate than what we even observe
today (Antevs 1948). While it has been suggested that this period may have seen greater monsoonal storms during the summers in the Mojave Desert, Grayson suggests that this apparently had little to no effect on the plant communities of the region (2011). It has been postulated by many archaeologists that there was a significant decrease of human presence in the Great Basin during this period (Rhode 1999).

The overall seasonal foraging pattern does not appear to have changed through the occupation of the region, but the duration of occupation may have been compromised by the arrival of the Altithermal. Archaeological evidence shows that this area supported human populations from as early as the Lake Mojave Period (12,00 to 7,000 b.p.) until contact with the ethno-historic populations by western settlers and ethnographers, but there is no evidence of occupation during the middle Holocene. The Pinto series of projectile points, which date from 7,000 to 4,000 b.p., are wholly absent from this region.

The four resource zones detailed in this thesis have extensive archaeological remains, and apparent occupation by many prehistoric cultures. With no diagnostics from the Middle Holocene though, the region may have been abandoned by Pinto period populations. The lack of diagnostics from this period may be the result of an overall lack of data in the region though. Further investigations may provide evidence supporting the occupation of this region during the 3,000 years of the Pinto period. Water resources such as perennial springs in the foothills and the ever-flowing Colorado River could have made this place ideal for human occupation, even during the Altithermal. Resources in the region also seem to be viable during the driest times due to elevation shifts that provide these resources at varied but consistent times of the year.
There does appear to be a short lived re-introduction during the Gypsum period that coincides with a marked increase in effective moisture at around 4,000 b.p., which may have increased the available game and other plant resources (Huckleberry et al. 2001 and Roth 2012). There also is an intensification of the region during the Late Prehistoric period, documented by 84 percent (n=16) of the chronological sites falling into this category. This enhanced later occupation may be attributed to the arrival of the cooler and moister Little Ice Age starting at about 600 b.p. (Grayson 2011). The Late Prehistoric sites are spread across most of the upland resource zones, and the ceramic artifacts are often found in rockshelters, while there is no evidence for their occupation along the Colorado River. The more temperate climate, along with the rich land provided by the Colorado River, may have facilitated farming and horticulture in later populations to the Piute Valley, and these groups may have been storing agricultural foods within the rockshelters (Warren and Crabtree 1986). Unfortunately, most evidence of the farming process, and shoreline occupation in the region is not currently accessible due to the flooded shores of Lake Mohave. This inundation may also be responsible for the lack of data supporting a previous Saratoga Springs population. These populations may have been more dependent upon agriculture, and their sites would likely be more restricted to the shoreline (Warren and Crabtree 1986). Possible abandonment during the Saratoga Springs period may also be attributed to climate change. For roughly 350 of the 700 years of this prehistoric period, the Great Basin was experiencing the warmer and dryer Medieval Climatic Anomaly (Grayson 2011). This shift in climate may have made the region unfavorable to agriculture or limited gatherable resources, much like the Altithermal. Throughout the Late Holocene in the Piute Valley, foraging would have
been a major pursuit in conjunction with the use of limited agriculture. Ethnographic evidence suggests that humans in the Mojave Desert did not abandon their productive foraging behavior in totality during these periods, and would have had very little trouble with either subsistence pursuit (Steward 1938, Stewart 1969).

Future Research

There are many gaps in this research project, but three key research topics could help expand and solidify this foraging model. Primarily, on the local level, research into the contemporary shoreline of the Colorado River could provide a breadth of archaeological data. These data would give us dramatic insights, and help prove the importance of this region to the overall seasonal foraging pattern discussed in this thesis. These data could be gained through records kept by the National Park Service (NPS) and the Bureau of Reclamation (BOR).

Second, and more expansive on the local level, archaeological surveys could be undertaken to help expand the general archaeological knowledge of the area. These are low cost projects that could be accomplished on a university, CRM or government level. While data was primarily limited to CRM investigations, these transects have proven to be valuable samplings of the Piute Valley.

Lastly the project area could be expanded to incorporate the surrounding valleys, and mountain ranges. This would require gaining access to more databases such as the NPS, BLM, BOR, as well as data repositories such as the Harry Reid Center, and their California counterparts. This would be a very low cost, and efficient way to look at further migration routes. With the GIS database already complete it would not be
difficult to expand the data along the same lines. Using digital elevation models and least cost analysis in GIS, predictive models could be developed to test these migration routes.

Summary

With the breadth of data provided by this project, it appears that humans used the Piute Valley as a source of stability in a land of extremes. While it is possible to have a productive life in the Mojave Desert, the resource rich highlands as well as the Colorado River surrounding the Piute Valley provide a much-needed haven for foragers. There is evidence of the likely abandonment of the region during the Middle Holocene though. Despite the presence of these likely stable resources, the inhospitable nature of the Altithermal may have driven populations to adjacent territories with more amenable environments. With more robust data, we may be able to demonstrate that the stability and resource availability of the region may have preserved seasonal foraging patterns throughout the Holocene, including the Altithermal. The limiting factors, such as water, edible materials, and tool making resources across the Piute Valley may have defined human foraging routes, but the changing climate may have been the deciding factor in the human decision to occupy the area.
Appendix A

Foraging Behavior Analysis

This appendix details the results of the individual analysis of the prehistoric sites previously recorded, re-recorded and newly discovered by the archaeology team of the Walking Box Ranch project. Each of these sites was analyzed based on the criteria developed in chapter five.

1. Site Type
2. Chronology
3. Bio-zone
4. Geographic Feature
5. Distance to Water (km’s)
6. Specific Resources
7. Distance to Paleo-water sources (km’s)*
8. Paleo Resources*

Each site has a categorical analysis, and the site descriptions provided from the literature review conducted at the Harry Reid Center, or by UNLV field teams (Cline et al 2008). Listed sections with an asterisk were dependent upon sites having chronological markers. The results were then appended to the geo-database (Figure _) and the results of that portion of the analysis were described in the findings and conclusion chapter of this thesis.

(Site Descriptions taken from Yoder 2007)

<table>
<thead>
<tr>
<th>Site Number - 26CK0121</th>
<th>Site Type – Rockshelter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Map Reference – Hart Peak</td>
<td>Date Recorded – 1968</td>
</tr>
<tr>
<td>Time Period – Late Prehistoric</td>
<td>Bio-zone – Lower Sonoran</td>
</tr>
<tr>
<td>Geography – Hill</td>
<td>Distance to Water – 1.3</td>
</tr>
<tr>
<td>Resources – Grasses, Small Game</td>
<td>Paleo-resources – Grasses, Small Game</td>
</tr>
<tr>
<td>Distance to Paleo-water – 1.3</td>
<td>Resource Ranking – Low</td>
</tr>
<tr>
<td>Mobility - Low</td>
<td></td>
</tr>
</tbody>
</table>

Petroglyphs on side of mountain, pecked deeper than usual. Area dimensions: 150ft horizontal and 12ft vertical, both sides. Facing both east and west on eroding vertical face. 160 to 175 individual elements. All appear pecked. Associated with the rock art are a small habitation and storage caves; 1 open site. Habitation and storage shelters are located on the western face of the same tilted formation as the glyphs only higher up the bluff facing west and northwest. Open site is on the open flat directly below glyph area and “stray cow” windmill and water tank. Lots of historic claim markers and test pits in the area as well. Because of the high degree of weathering many of the elements are becoming practically invisible; some of the glyphs were chalked and possibly they all should be. There seems to be no noticeable evidence of a time difference in the glyphs. Surrounding vegetation includes creosote, yucca, mesquite, and burro bush. Photos and drawings are recorded separately in the rock art folders.

Addendum - Original site record reports rock art associated with small habitation and storage caves as well as a single open site. As the original site record contains photos of the rock art, this portion of the site was not re-evaluated. Two rockshelters (or alcoves) were located at the UTM’s listed above and are assumed to be the “habitation and storage shelters” listed on the original record. The rockshelters are located near the top of the ridge north of the rock art panels.

Rockshelter 1 is the more southern of the two and measures roughly 10m wide by 9m tall by 2m deep. It is found on a slope of roughly 50° and has an aspect of 300°. Artifacts in the alcove included approximately 5 white chert lithic flakes and 15-20 obsidian flakes. Flakes were primarily shatter but
primary flakes with some cortex were also common. Secondary and tertiary flakes were rare. Numerous owl pellets littered the area.

Rockshelter 2 is the more northern of the two alcoves and measures roughly 12m wide by 8m tall by 5m deep. It is found on a similar slope and aspect as Rockshelter 1. Artifacts in the shelter include 2 lithic flakes and 4 ceramic sherds. The lithics are secondary flakes, brown colored chert. The ceramic sherds are plain ware, buff to brown in color and are tempered with what appeared to be quartz. One large bowl sherd was found apparently in situ in a crevice at the north end of the shelter. Numerous owl pellets littered the area.

Original site record was unclear as to the exact location of the “open site” below the rock art area. We surveyed the area directly east of the windmill and water tank and only found roughly 10 lithic flakes scattered over an area 15 m by 15m centered around a rock outcrop. The lithics were composed of a white chert and were mostly secondary flakes.

26Ck121 is only 200m from the road and is in plain sight. In addition there are small mine tests in various locations on the ridge. The site has probably been stripped of many of its surface artifacts.

Site Number – 26CK1152  Site Type – Lithic Scatter
Map Reference – Hart Peak  Date Recorded – 1968
Time Period – Unknown  Bio-zone – Lower Sonoran
Geography – Drainage  Distance to Water – 3.9
Resources – Grasses, Small Game
Distance to Paleo-water – n/a
Paleo-resources – n/a
Resource Ranking – Low  Mobility - High

Rock feature that appears to be a cairn; possibly a cache or grave site. Measures ~ 4ft by 3 ft by 1.5 ft. Most rocks are ~ 1 ft in diameter. Rocks are mostly basaltic, though some rhyolite and some granite included. Feature is located on an arroyo side, approximately 10 ft from the crest. Lithic scatter is said by recorded to cover entire arroyo side and crest, yet he says they found “one flake of obsidian, one flake of quartzites, and one flake of silicious material.” Surrounding vegetation includes mesquite, catclaw, yucca, bunch grass, and cacti. No photos or drawings included in the site form.

Site Number – 26CK1153  Site Type – Lithic Scatter
Map Reference – Ten Mile Well  Date Recorded – 1972
Time Period – Unknown  Bio-zone – Lower Sonoran
Geography – Valley  Distance to Water – 7
Resources – Grasses, Small Game
Distance to Paleo-water – n/a
Paleo-resources – n/a
Resource Ranking – Low  Mobility - High

Lithic scatter 8 m by 10 m. Recorded as “thin lithic concentration, just flakes.” No photos or drawings included in site form.

Site Number – 26CK1190  Site Type – Lithic Scatter
Map Reference – Nelson SW  Date Recorded – 1973
Time Period – Unknown  Bio-zone – Lower Sonoran
Geography – Drainage  Distance to Water – 8.1
Resources – Lithics, Acorn, Large game, grasses, small game
Distance to Paleo-water – n/a
Paleo-resources – n/a
Resource Ranking – General  Mobility - High

There are a few clubby scrapers and choppers and some utilized flakes present, but the majority of lithics on the site are simply core and waste flakes. There are large parent cores of the semi-salicious, rhyolitic material with the chipping stations, evidence of quarry activity on boulders of same material. Site
has been disturbed on east end by construction on previously existing trans-line, also access road for trans-line. Site may now be destroyed because of new trans-line construction. Site recorder noted “Possibly related to San Dieguito culture.” But does not explain why he thinks so. Recorder did not give counts for any of the artifacts. Surrounding vegetations includes creosote, bursage, yucca, and sego lilies. No photos or drawings are included in site record.

Site recorded on a form entitled “Nevada Archaeological Survey, UNLV Museum & DRI, Site Survey Record.” Also has: Mus. Cat. # 5-344. Maybe artifacts were collected?

Site Number – 26CK1191  Site Type – Quarry
Map Reference – Nelson SW  Date Recorded – 1973
Time Period – Unknown  Bio-zone – Lower Sonoran
Geography – Drainage  Distance to Water – 8
Resources – Lithics, Acorn, Large game, grasses, small game
Distance to Paleo-water – n/a
Paleo-resources – n/a
Resource Ranking – General  Mobility - Low

Site composed of two components. Component A is an extensive series of chipping stations in association with quarry activity and a thick lithic scatter extending across right-of-way from the TWR. Clubby artifacts are present along with blade flakes, broken hammerstones and etc. All material is indigenous to the site area. Component B has similar circumstances, but there is a couple of stone circles (small) located here, and a small basin metate not well worn was recovered from this part of the site. Both components are located on the same terraced ridge. All material is imbedded in pavement (desert?). All chipping stations have large parent cores of crypto-crystalline stone. East end of site is disturbed by previous trans-lines construction and access road, as well as old historical road, which crosses the site. Artifacts collected include clubby scrapers, choppers, blade and utilized flakes. Site recorder states “Possibly related culturally to San Diegito.” But does not explain why he thinks so. Site may have been destroyed due to construction. No photos or drawings are present in the site record.

Site recorded on a form entitled “Nevada Archaeological Survey, UNLV Museum & DRI, Site Survey Record.” Also has: Mus. Cat. # 5-344. Maybe artifacts were collected?

Site Number – 26CK1192  Site Type – Residential Camp
Map Reference – Nelson SW  Date Recorded – 1973
Time Period – Unknown  Bio-zone – Lower Sonoran
Geography – Drainage  Distance to Water – 8.1
Resources – Lithics, Acorn, Large game, grasses, small game
Distance to Paleo-water – n/a
Paleo-resources – n/a
Resource Ranking – General  Mobility - Low

A series of small to large chipping stations in association with a lithic scatter and large parent cores of which were taken large amounts of workable materials. The only artifacts round on this site, and most common on all sites in the M.W.D. site series were utilized flakes and blade cores. All material found was imbedded in the highly patinated pavement. The lithics also were heavily patinated and were quite hard to spot in the paved terrace. The material on these sites is crude and hard to work. This is evident by the crude artifacts made of this rhyolitic stone. One stone circle present. Artifacts consisted of cores and worked flakes, also waste. Surrounding vegetation includes creosote, bursage community, yucca, and cactus. Extreme eastern side of site disturbed during building of previous trans-line and access road, also very old, historical road crosses site at this point. No photos or drawings present in the site record.

Site recorded on a form entitled “Nevada Archaeological Survey, UNLV Museum & DRI, Site Survey Record.” Also has: Mus. Cat. # 5-346. Maybe artifacts were collected?

Site may have been destroyed due to construction.

Site Number – 26CK1193  Site Type – Residential Camp
Map Reference – Nelson SW  Date Recorded – ?
Time Period – Unknown  Bio-zone – Lower Sonoran

79
Site Number – 26CK1205
Map Reference – Fourth of July Mountain
Time Period – Unknown
Geography – Valley
Resources – Large game, Riverine, Pinyon, Grasses, Small game
Distance to Paleo-water – n/a
Paleo-resources – n/a
Resource Ranking – General
Mobility - Low

No description. All information comes from the IMACS Encoding Form. Midden present and smoke blackening.

Addendum - Original record encodes this site as a rockshelter with midden present, smoke blackening, lithic, and ceramic artifacts. Location on map and UTM’s on original record do not match up exactly, with the map plot being ~100 meters to the north of the UTM’s listed. In any case, the location is in an almost flat plane with no rock outcrops in the vicinity. The nearest possibility for a rockshelter is 1.5 km to the west at Black Mountain. Searched roughly 100 meters in each direction centered on original UTM’s, but found no artifacts of any type. Could not confirm sites existence.

Site Number – 26CK1343
Map Reference – Fourth of July Mountain
Time Period – Late Prehistoric
Geography – Hill
Resources – Grasses, small game
Distance to Paleo-water – 4.1
Paleo-resources – Grasses, Small game
Resource Ranking – Low
Mobility - Low

Petroglyphs on both sides of the wash on volcanic talus boulders all the way up to the ridges. Petroglyphs begin at the dry falls area and extend northward ~200 ft. Shelter is on the west side of the wash near the south end of the site. Metates are at shelter. Good midden with ceramics, lithic scatter, and charred bone. Surrounding vegetation includes creosote, cacti, catclaw, Indian tobacco, buckwheat, and paper bag bush. Some photos are included in the site record, while others are recorded separately in the rock art folders. No drawings are recorded in either.

Addendum - Original site record reports large amounts of petroglyphs on both sides of the wash and a rockshelter on the west side near the south end of the site. Shelter is reported to have metates as well as a good midden with ceramics, lithics, and charred bone. As original records recorded the rock art we did not re-record this information.

The rockshelter is near the top of the ridge on the west side of the wash above the dry falls and has a slope of 50° and an aspect of 100° (east facing). The shelter measures approximately 6m wide by 2m deep by 2.5m tall. The remains of a small rock retaining wall appear to be present on the southern end of the shelter. Lithics are found within and just outside of the shelter. Roughly 50 lithic flakes were seen, all chert in varying colors of pink, red, white, brown, and some with speckling. One obsidian flake was also seen. Secondary and tertiary flakes were most common with a few pieces of shatter. Although the lithics were primarily inside of the shelter a few pieces were found on the slope leading up to the shelter. Ceramic artifacts consisted of 5 to 10 sherds of a red to orange colored plain ware that had a dark carbon core. 10 to 20 sherds of gray ware were also observed. Both types appeared to be tempered with quartz or sand and were found within the shelter and in the area just outside. A few (10-15) pieces of burned and unburned
faunal bone were also noted. The bone was small and medium mammal sized with some being fresh, probably brought in by recent predators. Contrary to the original record, we did not find any metates at the shelter, or any ground stone of any type at the site. The site does not appear to have been dug in by looters and may contain intact deposits.

Site Number – 26CK1588  Site Type – Quarry
Map Reference – Nelson SW  Date Recorded – 1979
Time Period – Unknown  Bio-zone – Lower Sonoran
Geography – Drainage  Distance to Water – 7
Resources – Lithics, Acorn, Large game, grasses, small game
Distance to Paleo-water – n/a
Paleo-resources – n/a
Resource Ranking – Low  Mobility - High

Site covers an area ~200 m N-S and 350 m E-W. It is located along an alluvial fan at the eastern base of the McCullough Mountains. North-south boundaries are defined on the basis of artifact densities along the transmission line corridor. The western site boundary is at the western extent of the artifact scatter, and the eastern boundary represents both the eastern extent of the artifact scatter and the arbitrary eastern boundary of the transmission line survey area. The site is an area of very high density chipped stone materials. This is a discrete concentration of flakes and cores of dark brown and beige rhyolites which appear to have been quarried from outcroppings on a small knoll ~300 m west of the transmission centerline. On this knoll, veins of this material are exposed, beige near the base and dark brown near at the top. The highest densities of flakes of each material are found in direct association with its respective source. Density of flakes also decreases away from the knoll. At the base, flakes are literally lying on top of each other reaching densities of 10-20 meters squared. In contrast, near the east edge of the survey right of way densities are ~ 1-3 per meter squared. No readily discernable archaeological features or bifacially worked tools were seen at this locus. Surrounding vegetation includes creosote, burro bush, and opuntia. No photos or drawings were included in the site record.

Site Number – 26CK2110  Site Type – Residential Camp
Map Reference – Crescent Peak  Date Recorded – 1979
Time Period – Gypsum  Bio-zone – Lower Sonoran
Geography – Hill  Distance to Water – .7
Resources – Pinyon, Large Game, Grasses, Small Game
Distance to Paleo-water – .7
Paleo-resources – Pinyon, Large Game, Grasses, Small Game
Resource Ranking – High  Mobility - Low

Aboriginal campsite or small village situated on north side of wash emerging from south edge of McCullough Mts. Site is on a low-lying alluvial ridge. Artifacts are plentiful and the soil in the central portion is dark grey, ashy midden. Site seems to have some depth in this area. Site measures ~100 m E-W by 50 m N-S. Artifacts included 1 obsidian projectile point (Rose Spring corner notched), 1 pot sherd (brownware-coiled and molded with muscovite and quartz temper, large mouthed, straight walled bowl form), numerous pieces of flaked stone including cores, hammerstones, chopper, scrapers, etc. Ground stone artifacts include 8-10 metate fragments (vehicular basalt except 1 schist). Flaked stone materials include milky quartz (locally NSO 6230-5(August 1978) available), grey-green andesite, white-mottled chert, black obsidian, grey fine-grained basalt. Datum made on boulder near site’s center; surface pecked with rock and rocks stacked on top; datum used to record locations of collected artifacts-1 proj point and 1 rim sherd from bowl like vessel. Surrounding vegetation includes creosote, Mojave yucca, cholla, and mixed grasses. No photos recorded but a drawing of the projectile point and map of area are included in the site record.

Site Number – 26CK2114  Site Type – Trail
Map Reference – McCullough Mountain  Date Recorded – 1979
Time Period – Unknown  Bio-zone – Lower Sonoran
Geography – Hill  
Distance to Water – 1.1  
Resources – Pinyon, Large Game, Grasses, Small Game  
Distance to Paleo-water – n/a  
Paleo-resources – n/a  
Resource Ranking – High  
Mobility - High

Possible aboriginal trail. Well defined trail proceeding in northerly direction along the west side of a medium-sized wash; no artifacts observed along segment in survey transect. Identified segment ~1/2 mile in length. Trail presently being used by burros. Surrounding vegetation includes creosote, Mojave yucca, cholla, shadscale (?), and numerous other smaller plants. Recorder recommends trail should be followed out and more carefully examined to determine cultural authenticity. No photos recorded in site record or report.

Site Number – 26CK2115  
Site Type – Lithic Scatter  
Map Reference – Nelson SW  
Date Recorded – 1979  
Time Period – Unknown  
Bio-zone – Lower Sonoran  
Geography – Hill  
Distance to Water – 6.2  
Resources – Acorn, Pinyon, Large Game, Grasses, Small Game  
Distance to Paleo-water – n/a  
Paleo-resources – n/a  
Resource Ranking – General  
Mobility - High

Small quarry site. About 15 andesite flakes (1 worked into possible chopper). No sign of occupation. Area about 20 by 50 m. Surrounding vegetation includes creosote scrub community. No photos or drawings included in the site record or report.

Site Number – 26CK2116  
Site Type – Rock Ring  
Map Reference – Nelson SW  
Date Recorded – 1979  
Time Period – Unknown  
Bio-zone – Lower Sonoran  
Geography – Hill  
Distance to Water – 4.2  
Resources – Acorn, Pinyon, Large Game, Grasses, Small Game  
Distance to Paleo-water – n/a  
Paleo-resources – n/a  
Resource Ranking – General  
Mobility - High

Site consists of a rock ring, measuring about 150 cm in diameter, located on the south side of a small bluff. The ring is on top of bedrock on a relatively flat outcrop. Rock ring and bedrock probably rhyolite. No artifacts associated with rock ring. Not even sure that site is prehistoric-lot of mining activity throughout the area. Not a typical boundary marker, though. Surrounding vegetation includes creosote scrub community. No photos included in site record or report, one drawing of rock ring is include in site record however.

Site Number – 26CK2117  
Site Type – Rockshelter  
Map Reference – Nelson SW  
Date Recorded – 1979  
Time Period – Late Prehistoric  
Bio-zone – Lower Sonoran  
Geography – Hill  
Distance to Water – 5.7  
Resources – Acorn, Pinyon, Large Game, Grasses, Small Game  
Distance to Paleo-water – 5.7  
Paleo-resources – Acorn, Pinyon, Large Game, Grasses, Small Game  
Resource Ranking – General  
Mobility - Low

Two shelters, which are facing generally northeast. Shelter to right (north) (CA-14v-OT-1A) contains sherds of 2-3 vases, 2 metate fragments, one hammerstone, flaking waste, and one broken projectile point. Other (CA-14v-OT-1B) has a metate and rock feature. Collected 11 sherds and 1 point fragment. Author estimates the cultural affiliation and dates of use as the Ceramic Period. Surrounding vegetation includes creosote bush scrub community. No photos recorded in site record or report, but a drawing of the projectile
point fragment is included in the site record. It is the base of a dart point or hafted biface, side-notched, with what appears to be a rounded rocker bottom.

<table>
<thead>
<tr>
<th>Site Number – 26CK2118</th>
<th>Site Type – Rockshelter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Map Reference – Nelson NW</td>
<td>Date Recorded – 1979</td>
</tr>
<tr>
<td>Time Period – Late Prehistoric</td>
<td>Bio-zone – Lower Sonoran</td>
</tr>
<tr>
<td>Geography – Hill</td>
<td>Distance to Water – 5.2</td>
</tr>
<tr>
<td>Resources – Acorn, Pinyon, Large Game, Grasses, Small Game</td>
<td></td>
</tr>
<tr>
<td>Distance to Paleo-water – 5.2</td>
<td></td>
</tr>
<tr>
<td>Paleo-resources – Acorn, Pinyon, Large Game, Grasses, Small Game</td>
<td></td>
</tr>
<tr>
<td>Resource Ranking – General</td>
<td>Mobility - Low</td>
</tr>
</tbody>
</table>

Two rockshelters facing southeasterly near top of rocky hill. Upper has two metates (1 shaped by chipping edges) and a flake scatter. Lower has only one flake. Shelters 10 m distant one from another. Metates are one block and one slab. Author estimates the cultural affiliation and dates of use as the Ceramic Period. Surrounding vegetation includes annual grasses, creosote, Mojave yucca, and catclaw. No photos or drawings are included in the site record or site report.

<table>
<thead>
<tr>
<th>Site Number – 26CK2119</th>
<th>Site Type – Rockshelter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Map Reference – Nelson SW</td>
<td>Date Recorded – 1979</td>
</tr>
<tr>
<td>Time Period – Late Prehistoric</td>
<td>Bio-zone – Lower Sonoran</td>
</tr>
<tr>
<td>Geography – Hill</td>
<td>Distance to Water – 5.2</td>
</tr>
<tr>
<td>Resources – Acorn, Pinyon, Large Game, Grasses, Small Game</td>
<td></td>
</tr>
<tr>
<td>Distance to Paleo-water – 5.2</td>
<td></td>
</tr>
<tr>
<td>Paleo-resources – Acorn, Pinyon, Large Game, Grasses, Small Game</td>
<td></td>
</tr>
<tr>
<td>Resource Ranking – General</td>
<td>Mobility - Low</td>
</tr>
</tbody>
</table>

Shelter facing east beneath large rock adjacent to wash-on north side of wash. Site measure ~20 by 20 ft. Three large slab or block metates, chalcedony flakes, burnt bone, ceramic sherd with brown exterior and slate interior. Author estimates the cultural affiliation and dates of use as the Ceramic Period. Surrounding vegetation includes creosote bush scrub community. No photos or drawings are included in the site record or site report.

<table>
<thead>
<tr>
<th>Site Number – 26CK2120</th>
<th>Site Type – Rockshelter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Map Reference – Nelson SW</td>
<td>Date Recorded – 1979</td>
</tr>
<tr>
<td>Time Period – Late Prehistoric</td>
<td>Bio-zone – Lower Sonoran</td>
</tr>
<tr>
<td>Geography – Hill</td>
<td>Distance to Water – 5.5</td>
</tr>
<tr>
<td>Resources – Acorn, Pinyon, Large Game, Grasses, Small Game</td>
<td></td>
</tr>
<tr>
<td>Distance to Paleo-water – 5.5</td>
<td></td>
</tr>
<tr>
<td>Paleo-resources – Acorn, Pinyon, Large Game, Grasses, Small Game</td>
<td></td>
</tr>
<tr>
<td>Resource Ranking – General</td>
<td>Mobility - Low</td>
</tr>
</tbody>
</table>

One large rockshelter ~70 ft wide and 15 ft deep from to back with some 170 forked sticks, various sizes, lying inside, with few exceptions the forked end pointing toward the back wall. Very well laid out. A second small shelter is to the north and around a rocky point from the large one, maybe 60 ft distant. It contains a metal 5 gal can with lid removed and another lid of the same kind. Artifacts include 170 sticks, pointed carved stick, sherd of gray to black ware, flaking waste, mano, metate, and a rifle shell. Author estimates the cultural affiliation and dates of use as the Ceramic Period. Surrounding vegetation includes creosote, Mojave yucca, cover quite dense with herbaceous plants. No photos or drawings are included in the site record or site report.

<table>
<thead>
<tr>
<th>Site Number – 26CK2121</th>
<th>Site Type – Rockshelter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Map Reference – Nelson SW</td>
<td>Date Recorded – 1979</td>
</tr>
<tr>
<td>Time Period – Late Prehistoric</td>
<td>Bio-zone – Lower Sonoran</td>
</tr>
<tr>
<td>Geography – Hill</td>
<td>Distance to Water – 5.7</td>
</tr>
</tbody>
</table>
Resources – Acorn, Pinyon, Large Game, Grasses, Small Game
Distance to Paleo-water – 5.7
Paleo-resources – Acorn, Pinyon, Large Game, Grasses, Small Game
Resource Ranking – General  Mobility - Low

Very small rockshelter facing east; midden area in front; scatter of red-on-buff sherds (painted and plain ware), two basalt mano fragments, few flakes. Site size 10 m square. Author estimates the cultural affiliation and dates of use as the Ceramic Period. Surrounding vegetation includes creosote bush scrub community. No photos or drawings are included in the site record or site report.

Site Number – 26CK2952  Site Type – Rock Ring
Map Reference – Fourth of July Mountain  Date Recorded – 1981
Time Period – Unknown  Bio-zone – Lower Sonoran
Geography – Hill  Distance to Water – .9
Resources – Pinyon, Large Game, Grasses, Small Game
Distance to Paleo-water – n/a
Paleo-resources – n/a
Resource Ranking – High  Mobility – High

Apparent hunting blind on small know overlooking wash running down to Colorado River. 2 meters in diameter, loose, rock ring, open to east; at highest wall is about .5 m high. Similar features are found on hill south of highway from site. May be complex of hunting blinds along wash, more survey needed. Surrounding vegetation include creosote, bur sage, Mohave yucca, and chollas. No photos or drawings included in site record or report.

Addendum - Original site record described a loose rock ring 2m in diameter that the recorders believed was probably a hunting blind. Location on map and UTM’s on original record matched. Searched roughly 150 meters in each direction centered on original UTM’s but could find no rock features that appeared to be man made. The site (if there is one) would be only 100m off of a main road and would be in clear site of passing motorists. It is possible that since the site was recorded in 1981 the rock feature could have been destroyed by vandals. Could not confirm sites existence.

Site Number – 26CK3509  Site Type – Rockshelter
Map Reference – Hopps Well  Date Recorded – 1981
Time Period – Late Prehistoric  Bio-zone – Lower Sonoran
Geography – Hill  Distance to Water – 3.4
Resources – Pinyon, Large Game, Grasses, Small Game
Distance to Paleo-water – 3.4
Paleo-resources – Pinyon, Large Game, Grasses, Small Game
Resource Ranking – General  Mobility - Low

Shelter cave on edge of wash, approximately 15 ft in length, 5 feet in height, and 5 ft in depth. Recorder observed potsherds and lithic scatter in cave but did not type any. Site appeared undisturbed. No collection or testing done. Surrounding vegetation included willows, creosote, and grasses. No photos or drawings included in site record.

Site Number – 26CK3635  Site Type – Rockshelter
Map Reference – Fourth of July Mountain  Date Recorded – 1930’s
Time Period – Gypsum  Bio-zone – Lower Sonoran
Geography – Hill  Distance to Water – .5
Resources – Pinyon, Large Game, Grasses, Small Game
Distance to Paleo-water – .5
Paleo-resources – Pinyon, Large Game, Grasses, Small Game
Resource Ranking – General  Mobility - Low

Cave is 8 ft wide by 6 ft deep by 6 feet high. Contains archaeological debris to a maximum depth of 18 inches and has no stratigraphy. Is composed of dust, charcoal, ceiling debris, and some food bone plus
sherds and worked chalcedony and jasper. Recorder says that the cave was used seldom for camping and only for short intervals judging from the slight amount of cultural debris. First used by NY-I people and then Y-II people. Deadman’s Fugitive Red ceramics apparently represented. No photos or drawings included in site record.

**Addendum** - Original site record from the 1930s described the site as a cave that contained archaeological debris to a maximum depth of 18 inches. Faunal bone, ceramic sherds, chalcedony and jasper lithic flakes, and charcoal were reported.

Site should probably be described as a rockshelter or alcove, measuring 3m wide by 2m deep by 1.5m tall. It sits on a slope of 60° and has an aspect of 18°, roughly north facing. Artifacts observed included only 1 lithic flake (white and pink colored chalcedony, primary decortication), 1 ceramic sherd (plain ware, temper appears to be sand), and one faunal bone fragment (medium to large mammal sized). The site is located 200m from road and is in plain view of passing motorists. Surface artifacts have probably been stripped, although there is no sign of recent looting.

<table>
<thead>
<tr>
<th>Site Number</th>
<th>26CK3637a, b</th>
<th>Site Type – Petroglyph</th>
</tr>
</thead>
<tbody>
<tr>
<td>Map Reference</td>
<td>Highland Spring</td>
<td>Date Recorded – 1996</td>
</tr>
<tr>
<td>Time Period</td>
<td>Unknown</td>
<td>Bio-zone – Upper Sonoran</td>
</tr>
<tr>
<td>Geography</td>
<td>Mountain</td>
<td>Distance to Water – .2</td>
</tr>
<tr>
<td>Resources</td>
<td>Acorn, Large Game, Cattail, Small Game</td>
<td></td>
</tr>
<tr>
<td>Distance to Paleo-water</td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td>Paleo-resources</td>
<td>n/a</td>
<td>Mobility - High</td>
</tr>
</tbody>
</table>

A. Two rocks with petroglyphs can be found on the way to the spring, one on each side of the wash. Just below the spring on a steep rocky outcrop a small hunting blind and several petroglyph elements can be seen. Surrounding vegetation includes yucca, cholla, willows along the wash, and many cattails below the spring. Photos and drawings of the petroglyphs are recorded separately in the rock art folders.

B. One mile below the spring in the canyon on a basalt dyke are a small number of petroglyphs of at least two different ages. They are pecked into the patina but not through it. They seem to be all Yuman and Chemehuevi in origin, mostly the latter. No occupation near them. Appears to have been first visited by Amar. III hunting parties and possibly in Amar. II times. After this and beginning with NY-I there was a long period of Yuman visitations and during Y-III times it became a Chemehuevi camp. The soil on the camp site is still black and must have been used by Chemehuevi until a recent date. A few small caves in the canyon were used by them. All of the metates here were of the flat lava type and sacrificed except for one through or deep oval-basined type. Photos and drawings of the petroglyphs are recorded separately in the rock art folders.

<table>
<thead>
<tr>
<th>Site Number</th>
<th>26CK3638</th>
<th>Site Type – Residential Camp</th>
</tr>
</thead>
<tbody>
<tr>
<td>Map Reference</td>
<td>Highland Spring</td>
<td>Date Recorded – 1930’s</td>
</tr>
<tr>
<td>Time Period</td>
<td>Late Prehistoric</td>
<td>Bio-zone – Upper Sonoran</td>
</tr>
<tr>
<td>Geography</td>
<td>Mountain</td>
<td>Distance to Water – .2</td>
</tr>
<tr>
<td>Resources</td>
<td>Acorn, Large Game, Cattail, Small Game</td>
<td></td>
</tr>
<tr>
<td>Distance to Paleo-water</td>
<td>.2</td>
<td></td>
</tr>
<tr>
<td>Paleo-resources</td>
<td>Acorn, Large Game, Cattail, Small Game</td>
<td></td>
</tr>
<tr>
<td>Resource Ranking</td>
<td>High</td>
<td>Mobility - Low</td>
</tr>
</tbody>
</table>

There were originally about 30 or 40 petroglyphs here on a basalt face but most of them are too old and altered by weathering to decipher. They are probably of Amargosa age or possibly earlier. There are, however, a few fresher ones of Chemehuevi origin. On the recently exfoliated surface of a granite boulder are two red pictographs which although having a Yuman nature must be of Chemehuevi origin because of their recent appearance. Amargosa I is the oldest cultural material found here followed by Amargosa III. The region, however, is so eroded due to its ruggedness that very little archaeological material can be found to work with. The small open site below the canyon with the petros gave the only indications of Yuman visitations in the way of 3 sherds and a trace of Chemehuevi material. A strong Indian trail which comes down from the north by Cow Springs bends off to the southwest into Crescent Pass and merges with the
Ivanpah-Colorado River Trail which runs east and west. The latter goes down to Searchlight Wash. No photos included in site record but crude drawings of some rock art is.

Site Number – 26CK3644       Site Type – Quarry  
Map Reference – Crescent Peak   Date Recorded – 1930’s  
Time Period – Unknown        Bio-zone – Upper Sonoran  
Geography – Mountain         Distance to Water – 2.1  
Resources – Large Game, Pinyon, Lithic  
Distance to Paleo-water – n/a  
Paleo-resources – n/a  
Resource Ranking – High     Mobility - Low

Because of winter weather in 1930 we did very little exploratory work here. Modern working has obliterated prehistoric mining. Most have been done in Amar. III or P-II times like the other turquoise mining of the region. Could not find where miner’s lived. Only one flat faced lava metate and a few jasper flakes were found near the mines. West of the peak George V. Scott of Searchlight found 2 stone mauls of ¾ groove type made of dark basic cobbles. More work is necessary in this area.

Site Number – 26CK3645       Site Type – Rockshelter  
Map Reference – Crescent Peak   Date Recorded – 1930’s  
Time Period – Late Prehistoric  
Geo-zone – Upper Sonoran  
Geography – Mountain         Distance to Water – 2.1  
Resources – Large Game, Pinyon, Lithic  
Distance to Paleo-water – 2.1  
Paleo-resources – Large Game, Pinyon, Lithic  
Resource Ranking – High     Mobility - Low

Several caves present in both north and south walls of which, 3 showed considerable occupation on the talus. The large blocks from roof falls prohibited digging in the caves at the time but they should be excavated properly. Three flat, broken lava metates seen on the taluses. Miners report that just south of these caves are prehistoric turquoise workings and that on the south margin 1 mile west was a Paiute camp in the 1880s. These caves were camped in, off and on, from the beginning of NY-I through Y-II times. Although Y-III sherds are present they were probably brought here by Chemehuevi who were the last occupants. Excavation might yield evidence of BM-III or P-II turquoise mines occupancy in the bottom of the biggest cave. No photos or drawings are included in the site record.

Site Number – 26CK3646       Site Type – Rockshelter  
Map Reference – Crescent Peak   Date Recorded – 1930’s  
Time Period – Late Prehistoric  
Geo-zone – Upper Sonoran  
Geography – Mountain         Distance to Water – 2.2  
Resources – Large Game, Pinyon, Lithic  
Distance to Paleo-water – 2.2  
Paleo-resources – Large Game, Pinyon, Lithic  
Resource Ranking – High     Mobility - Low

Cave measures 26 ft wide by 13 ft long 8 ft high. Although at the base of the Y-II level a barren zone of wash sand was encountered, our test trench was not carried into or below this level. Therefore the know occupancy begins with the Y-II period and probably ends with it for the few Y-III sherds in the middle stratum were brought in by the Chemehuevi who deposited the Desert Mohave in this area. They used the cave up until historic time for their cultural material is intermingled with early American prospectors possessions in the upper level. This cave should be completely excavated for better stratigraphical evidence and the possibility of a pre-Y-II basal stratum being present. Test Pit No. 1 at west end of cave was later enlarged to the east and bedrock was encountered without finding the packed-sand, barren stratum. This indicates that pockets would off the only possibility for finding NY-I or older material.
Artifacts mentioned by the recorder are ceramics and include Deadman’s Black on White, Aquarius Orange, Needles Buff III and Red on Buff III. No photos or drawings are included in the site record. Record does not indicate where collected materials may be located.

Site Number – 26CK3849  Site Type – Quarry
Map Reference – Hopps Well, Hart Peak  Date Recorded – 1987
Time Period – Unknown  Bio-zone – Lower Sonoran
Geography – Drainage  Distance to Water – 4.6
Resources – Obsidian, Small Game, Grasses
Distance to Paleo-water – n/a
Paleo-resources – n/a
Resource Ranking – Low  Mobility – High

One of the long-sought obsidian nodule sources of the Mojave Desert. This one has now been logged into the files of P. J. Wilke, who is conducting this study. Artifacts noted by recorder include one grinding slick and obsidian bipolar core remnants, flakes.

Updated record by Wilke reads:

“On 21 January 1987 I had the opportunity to reexamine this site and to spend a brief time trying to determine the depositional situation with regard to the occurrence of obsidian. As noted earlier, the surface assemblage is of small clasts generally not over 4 cm in maximum dimension, and some of these were bipolarly reduced in antiquity by Indians quarrying, or collecting, tool stone.

I examined a major wash on the north side of the existing road and determine that the obsidian clasts occur throughout an observed depth of at least 3 meters in the wash exposures. The depositional situation is therefore of an alluvial nature, and bedding grades down and to the southeast. Two specimens up to 10 cm across were seen, one consisting of in place remnants of a larger clast that had is weathering to perlite. The articulating remnants have facets that could be confused by some with culturally induced fracture facets.

Looking to the northwest, and examining the topography as indicated on the USGS Crescent Peak 15’ Quad, there are several topographic features in the New York Mountains that may be the original source of this volcanic glass. All are north of the prominent Castle Peaks. These suggested possible source domes are in Sections 23,24,25, T.29S, R.62E, MDBM, seems to support this conclusion.

If these observations and predictions are correct, it would appear likely that:
- A number of surface occurrences of obsidian may be represented in the zone upslope to the northwest of site 26-CK-3849;
- Large Exposures, or large clasts, of obsidian will occur in original context 2-4 miles northwest of 26-CK-3849;
- The small size of the clasts now present on the surface of 26-CK-3849 reflect intensive collection activities of late prehistoric peoples living in, or working in, the area of the site and seeking tool stone for arrow points;
- larger clasts of obsidian that once existed on the surface of 26-CK-3849 have been removed from the site in pre-bow-and-arrow times when weapons points were larger than could be made from any obsidian that occurs on the site today.

A map suggesting the depositional situation is attached hereto.”

No photos or drawings are included in the site record, though the map Wilke refers to is given.

Site Number – 26CK3850  Site Type – Quarry
Map Reference – Hart Peak  Date Recorded – 1987
Time Period – Unknown  Bio-zone – Lower Sonoran
Geography – Hill  Distance to Water – 3.7
Resources – Small Game, Grasses, Pumice, Obsidian
Distance to Paleo-water – n/a
Paleo-resources – n/a
Resource Ranking – Low  Mobility – High
Historic portion is apparently part of the Perlite mining industry. Open mines, landing strip, historic roads, and former residential areas are listed on this site record, but no detail given.

Prehistoric component also listed. "Site is also the source of a fine deposit of pumice. This occurs ca. 200 m S and above the main mine located SW of the W end of the old landing strip. Pumice apparently mined by Indians as a source of abrasive, as in paired arrow shaft smoothers. A few flakes were seen in the area of the pumice outcrop."

No photos or drawings are included in the site record.

### Site Number – 26CK3889
- **Site Type**: Petroglyph
- **Map Reference**: Nelson SW
- **Date Recorded**: 1988
- **Time Period**: Unknown
- **Bio-zone**: Lower Sonoran
- **Geography**: Hill
- **Distance to Water**: 2.8
- **Resources**: Acorn, Large Game, Small Game, Grasses
- **Paleo-resources**: n/a
- **Resource Ranking**: General
- **Mobility**: High

Approximately halfway up the hill SW of the corral we located six large granite boulders with petroglyphs. We found them only on the NE side of the hill. Some of the petroglyphs are very faint and difficult to decipher or photograph. Surrounding vegetation includes the Joshua tree community. Photos and drawings are recorded separately in the rock art folders.

### Site Number – 26CK3890
- **Site Type**: Petroglyph
- **Map Reference**: Nelson SW
- **Date Recorded**: 1987
- **Time Period**: Unknown
- **Bio-zone**: Lower Sonoran
- **Geography**: Hill
- **Distance to Water**: 4.8
- **Resources**: Acorns, Large Game, Small Game, Grasses
- **Paleo-resources**: n/a
- **Resource Ranking**: General
- **Mobility**: High

Petroglyphs on granite boulders on the west side of a rocky hill near the confluence of three dry washes. At the base of a hill adjacent to a wash (north/south orientated) are some large granite boulders. One boulder has glyphs on three sides and the top. Others face the wash or north. One glyph may be recent. In addition there is a metate on a small alluvial fan approximately 50 meters to the south just above the wash. Surrounding vegetation includes Joshua tree community. Photos and drawings are recorded separately in the rock art folders.

### Site Number – 26CK3892
- **Site Type**: Residential Camp
- **Map Reference**: Nelson SW
- **Date Recorded**: 1987
- **Time Period**: Late Prehistoric
- **Bio-zone**: Upper Sonoran
- **Geography**: Hill
- **Distance to Water**: 5.6
- **Resources**: Acorns, Large Game
- **Paleo-resources**: Acorns, Large Game
- **Resource Ranking**: General
- **Mobility**: Low

4 panels of petroglyphs on cliff face. Small site just below Panel 1 (northwest end) next to cliff. Site has midden with metate, mano, 5 Lower Colorado sherds, and scattered lithic deposit. Rock shelters above site not investigated. Surrounding vegetation includes Creosote plant community. Photos and drawings recorded separately in the rock art folders.

### Site Number – 26CK3894
- **Site Type**: Petroglyph
- **Map Reference**: Highland Spring
- **Date Recorded**: 1988
- **Time Period**: Unknown
- **Bio-zone**: Upper Sonoran
- **Geography**: Hill
- **Distance to Water**: 5
Resources – Acorns, Large Game
Distance to Paleo-water – n/a
Paleo-resources – n/a
Resource Ranking – General Mobility – High

Single petroglyph on small basalt outcrop on north side of wash. Photos and drawings are recorded separately in the rock art folders.

Site Number – 26CK3899  Site Type – Rock Ring
Map Reference – Nelson SW  Date Recorded – 1988
Time Period – Unknown  Bio-zone – Lower Sonoran
Geography – Hill  Distance to Water – 4.2
Resources – Acorns, Large Game
Distance to Paleo-water – n/a
Paleo-resources – n/a
Resource Ranking – General Mobility – Low

Along the slopes and on top of this hill adjacent to the wash there are six rock circles. All are placed on bedrock surfaces. In two of the circles all of the stones are still in place. In the other four, enough stones remain in place to confirm that they could not be natural alignments. Two others, not counted, are possibilities. I visited after a rain and also observed some tanajas in the area. They are shallow and do not hold much water. Surrounding vegetation includes creosote. Photos are included in separate folder, rock art “Mics.” book.

Site Number – 26CK4095  Site Type – Petroglyph
Map Reference – Ireteba Peaks  Date Recorded – 1988
Time Period – Unknown  Bio-zone – Lower Sonoran
Geography – Hill  Distance to Water – 7.2
Resources – Pinyon, Large Game, Small Game, Grasses
Distance to Paleo-water – n/a
Paleo-resources – n/a
Resource Ranking – High Mobility – High

Petroglyphs are on two basalt boulders which are ~ 125 ft apart in an east/west direction. The boulders are half way up the hill on the north side of the road. Surrounding vegetation includes creosote plant community. Photos are recorded separately in the rock art folders. No drawings are included in the site record or rock art folders.

Site Number – 26CK4099  Site Type – Petroglyph
Map Reference – Highland Spring  Date Recorded – 1988
Time Period – Unknown  Bio-zone – Upper Sonoran
Geography – Mountain  Distance to Water – 2.2
Resources – Acorns, Large Game
Distance to Paleo-water – n/a
Paleo-resources – n/a
Resource Ranking – General Mobility – High

Petroglyphs on low bedrock outcrop adjacent to wash on right side. Another panel .05 mile farther along wash on left side. Photos and drawings are recorded separately in the rock art folders.

Site Number – 26CK4168  Site Type – Rockshelter
Map Reference – Hart Peak  Date Recorded – 1966
Time Period – Late Prehistoric  Bio-zone – Lower Sonoran
Geography – Mountain  Distance to Water – 3.5
Resources – Obsidian, Grasses, Small Game
Distance to Paleo-water – 3.5
The site is an east facing rock shelter located on the east side of a very prominent reddish volcanic tufa formation. The back wall and ceiling of the cave contains 201 pictographs in a wide variety of colors, including polychrome elements. The bedrock floor of the shelter has 4 mortar holes, 8 milling slicks, 7 basin metates, and 3 petroglyphs. On the dirt floor beyond the dripline and on the down slope in front of the rock shelter is an artifact scatter that includes metate fragments, a bifacial mano, a scraper, unidentified burnt bone fragments, a few buffware sherds, and rhyolite, obsidian, and cryptocrystalline debitage. Exfoliation of the floor and spalling on the ceiling and walls have removed some elements. Sheetwash on the slope has probably buried some of the artifacts. Some of the pictograph elements are now so amorphous as to be indiscernible.

The debitage is composed of rhyolite, several types of cryptocrystalline (chalcedony and agate), and obsidian (which may be from nearby Devils Peak). Quantity of debitage is only between 10-25 flakes, the flaking stage being tertiary, and maximum density is 3 flakes in a square meter. The ceramic sherds are buffware that are characteristic of the alluvial clays along the Colorado River. They have a buff exterior color and very fine sand temper with a few flakes of mica. These sherds are Late Prehistoric in age (post date A.D. 1200). There is a bifacially worked vesicular basalt mano. The metate fragments are vesicular basalt, a light colored fine-grained granite, and a light reddish granite with white inclusions. The burnt bone fragments are unidentifiable, but are mammal. In addition to the bedrock milling features (4 mortars, 8 grinding slicks, and 7 basin metates), there are also 92 cupules ranging in diameter from 1-6 cm in size. The pictographs are Great Basin Abstract in style and could date back as far as the Gypsum Period but are most likely Late Prehistoric.

Surrounding vegetation includes creosote, buckhorn cholla, cactus, Mohave yucca, shadscale, buckwheat, ephedra, Mojave aster, brittle-bush, Anderson’s desert thorn, sticky snakeweed, and cheatgrass. Drawings are included in the site record, photos are recorded separately in the rockart folders.

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**Site Number – 26CK4233**  
**Map Reference – Hart Peak**  
**Time Period – Unknown**  
**Geography – Hill**  
**Resources – Obsidian, Small Game, Grasses**  
**Distance to Paleo-water – n/a**  
**Paleo-resources – n/a**  
**Resource Ranking – Low**  
**Mobility – High**

Shelter is NE of the road against a volcanic mud cliff face. Red paint in 3 spots on the cliff face just uphill from the shelter and in two alcoves on the NW side of the same ridge (this would be behind the shelter). One petroglyph, facing up, on a boulder in front of the shelter. We drove to Jack’s Well ~.5 mile to the south we found two more shelters along the cliff north of the well. Both had been dug. Surrounding vegetation includes the Yucca/Blackbrush community. Photos recorded separately in the rock art folders, no drawings included in the site record, report, or rock art folders.

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**Site Number – 26CK4326**  
**Map Reference – Hopps Well**  
**Time Period – Unknown**  
**Geography – Valley**  
**Resources – Obsidian, Small Game, Grasses**  
**Distance to Paleo-water – n/a**  
**Paleo-resources – n/a**  
**Resource Ranking – Low**  
**Mobility – High**

Five petroglyphs close together on the cliff face. Four of them face 160 magnetic. All of them are within an 8’ horizontal section of the cliff. No vandalism noted. Petroglyphs are located on a cliff close to a wash. Many large willows noted, as well as creosote, catclaw, Joshua tree, and yucca. Photos recorded separately in the rock art folders, no drawings recorded however.
Site Number – 26CK4342
Site Type – Petroglyph
Map Reference – Hart Peak
Time Period – Unknown
Geography – Hill
Resources – Obsidian, Small Game, Grasses
Distance to Paleo-water – n/a
Palo-resources – n/a
Resource Ranking – Low
Mobility – High

Eight panels scattered over five basalt boulders on the NW side of a small tributary wash. All were at ground level. Some panels face up the hill instead of towards wash. Only one is heavily repatinated. Surrounding vegetation includes catclaw, yucca, and barrel cacti. Photos recorded separately in the rock art folders, no drawings included in the site record or rock art folders.

Site Number – 26CK4343
Site Type – Rockshelter
Map Reference – Hart Peak
Time Period – Late Prehistoric
Geography – Hill
Resources – Obsidian, Small Game, Grasses
Distance to Paleo-water – 4.5
Palo-resources – Obsidian, Small Game, Grasses
Resource Ranking – Low
Mobility – High

Shelter is up the hill NW of end of road. Shelter faces south with considerable area of midden down the slope to the south and east. Many small sherds, chipped stone and worked obsidian flakes. Shelter has animal disturbance but does not appear vandalized. Several campfire circles by recent occupants of area. Surrounding vegetation includes scrub oak and yucca/blackbrush community. No photos or drawings included in the site record.

Site Number – 26CK4344
Site Type – Petroglyph
Map Reference – Hopps Well
Time Period – Unknown
Geography – Hill
Resources – Obsidian, Small Game, Grasses
Distance to Paleo-water – n/a
Palo-resources – n/a
Resource Ranking – Low
Mobility – High

Petroglyph panels are on both sides of a very small wash which appears to enter this formation about the center. One boulder on north (ground level) has glyphs on top and two sides. Three separate boulders on the south side have glyphs. Glyph on upper one faces west. No vandalism mentioned. Creosote, catclaw, Joshua tree, yucca, and willows found near site. Photos recorded separately in the rock art folders, no drawings recorded however.

Site Number – 26CK4345
Site Type – Petroglyph
Map Reference – Tenmile Well
Time Period – Unknown
Geography – Hill
Resources – Obsidian, Small Game, Grasses
Distance to Paleo-water – n/a
Palo-resources – n/a
Resource Ranking – Low
Mobility – High

One boulder with two petroglyphs can be seen from the foot of the hill. Glyphs face 60 magnetic. Panel measures horizontal 20 inches, vertical 11.5 inches. Surrounding vegetation includes creosote/bursage plant
community. Photos recorded separately in the rock art folders, no drawings included in either site record or rock art folders.

Site Number – 26CK4346  Site Type – Petroglyph
Map Reference – Tenmile Well  Date Recorded – 1990
Time Period – Unknown  Bio-zone – Lower Sonoran
Geography – Hill  Distance to Water – 5.7
Resources – Obsidian, Small Game, Grasses  Distance to Paleo-water – n/a
Paleo-resources – n/a  Resource Ranking – Low  Mobility – High

Petroglyphs on small boulders and eroded in cliff face adjacent to wash on south side. Locus 1 wraps around the face of this small cliff. Locus 2 are boulders on top which cannot be seen from below. Locus 3 are on another outcrop ca. 100 ft to the south. Primarily rectilinear designs which appear to be very old. Surrounding vegetation includes creosote, yucca, barrel cactus, and catclaw. Photos are recorded separately in rock art folders, no drawings included in site record or rock art folders.

Site Number – 26CK4347  Site Type – Petroglyph
Map Reference – Tenmile Well  Date Recorded – 1990
Time Period – Unknown  Bio-zone – Lower Sonoran
Geography – Hill  Distance to Water – 3.9
Resources – Obsidian, Small Game, Grasses  Distance to Paleo-water – n/a
Paleo-resources – n/a  Resource Ranking – Low  Mobility – High

Petroglyphs are on two cliff face panels facing 20 degrees magnetic. They are clearly visible from the bottom of the hill. Surrounding vegetation includes creosote/bursage plant community. Photos are recorded separately in the rock art folders, no drawings are included in site record or rock art folders.

Site Number – 26CK4611  Site Type – Artifact Scatter
Map Reference – Crescent Peak  Date Recorded – 1990
Time Period – Late Prehistoric  Bio-zone – Upper Sonoran
Geography – Mountain  Distance to Water – 1.5
Resources – Mule Deer, Pinyon  Distance to Paleo-water – 1.5
Paleo-resources – Mule Deer, Pinyon  Resource Ranking – High  Mobility – Low

The site is a lithic, ground stone, and ceramic scatter located on high ground immediately adjacent to the intersection of two ephemeral drainages. Debitage on the site consists of white quartzite, white and gray cherts, white chalcedony, brown rhyolite and some black opaque and black translucent obsidian. Lithic tools noted on the site include four projectile points (one a Humboldt Concave based point, the others untyped), unifaces, edge-battered cobbles, a two sided black basalt mano, a dashed metate, and edge-battered cobbles, a edge-modified flakes. Ceramic sherds varied from light gray through brown to brick red in color with equally variable tempers. Many show paddle and anvil finish. A very small historic component consisting of three hole-in-cap cans was noted near the east end of the site.

Site measures 220 m (E-W) by 140 m (N-S). Three 25 cm by 25cm shovel test pits and a single 1 by 1 m unit were excavated. Cultural material present to 30 cm below ground surface. Lithic debitage estimated to be between 100-500 pieces, maximum density of 5/sq m, and secondary and tertiary flakes were common, decortication, shatter, and cores were rare. Debitage was white quartzite, white and gray cherts, white, green/white chalcedony, brown rhyolite, black opaque and translucent obsidian. Organic materials are represented on the site by fragments of burnt bone, possibly cranium. Ceramics had a
maximum density of 4/sq m. Recorder believes cultural affiliation is Yuman based on ceramics. Descriptions of 18 sherds are given in the site record. Surrounding vegetation includes Joshua tree, blackbrush, and cholla. No photos are included in the site record or report, but drawings of the four projectile points are.

Site Number – 26CK4612  
Site Type – Lithic Scatter  
Date Recorded – 1990  
Bio-zone – Lower Sonoran  
Distance to Water – 6.6

Surrounding vegetation includes Joshua tree, blackbrush, and cholla. No photos are included in the site record or report, but drawings of the four projectile points are.

The site is very large, but generally sparse, lithic scatter extending for 2.2 km on a northwest-southeast axis and for an indeterminate distance (at least 200m) to the southwest and northeast. Three loci of greater lithic density were noted on this generally diffuse site. Tools observed include two Silver Lake points, a slab metate and a metate fragment, over 20 unifaces and over 50 biface fragments.

Ten 25 by 25cm shove test units were excavated, one produced cultural material at 40 cm bgs, all others had materials no deeper than 20cm bgs. The lithic scatter consists primarily of decortication and secondary flakes of rhyolite, chert, and obsidian. Estimated quantity of lithic debitage is 500+. Some quartzite flakes were also noted. Two Silver Lake projectile points (one black basalt, one gray silicified rhyolite), one quartzite hammerstone, more than 50 bifaces and biface fragments primarily of rhyolite, but also of chert and quartzite; in excess of 20 unifaces of rhyolite and chert; one of the two metates is fragmentary of vesicular basalt and the other is a whole slab metate of granodiorite. Recorder believes the site has Paleoindian affiliation based on lithic cross-dating. Surrounding vegetation includes creosote, Joshua tree, blackbrush, and xeric grasses. No photos are included in the site record or report, but drawings of the two Silver Lake Points are included in both.

Site Number – 26CK4613  
Site Type – Petroglyph  
Date Recorded – 1990  
Bio-zone – Lower Sonoran  
Distance to Water – 4.8

A single small boulder (~2 ft high) can be found about 50 ft east of the road and west of a very small wash. Faint petroglyphs are pecked on the east side and part of the top of this boulder. Glyphs appear rectilinear. Surrounding vegetation includes Joshua tree, yucca/blackbrush plant community. Photos are recorded separately in the rock art folders, no drawings are included in the site record or rock art folders.

Site Number – 26CK4614  
Site Type – Petroglyph  
Date Recorded – 1990  
Bio-zone – Upper Sonoran  
Distance to Water – 1.9

Petroglyphs at ground level (1 panel) up to 10 feet above wash on the right side going up. We found only 2 panels (1 glyph each) on the left side going up. Glyphs include 1 stick-figure anthropomorph, 4 vulva elements, 1 star (?), 5 shield elements, and a few misc. elements. Surrounding vegetation include yucca,
blackbrush, catclaw, and willow. Photos recorded separately in the rock art folders, no drawings included in the site record or rock art folders.

### Site Number – 26CK4632
- **Site Type** – Petroglyph
- **Map Reference** – Ireteba Peaks
- **Time Period** – Unknown
- **Geography** – Hill
- **Resources** – Aquatic Resources, Large Game
- **Distance to Paleo-water** – n/a
- **Paleo-resources** – n/a
- **Resource Ranking** – High
- **Mobility** – High

Petroglyphs are on right side of road (east side) on three widely separated small patinated rhyolite boulders. Boulder No. 1 has glyphs on concave upper surface and is located ~ 20 ft east of road. Boulder No. 2 is located ~75 ft south of No. 1 and is ~ 15 to 20 ft east of road. Boulder No. 3 is located on top of the next ridge to the south, has one rectilinear glyph facing east. On this same ridge we noted two more boulders with a few small randomly pecked areas. Surrounding vegetation included creosote, bursage, and cholla. Photos are recorded separately in the rock art folders, no drawings are included in the site record or rock art folders.

### Site Number – 26CK4666
- **Site Type** – Petroglyph
- **Map Reference** – Ireteba Peaks
- **Time Period** – Unknown
- **Geography** – Hill
- **Resources** – Aquatic Resources, Large Game
- **Distance to Paleo-water** – n/a
- **Paleo-resources** – n/a
- **Resource Ranking** – High
- **Mobility** – High

Petroglyphs were found on two large basalt boulders at the base of the hill on the south side of the wash. The first panel encountered, with two glyphs facing 95 degrees, the second panel with four glyphs faces 60 degrees true north. Surrounding vegetation includes creosote/bursage plant community. Photos are recorded separately in the rock art folders, no drawings are included in the site record or rock art folders.

### Site Number – 26CK4807
- **Site Type** – Rockshelter
- **Map Reference** – Hart Peak
- **Time Period** – Late Prehistoric
- **Geography** – Hill
- **Resources** – Obsidian, Small Game, Grasses
- **Distance to Paleo-water** – Obsidian, Small Game, Grasses
- **Paleo-resources** – 3
- **Resource Ranking** – Low
- **Mobility** – Low

Pictographs in red and one petroglyph are located in a small outcrop below shelters which are very prominent and face SE in the main ridge. Chipped stone, ground stone, and pottery are scattered over area. Petroglyphs were photographed in the two main shelters. Designs are all abstract. Surrounding vegetation includes creosote, yucca, Joshua tree, and cholla. Photos of rock art are recorded separately in the rock art folders, no photos or drawings of general site or other artifacts are included in the site record or rock art folders.

**Addendum** - Original site record reported 2 rockshelters with rock art, lithics, ceramic sherds, and ground stone scattered over the site and down slope. The 2 shelters are located at the UTM’s listed above. The northern rockshelter measures roughly 6m wide by 5m deep by 3m tall while the southern rockshelter measures 7m wide by 1m deep by 2m tall. Both are on a slope of 30° with an aspect of 100° (east facing). Lithic flakes are scattered down slope of the rockshelters. Flakes (n=25 to 100) are made of chert and most are colored a milky white but include some gray and pink as well. Secondary flakes are the dominate type, with tertiary being common while shatter and decortication are rare. A few pieces of burnt bone (4 or 5)
were scattered over the slope. Contrary to the original site record, no ceramics or ground stone was observed. As rock art had been previously documented we did not re-record it.

Site Number – 26CK4813  Site Type – Petroglyph
Map Reference – Nelson SW  Date Recorded – 1992
Time Period – Unknown  Bio-zone – Lower Sonoran
Geography – Hill  Distance to Water – 3.9
Resources – Acorn, Large Game, Small Game, Grasses
Distance to Paleo-water – n/a
Paleo-resources – n/a
Resource Ranking – General  Mobility – High

Petroglyphs can be seen on large patinated boulders on the left side of the wash. Petroglyphs are grouped near the north end of the rocky outcrop. Nineteen panels were photographed. Elements are rectilinear and curvilinear abstract with a few halved and quartered circles. Many are weathered in appearance. No sheep or anthropomorphical elements were noted. On the upper east side of the ridge south of the 19 panels are located 12 more petroglyph panels. One element was a distinct anthropomorph. In addition a cluster of rock circles were noted on the top of the ridge adjacent to the petroglyphs on the south side. Four prominent circles on slightly slanted bedrock pads were photographed. Diameters, inside measurement, were ~95 inches, 98 inches, 98 inches, and 102 inches. One well-defined circle on earth, 98 inches in diameter, also photographed. Several additional, poorly-defined circles, some on bedrock, some on earth, were also noted. Several piles of boulders were noted among the circles almost as if they had been removed from the circle interiors or collected to place in still unformed circles. Surrounding vegetation includes creosote/Joshua transition zone. Photos recorded separately in the rock art folders, no drawings were included in the site record or rock art folders.

Site Number – 26CK4819  Site Type – Petroglyph
Map Reference – Highland Spring  Date Recorded – 1992
Time Period – Unknown  Bio-zone – Lower Sonoran
Geography – Hill  Distance to Water – 5.4
Resources – Acorn, Large Game, Small Game, Grasses
Distance to Paleo-water – n/a
Paleo-resources – n/a
Resource Ranking – General  Mobility – High

Two glyphs are located on one of the larger boulders which measures ~3 ft in height and ~8 ft in diameter at the base. One of these is a quartered cross glyph. A third glyph is located on the next boulder to the north. About 11 paces to the NE is a possible fourth petroglyph. Only a short segment of edge cortex is visible through the almost complete covering of yellow lichen. Surrounding vegetation includes Joshua plant community. Photos are recorded separately in the rock art folders, no drawings are included in either the site record or rock art folders.

Site Number – 26CK4846  Site Type – Milling Slick
Map Reference – Hart Peak  Date Recorded – 1992
Time Period – Unknown  Bio-zone – Lower Sonoran
Geography – Drainage  Distance to Water – 2.3
Resources – Obsidian, Small Game, Grasses
Distance to Paleo-water – n/a
Paleo-resources – n/a
Resource Ranking – Low  Mobility – High

A single very faint milling slick on a nonvesicular basalt boulder in an active wash. Slick measures 30 by 45 by 25 cm. Surrounding vegetation includes creosote, blackbush, Mojave yucca, beavertail, Engelmann cactus, galleta grass, salazaria, and catclaw. No photos or drawings are included in the site record or report.

Site Number – 26CK4847  Site Type – Milling Slick
Map Reference – Hart Peak  Date Recorded – 1992
Time Period – Unknown  Bio-zone – Lower Sonoran
Geography – Drainage  Distance to Water – 2.3
Resources – Obsidian, Small Game, Grasses  Distance to Paleo-water – n/a
Paleo-resources – n/a  Resource Ranking – Low  Mobility – High

A very faint milling slick on a vesicular basalt boulder in an active wash. Slick measures 30 by 20 by 50 cm. Surrounding vegetation includes creosote, Mojave yucca, beavertail, Engelmann cactus, galleta grass, salazaria, and catclaw. No photos or drawings included in site record or report.

Site Number – 26CK4851  Site Type – Petroglyph
Map Reference – Ireteba Peaks  Date Recorded – 1992
Time Period – Unknown  Bio-zone – Lower Sonoran
Geography – Hill  Distance to Water – 4.3
Resources – Pinyon, Large Game, Aquatic Resources  Distance to Paleo-water – n/a
Paleo-resources – n/a  Resource Ranking – High  Mobility – High

Two petroglyph panels are located on the left side of the road on a single boulder at ground level. Panels face the wash. Surrounding vegetation includes creosote, catclaw, and yucca. Photos and drawings are recorded separately in rock art folders.

Site Number – 26CK4960  Site Type – Petroglyph
Map Reference – Ireteba Peaks  Date Recorded – 1993
Time Period – Unknown  Bio-zone – Lower Sonoran
Geography – Hill  Distance to Water – 6.4
Resources – Pinyon, Large Game, Aquatic Resources  Distance to Paleo-water – n/a
Paleo-resources – n/a  Resource Ranking – High  Mobility – High

Starting at the junction of the ridge and an eastward draining major wash two boulders (~6 feet tall) are decorated with numerous petroglyphs. The more westerly boulder also exhibits a panel of historic initials dated 1915 and 1917 and a series of lightly scratched elements in the form of straight lines and grids. Follow this ridge up the hill in a general SE direction noting the glyph, many of which face the wash on the NE side of the ridge. Thirty-six panels were photographed. Some glyphs are more repatinated than others. As the SE end of the ridge in a pocket several shelters are located in a semicircle. Surrounding vegetation includes creosote plant community with much Brittlebush and Cholla. Photos are recorded separately in the rock art folders, no drawings are included in the site record or rock art folders.

Site Number – 26CK5249  Site Type – Petroglyph
Map Reference – Ireteba Peaks  Date Recorded – 1995
Time Period – Unknown  Bio-zone – Lower Sonoran
Geography – Hill  Distance to Water – 6.7
Resources – Pinyon, Large Game, Aquatic Resources  Distance to Paleo-water – n/a
Paleo-resources – n/a  Resource Ranking – High  Mobility – High

A large outcrop of basalt lies adjacent to the road on the south side. A large panel of petroglyphs, which measures about 8 ft vertically, is located on this outcrop facing the road. Surrounding vegetation includes creosote plant community. Photos are recorded separately in the rock art folders, no drawings are included in the site record or rock art folders.
A patinated basalt dyke is visible on both sides of the road. Several petroglyph panels are located on this dyke on the north side of the road at the eastern end of the dyke. A couple are at ground level while others are located higher up. Surrounding vegetation includes the creosote plant community. Photos are recorded separately in the rock art folders, no drawings are included in the site record or rock art folders.

Look for a larger than usual basalt boulder close to the horizon on the north side of the wash. Lower few feet of hillside appear to be crumbling limestone. Faint petroglyphs on this boulder are visible from wash. A second, smaller boulder, not seen from below, lies to the north of the larger boulder. Two faces, one east and one west also have faint petroglyphs. Surrounding vegetation includes creosote plant community. Photos are recorded separately in the rock art folders, no drawings are included in the site record or rock art folders.

One panel of petroglyphs was located on north side of wash where what looks like a porphyritic granite dyke touches the wash. Panel faces S/SW, is about 3 ft tall and can be easily seen as one approaches from the west. Panel is about 1/3 way up the rocky hill. A second petroglyph was located ~75 paces to the west of the main panel. It faces west on a boulder in the middle of the wash. Surrounding vegetation includes the transition between creosote and yucca communities. Photos are recorded separately in the rock art folders, no drawings were included in the site record or rock art folders.
Small lithic scatter measuring 14 m by 11m and containing a white chert core/biface, a very crude quartzite uniface, and four possibly retouched quartzite chunks. Site is located immediately south of a very large, steep walled arroyo on the west facing slope of the New York Mountains. Surrounding vegetation includes Silver cholla, black brush, pencil cholla, and Mohave yucca. No photos or drawings were included in the site form or report. All artifacts collected.

**Site Number** – 26CK5617  **Site Type** – Artifact Scatter
**Map Reference** – Crescent Peak  **Date Recorded** – 1990
**Time Period** – Unknown  **Bio-zone** – Upper Sonoran
**Geography** – Hill  **Distance to Water** – 1.6
**Resources** – Pinyon, Large Game  **Mobility** – Low
**Distance to Paleo-water** – n/a  **Paleo-resources** – n/a
**Resource Ranking** – High

Site consists of a sparse historic trash scatter overlying a sparse prehistoric lithic scatter. Historic component is roughly 350 m by 100 m and is composed of fragments of broken Mason jars, a crumpled hole-in-cap can, a condensed milk can matchstick filler measuring 2 15/16 by inches dated to 1917-1929 by Sidonis, and one sheet metal and wire nail fastener. Modern looking sanitary cans also noted. Prehistoric component also measures 350 m by 100 m and includes a white quartzite uniface, a white quartzite Stage II biface end piece, one core and several (~20?) dubious flakes of white quartzite. This material has very poor concoidal fracture and the flakes do not display all the diagnostic characteristics of a flake. Site is located on a gently northwest sloping stream terrace between two ephemeral washes. Surrounding vegetation includes Blackbrush, ephedra, silver cholla, and Mohave yucca. Rough drawing of uniface and biface included in site form.

**Site Number** – 26CK5622  **Site Type** – Lithic Scatter
**Map Reference** – Hopps Well  **Date Recorded** – 1990
**Time Period** – Unknown  **Bio-zone** – Lower Sonoran
**Geography** – Valley  **Distance to Water** – 8.6
**Resources** – Obsidian, Small Game, Grasses  **Mobility** – High
**Distance to Paleo-water** – n/a  **Paleo-resources** – n/a
**Resource Ranking** – Low

Lithic reduction station. Two rhyolite boulders have been reduced in place leaving a scatter consisting of 14 flakes in an area 10 by 20 m. Eight decortication and large interior flakes from a fine-grained pink rhyolite boulder. Six decortication and large interior flakes from a second more highly silicified boulder also noted. The site is located on an east facing alluvial fan in Piute Valley immediately east of the New York Mountains and north of the Castle Mountains. Surrounding vegetation includes Mohave yucca, cholla, black brush, and xeric grasses. No photos or drawings given in either the site form or report. Collections were made.

**Site Number** – 26CK5968  **Site Type** – Quarry
**Map Reference** – Fourth of July Mountain  **Date Recorded** – 2000
**Time Period** – Unknown  **Bio-zone** – Lower Sonoran
**Geography** – Hill  **Distance to Water** – 5.6
**Resources** – Lithic, Small Game, Grasses  **Mobility** – High
**Distance to Paleo-water** – n/a  **Paleo-resources** – n/a
**Resource Ranking** – Low

Site consists of a widespread rhyolitic toolstone procurement assaying, and primary reduction activity area. Numerous lithic reduction concentrations are present against a background of general scattering of lithic debitage. Observed tools include a broken rhyolite biface fragment and a rhyolitic perform.
Chronologically diagnostic artifacts were not observed. Site is located on a ridge. Low resolution photos of site and artifacts are included in site form.

Site Number – 26CK5969
Map Reference – Fourth of July Mountain
Time Period – Unknown
Geography – Mountain
Resources – Small Game, Grasses
Distance to Paleo-water – n/a
Paleo-resources – n/a
Resource Ranking – Low

Site Type – Rockshelter
Date Recorded – 2000
Bio-zone – Lower Sonoran
Distance to Water – 7.1

Site is a small shelter in the welded tuff rock facing northeast. It measures 3 meters across the dripline, 1.1 meters deep, and .8 meters high. Artifacts include two complete portable milling stones, four milling stone fragments, and one mano of vesicular basalt. No other artifacts noted. Photos of site and artifacts included in site form. Surrounding vegetation includes creosote.

Site Number – 26CK5970
Map Reference – Fourth of July Mountain
Time Period – Unknown
Geography – Mountain
Resources – Small Game, Grasses
Distance to Paleo-water – n/a
Paleo-resources – n/a
Resource Ranking – Low

Site Type – Rockshelter
Date Recorded – 2000
Bio-zone – Lower Sonoran
Distance to Water – 1.6

Site is a small, north facing rockshelter that measures 1.5 m wide, 1.5 m deep, and .75 m high at the dripline. Rockshelter is partially surrounded by a low wall of welded tuff rocks arranged in a semi-circle. A small rock-surrounded cache is situated approximately 30 m northwest and downslope of the shelter on a separate bench. Noted artifacts include a portable milling rock along with a rhyolite hammerstone. No other artifacts noted. Site is located at the headwater of a major drainage with the surrounding vegetation being primarily creosote. Photos of site and artifact included in site form.

Site descriptions taken from site forms provided by the WBR surveys

Site Number – 1RB051507
Map Reference – Spirit Mountain NW
Time Period – Unknown
Geography – Drainage
Resources – Aquatic Resources
Distance to Paleo-water – n/a
Paleo-resources – n/a
Resource Ranking – High

Site Type – Lithic Scatter
Date Recorded – 2007
Bio-zone – Lake Shore
Distance to Water – 1

Small lithic scatter located on an arroyo ridge near the modern day shoreline of Lake Mohave. Site consists of six orange ccs flakes and three red quartzite lithic flakes. Primary and secondary flakes are the representative reduction stages. There is also one quartzite hammerstone on the site. This is likely a primary reduction site. Creosote and desert lakeshore community.

Site Number – 1LF051607
Map Reference – Spirit Mountain NW
Time Period – Unknown
Geography – Drainage
Resources – Aquatic Resources, Mesquite
Distance to Paleo-water – n/a
Paleo-resources – n/a

Site Type – Lithic Scatter
Date Recorded – 2007
Bio-zone – Lake Shore
Distance to Water – .8

99
**Resource Ranking – High**  
**Mobility – High**

Small lithic scatter on top of a shallow arroyo crest. Soil is gravelly desert pavement. A lack of identifying features will make this site hard to relocate without accurate coordinates. The remoteness of the site and low profile should keep it untouched. Possible butchering site. Expedient tool creation or quarry site possible as well. One red chert utilized flake and two red chert secondary flakes. Creosote and desert lakeshore community.

<table>
<thead>
<tr>
<th>Site Number – 1LF051807</th>
<th>Site Type – Lithic Scatter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Map Reference – Spirit Mountain NW</td>
<td>Date Recorded – 2007</td>
</tr>
<tr>
<td>Time Period – Unknown</td>
<td>Bio-zone – Lake Shore</td>
</tr>
<tr>
<td>Geography – Drainage</td>
<td>Distance to Water – .1</td>
</tr>
<tr>
<td>Resources – Aquatic Resources, Mesquite</td>
<td></td>
</tr>
<tr>
<td>Distance to Paleo-water – n/a</td>
<td></td>
</tr>
<tr>
<td>Paleo-resources – n/a</td>
<td></td>
</tr>
<tr>
<td>Resource Ranking – High</td>
<td>Mobility – High</td>
</tr>
</tbody>
</table>

Lithic scatter on a ridge overlooking a large wash and a cove of modern Lake Mohave. The lithic scatter is in the halfway portion a finger of the ridge. Site is directly to the east of 1MP051807, just across the drainage. White chert, white chalcedony, tan quartzite, white ccs flakes present with primary reduction mostly represented. Creosote and desert lakeshore community.

<table>
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<tr>
<td>Paleo-resources – n/a</td>
<td></td>
</tr>
<tr>
<td>Resource Ranking – High</td>
<td>Mobility – Low</td>
</tr>
</tbody>
</table>

Large lithic scatter on a north/south trending ridgeline. Site overlooks a heavily vegetated cove and a significant drainage to the south. Several loci of various materials, most likely a quarry site. Quarrying may have taken place at this location while habitation/foraging may have taken place closer to the rivers shoreline. This site appears to be the southern end of a large lithic procurement area marked by desert pavement. Flakes are mostly decortication and secondary reduction stage of many materials. Creosote and desert lakeshore community.

<table>
<thead>
<tr>
<th>Site Number – 1LF052107</th>
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</thead>
<tbody>
<tr>
<td>Map Reference – Spirit Mountain NW</td>
<td>Date Recorded – 2007</td>
</tr>
<tr>
<td>Time Period – Unknown</td>
<td>Bio-zone – Lake Shore</td>
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<tr>
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<td></td>
</tr>
<tr>
<td>Paleo-resources – n/a</td>
<td></td>
</tr>
<tr>
<td>Resource Ranking – High</td>
<td>Mobility – High</td>
</tr>
</tbody>
</table>

Lithic scatter on a hill crest overlooking Lake Mohave and a red blowart of bedrock. This is probably a quarry site, there are many trails intersecting the area. These trails may be modern visitation, aboriginal trails, burro activity, or any combination of all four. The lithics (~21) are mainly primary flakes of ccs and other materials. No tools or features were discovered. Creosote and desert lakeshore community.

<table>
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<tbody>
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</tr>
<tr>
<td>Geography – Drainage</td>
<td>Distance to Water – .1</td>
</tr>
</tbody>
</table>
On a hillside there are many décort flakes of varying materials. There is also a small collection of possibly historic brown glass. Site lies below a red blowout of bedrock material. Possibly another quarry site near the Colorado River consisting of ~60 flakes mainly consisting of primary reduction stage. 1 white chert utilized flake and 1 white chert scraper also found on site. Creosote and desert pavement community.

Site Number – 1RB052307  Site Type – Lithic Scatter
Map Reference – McCullough Mountain  Date Recorded – 2007
Time Period – Unknown  Bio-zone – Upper Sonoran
Geography – Mountain  Distance to Water – 2.7
Resources – Pinyon, Large Game, Lithic
Distance to Paleo-water – n/a
Paleo-resources – n/a
Resource Ranking – High  Mobility – High

This appears to be a small lithic scatter in a highly rich resource area. The entire range is covered in pinyon and juniper as well as prickley pear, all of which are sought after resources for prehistoric populations. Large game is also a likely encounter in this region, more so then the valley. This site is made up of quartzite material scattered on a hillside overlooking a relatively uncovered area. The flakes are mainly primary reduction stage, which may simply indicate a testing of the material. The cortex of the material does have a red chert appearance.

Site Number – 1MP052407  Site Type – Lithic Scatter
Map Reference – Highland Spring  Date Recorded – 2007
Time Period – Unknown  Bio-zone – Lower Sonoran
Geography – Valley  Distance to Water – 7.6
Resources – Joshua, Grasses, Small Game
Distance to Paleo-water – n/a
Paleo-resources – n/a
Resource Ranking – Low  Mobility – Low

White quartzite lithic scatter in a Joshua tree forest. These three flakes are in a 1x1 meter area. Likely a quartzite material testing area. Maybe some portion of the core or the core itself was taken for tool manufacturing. No formal tools or features on site. Joshua Tree and shadscale community.

Site Number – 1CB052907  Site Type – Lithic Scatter
Map Reference – Hopps Well  Date Recorded – 2007
Time Period – Unknown  Bio-zone – Lower Sonoran
Geography – Drainage  Distance to Water – 6.7
Resources – Obsidian, Small Game, Grasses, Joshua Trees
Distance to Paleo-water – n/a
Paleo-resources – n/a
Resource Ranking – Low  Mobility – High

This is a small multi-material lithic scatter made up of four brown chert, one obsidian and one purple tuff flakes. The flakes are primary and secondary reduction stage. The site is located on a ridge overlooking a good size wash across from a guzzler. The different materials suggest multiple visits, although all of them short-lived. Many resources such as obsidian, quail, and vegetal resources could be drawing foragers. No tools or features located on site. The presence of a guzzler suggests no perennial water sources are in the region. Creosote shadscale community.

Site Number – 1LF053007  Site Type – Rockshelter
Map Reference – Searchlight SE  Date Recorded – 2007
This is a small rockshelter in the Newberry Mountain Range, just north of an OHV road, which it is visible from. It measures fifteen meters wide by two meters tall and no more than two meters deep. There is one possible granitic metate and one small dark brown ccs secondary flake. The western half of the shelter has a soot layer of the ceiling and burrowing rodents seem to have brought up charcoal. No subsurface testing was conducted by the team. It is listed on the HRC basemaps as a mining cave/shelter (temporary) but does not appear to have been recorded. This is likely a prehistoric shelter as well. No historic evidence was discovered. Creosote shadscale community.
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Sontz, Ann  

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Stewart, Kenneth

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Taylor, Walter

Vita-Finzi, C., E. S. Higg.

Warren, Claude

Warren, Claude and Robert Crabtree

Whitley, David

Whitley, David
Yoder, David

Zeneah, David and Steven Simms
Christopher A. Brosman

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Education
2012 M.A. Department of Anthropology and Ethnic Studies, University of Nevada Las Vegas.

2005 B.A. Department of Anthropology and Ethnic Studies, University of Nevada Las Vegas

Research Interests
Great Basin and Southwest Archaeology; Paleo-climatic adaptations in hunter-gatherer populations. Landscape Archaeology. Pit-house Village Settlements in Mimbres, Mogollon populations.

Current Occupation
April 2012 – Current.
Archeology Technician (GS – 07) Bighorn Canyon National Recreation Area.
Supervisor – Cindy Norum. (307) 548-5409

Professional Employment
March 2010 – April 2012.

Crew Chief and in 2009 Assistant Field Director for the Harris site excavations in Mimbres New Mexico under Dr. Barbara Roth, UNLV.

Archaeological Technician, Desert Research Institute. Las Vegas, NV. Work sites included the Yucca Mountain project, Nevada Test Site, Dugway Proving Ground in Northern Utah and The Lincoln County (Nevada) Power District. Intermittent field work in combination with archival research and other office duties.
January 2008 – May 2008
Intern, Harry Reid Center for Environmental Studies. This internship was an introduction to Section 106 compliance, site file curation, literature reviews and office management with some fieldwork. Duties also included: Curation, data entry and artifact transportation.

August 2006 – August 2008
Teaching Assistant, University Nevada Las Vegas. I served four semesters as a teaching assistant for several classes and professors. These classes included Introduction to Physical Anthropology, varied Archaeology classes and Introduction to Linguistics. This job involved lecture preparation and administration, proctoring exams, and grading papers and exams.

2005 – 2008
Archaeological Technician/Crew Chief, University of Nevada Las Vegas and the Public Land Institute. Walking Box Ranch Project, Piute Valley, Southern Nevada. This was an extended project to help mitigate and direct development for Searchlight, NV. A satellite campus for UNLV was proposed and the beginning plans were developed by this multi-disciplinary project.

1998 – 2002
United States Marine Corps, Enlisted (Corporal) Heavy Equipment Mechanic, Publications Non-Commissioned Officer and Tool Room NCO.

Teaching Experience
Introduction to Physical Anthropology, University of Nevada Las Vegas. Teaching Assistant under Dr. Deb Martin. Lecture preparation and grading. (2006 – 2008).

Introduction to Linguistic Anthropology, University of Nevada Las Vegas. Teaching Assistant under Dr. Heidi Swank. Assignment and exam grading. (Fall of 2007)


Professional Development
2006 – Hands on and professional training with ArcGIS 9 and 10, Trimble systems and associated software i.e. ArcPad and Pathfinder, still ongoing and constantly being updated to the newer programs.

2007 - Introduction to Geographic Information Systems. University of Nevada Las Vegas. (Spring)

2010 – First Responder Certification (National), Death Valley National Park.
2011 – Resource Advisor Training, National Park Service

2011 – NEPA training, Death Valley National Park Service

2011 - Wildland Firefighter Type II, National Park Service

**Presentations**

**Organizations**
Anthropology Society, University of Nevada Las Vegas (2007).