Chapter 8

Human Interactions With the Environment Through Time in Southern Nevada

Carol Raish

Introduction

Southern Nevada is rich in irreplaceable cultural resources that include archeological remains, historic sites, cultural landscapes, and other areas of significance to Native Americans and other cultural groups. The Southern Nevada Agency Partnership (SNAP) seeks to provide for responsible use of Southern Nevada's lands in a manner that preserves heritage resources and promotes an understanding of human interaction with the landscape. This chapter addresses Sub-goal 2.1 in the SNAP Science Research Strategy which is to develop an understanding of human interactions with the environment through time (table 1.3; Turner and others 2009). A review of human occupation in the region as derived from southern Nevada's cultural resources is presented with a focus on the following questions.

1. Did humans use varying environmental zones through time and how were these zones used?
2. What influences did humans have on the landscape through history?
3. Did changes in the environment influence human use and occupation of the landscape over time?
4. Did human interaction with other groups influence the environment or resource utilization? and
5. Did resource use vary through time?

The depth with which these questions can be discussed is dependent on the nature and extent of archeological survey coverage of the region (fig. 8.1) and the nature of the resources themselves. Gaps in knowledge and implications for regional management are reviewed in final sections of this chapter.

The area shows wide-ranging use of resources and environmental zones over time. The focus of this overview is on the time periods primarily informed by archeological sources, from roughly 11,950 BP (10,000 BC) to 100 BP (AD 1850). This time period encompasses the end of the Pleistocene/beginning of the Holocene until occupation by Euro-Americans. There is evidence, although scant, of human occupation of southern Nevada at the end of the Pleistocene. Groups producing these remains are viewed as nomadic hunters and scavengers of large fauna, who also undoubtedly utilized both small game and plant resources (Harper and others 2006). The Early Holocene represents a broad spectrum of adaptations to changing climatic conditions that were affecting Holocene plant and animal resources (Ezzo and Majewski 1996). The beginnings of agriculture, with continued important exploitation of wild resources and seasonal movement, are indicated prior to 2350 BP (400 BC) and increase in intensity until ca. 750/650 BP (AD 1200/1300). With the decline of agriculture as a major subsistence practice in the area around 750/650 BP (AD 1200/1300), archeological remains reflect

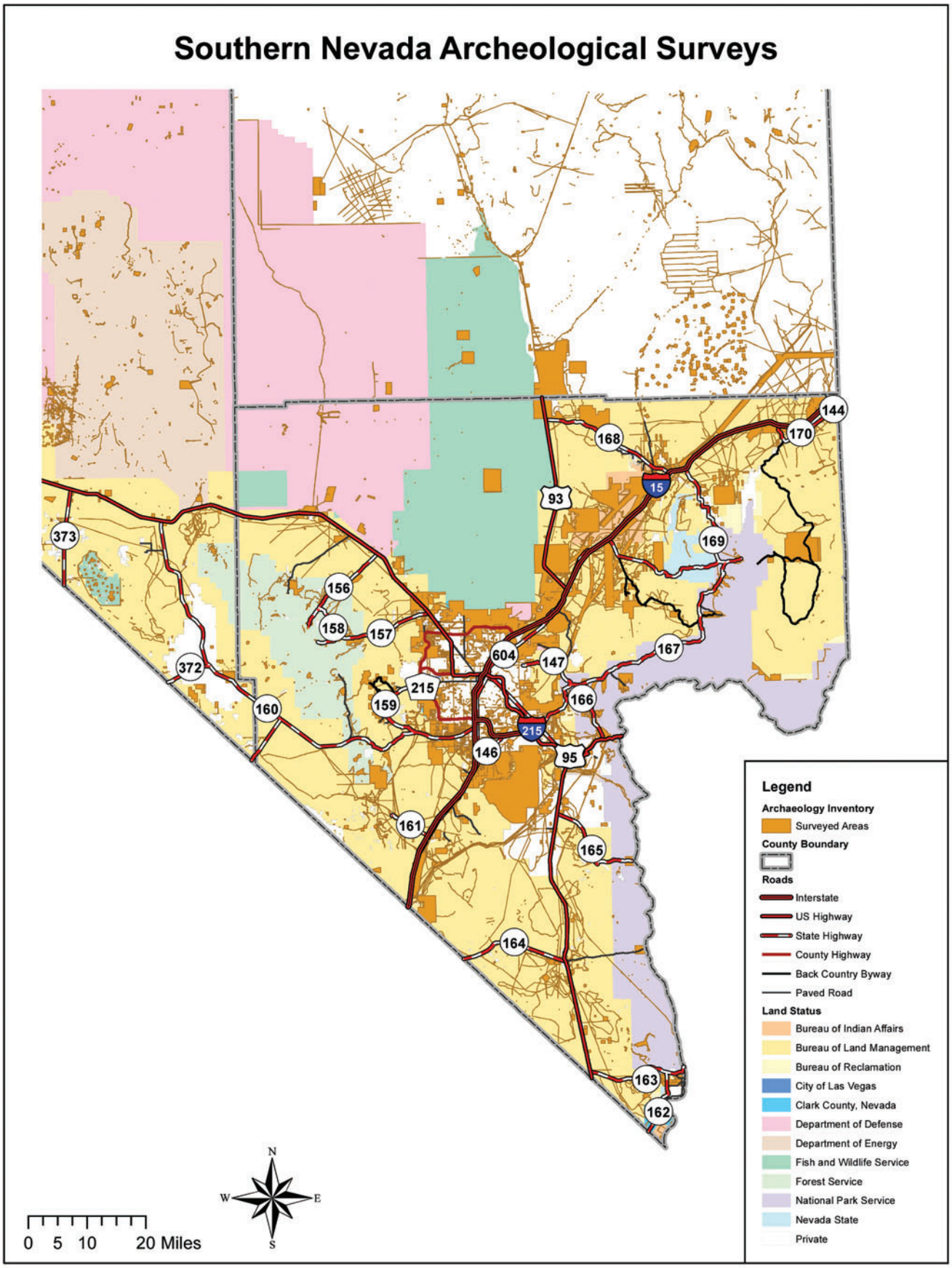


Figure 8.1—Map of southern Nevada archeological survey coverage.

a return to a more nomadic foraging way of life that was supplemented by smaller-scale agriculture (Ahlstrom and Roberts 2012; Altschul and Fairley 1989; Ezzo and Majewski 1996). This more mobile adaptation is associated with the Southern Paiute, who were residents of the region at European contact and who occupy southern Nevada today.

Focal Area

The area under study is mainly centered in southern Nevada's Clark County but lands in Lincoln and Nye Counties also are included, as well as a small portion of Mohave County, Arizona (fig. 1.1). The geographic focus includes areas surrounding Lake Mead, the Muddy and Virgin Rivers, and the Las Vegas Valley. It extends west to Sloan Canyon National Conservation Area, the Spring Mountains National Recreation Area, and Ash Meadows National Wildlife Refuge. Physiographic features important for human occupation in and surrounding the location include the Muddy and Virgin Mountains, Moapa and Virgin Valleys, the Valley of Fire, the Muddy and Virgin Rivers, the Las Vegas Valley, and the Spring Mountains (figs. 8.2 and 8.3). These lands encompass nine distinct ecosystem types and support multiple species of management concern (tables 1.1 and 1.2).

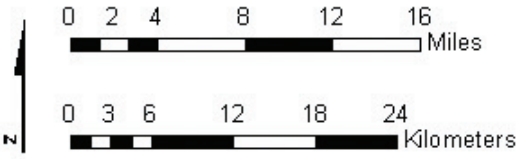
Culture History and Chronology

A variety of terms have been used to describe the cultural chronology of the region. Ezzo and Majewski (1996) list some of the more important designations and their associated time periods. We do not present all prior chronological schemes here, but correlate each sequence with the most common previously used names for the time period. In addition, different chronological schemes are currently used for the lands surrounding the Moapa and Virgin River Valleys, the Las Vegas Valley, and the Ash Meadows area of the Northern Mojave. These differences are based both in research history and in material culture variations. Thus, each of these geographic areas is discussed separately with the appropriate chronological terms (tables 8.1 and 8.2).

Paleo-Archaic 11,950-7,450 BP (10,000-5500 BC)

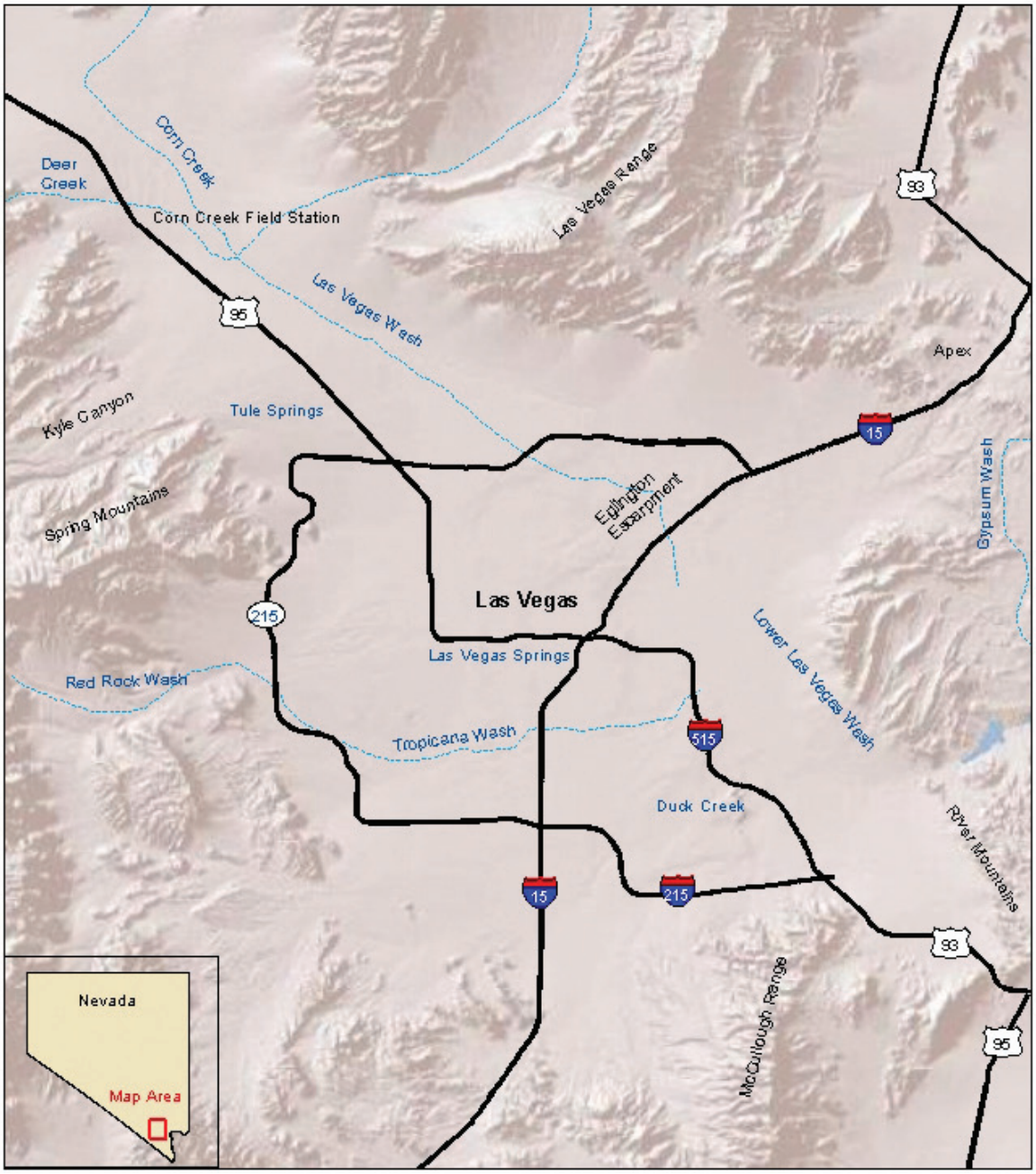
For this period and for the Middle and Late Archaic periods, the Las Vegas Valley and Northern Mojave area are included in the discussion owing to a similar chronological sequence (Ahlstrom and Roberts 2008; Roberts and Ahlstrom 2007). Diagnostic artifact overlap between the Paleo-Indian and Early Archaic has led Great Basin archeologists to designate the period Paleo-Archaic, as used here (Grayson 1993; Warren and Crabtree 1986). This period encompasses the end of the Pleistocene epoch and the first several thousand years of the Holocene (Harper and others 2006). It includes the earliest known human occupations in southern Nevada and also is referred to as the Lake Mojave period (Ezzo and Majewski 1996).

There has been considerable paleoenvironmental research in southern Nevada and the Great Basin that is relevant to this time period. These studies have derived data from packrat middens and from paleohydrological research on spring deposits and pluvial lake basins. Information from this research indicates that climatic changes from a moister, temperate regime to current climatic conditions began around 13,950 BP (roughly 12,000 BC) with deglaciation of the mountains within the area. A continuing trend toward aridity and drying of pluvial lakes is indicative of southern Nevada's climate in the Holocene, with an increase in succulents in lower environments and a movement of woodlands to higher elevations (Ezzo 1996).



For Informational Use Only

Figure 8.2—Map of the Moapa and Virgin Valleys.



For Informational Use Only

Figure 8.3—Map of the Las Vegas Valley.

Table 8.1—Chronological sequence for the Moapa and Virgin River Valleys (adapted from Ahlstrom and Roberts 2012[1]; Ezzo 1995[2]; Harper and others 2006[3]; Lyneis 2012[4]). Question marks indicate uncertain date range.

Period	Subperiod	Date range	Source
Paleo-Archaic		11,950-7450 BP (10,000-5500 BC)	3
	Paleo-Indian	11,450-10,950 BP (9500-9000 BC)	2, 3
	Early Archaic	11,150-7450 BP (9200-5500 BC	3
Archaic	Middle Archaic	7450-4950 BP (5500-3000 BC)	3
	Late Archaic	4950-2350 (?) BP (3000-400 (?) BC)	3
	Late Archaic/Early Agricultural	2350 (?)-1450 BP (400 (?) BC-AD 500)	3
Virgin Branch		1600-750/650 BP (AD 350-1200/1300)	1, 3, 4
	Moapa phase	1600-1400 BP (AD 350-550)	3
	Muddy River phase	1400-1200 BP (AD 550-750)	3
	Lost City phase	1200-800 BP (AD 750-1150)	3
	Mesa House phase	800-750/650 BP (AD 1150-1200/1300)	1, 3, 4
Late Prehistoric and Protohistoric		750/650-150 BP (AD 1200/1300-1800)	3, 4
Historical		150-0 BP (AD 1800-1950)3	

Table 8.2—Chronological sequence for the Las Vegas Valley (adapted from Roberts and Ahlstrom 2007).

Period	Subperiod	Date range
Paleo-Archaic		11,450-7450 BP (9500-5500 BC)
	Paleo-Indian	11,450-10,950 BP (9500-9000 BC)
	Early Archaic	11,150-7450 BP (9200-5500 BC)
Archaic	Middle	7,450-4950 BP (5500-3000 BC)
	Late	4950-1450 BP (3000 BC-AD 500)
	Terminal Late	1949-1450 BP (AD 1-500)
Ceramic	Early	1450-950 BP (AD 500-1000)
	Middle	950-450 BP (AD 1000-1500)
	Late	450-100 BP (AD 1500-1850)
Historical	Early	450-100 BP (AD 1500-1850)
	Late	100-50 BP (AD 1850-1900)

The majority of knowledge concerning the Paleo-Archaic comes from projectile points that are often found as isolated occurrences and that provide little information about lifeways in the Great Basin during this time. Evidence of occupation in southern Nevada itself is scant. Two artifact traditions are distinguished in the area during the period: fluted points, such as Clovis, and stemmed points, such as Lake Mojave (Grayson 1993; Harper and others 2006).

Clovis points are representative of the Paleo-Indian occupation found across the Americas. The points were used with the thrusting spear or atlatl (spear-thrower) and are generally considered to indicate the activities of nomadic groups that subsisted by hunting and scavenging Pleistocene megafauna, represented by mammoth, camel, horse, and bison. Paleo-Indian sites include camps, kill and butchering locations, and isolated projectile points (Cordell 1997; Harper and others 2006; Roth 1993). Clovis points are rare in the study area and are usually found in restricted contexts confined to lowland valleys and lake shores. No Clovis points have been found directly associated with Pleistocene megafauna in southern Nevada, nor have they been found in stratified, well-dated contexts (Roth 2012). The distribution of sites with these fluted points indicates that Paleo-Indian use of the area was sporadic but patterned, suggesting small-scale hunting expeditions into the area by highly mobile groups following game corridors, such as washes and valleys (Jones and Edwards 1994; Roth 2012).

The Great Basin Stemmed point series was defined at Pleistocene Lake Mojave, California (60 to 70 miles south of Ash Meadows National Wildlife Refuge), with sites having Lake Mojave projectile points and Silver Lake projectile points, as well as artifacts referred to as crescents (Grayson 1993; Warren and Crabtree 1986). The culture dates to between 11,150 and 7,450 BP (roughly 9200 to 5500 BC), which overlaps both the Paleo-Indian and Early Archaic periods. Stemmed points were first identified in lakeshore environments leading researchers to focus on marsh or lacustrine locales and subsistence resources. However, more recent work has identified stemmed points in a variety of other environments leading to the view that the makers of these points used additional plant and animal resources from various locations (Harper and others 2006; Roth 2012). In general, Paleo-Archaic sites do not contain identifiable features or ground stone, indicating an emphasis on hunting and gathering plant resources that did not require heavy grinding or parching (Roth 2012). The scarcity of Paleo-Archaic sites in southern Nevada and elsewhere undoubtedly reflects the depth at which these sites may be buried, the lack of intact, exposed surfaces, the nature and mobility of the subsistence adaptation, and the fact that Paleo-Archaic sites may not be recognized without diagnostic projectile points (Cordell 1997).

Middle Archaic 7450-4950 BP (5500-3000 BC)

The Archaic Period represents a broad spectrum adaptation to Holocene animal and plant resources that derived from environmental conditions similar to those of the present. The Archaic in North America seems to represent localized cultural traditions that developed out of Paleo-Indian traditions. Tools came to be more diverse as groups adapted to the mosaic of environments resulting from the climate transition from the Pleistocene to the Holocene. Movement between ecological zones for resource procurement undoubtedly occurred (Ezzo and Majewski 1996; Fowler and Madsen 1986). The Middle Archaic adaptation centers on generalized foraging and a broad spectrum economy (Basgall 2000). Middle Archaic sites are generally small with sparse artifact assemblages indicating short-term use by small, mobile groups (Lyneis 1982). During these times, plant procurement and processing tools, storage cists, and snares and traps for small game came into use. Artifacts of the Middle and Late Archaic include large, diagnostic projectile points attached to darts for use with the atlatl; thus, the Middle Archaic is also referred to as the Pinto period after the Pinto point (Ezzo and Majewski 1995; Warren and Crabtree 1986).

Middle Archaic sites and components are known from the Tule Springs area, the Eglington Escarpment, along Duck Creek, and at the Corn Creek Dunes site in the Las Vegas Valley. Pinto points also are reported from lithic scatter sites in the Moapa area (Ezzo and Majewski 1996). Middle Archaic sites also are known from the Ash

Meadows area in the Amargosa Valley, a relatively lush valley with a variety of wild resources including marsh resources, mesquite beans, and piñon nuts (Roth 2012). Site types include isolated projectile points; rockshelters; larger artifact scatters presumably representing re-use over a long period of time; lithic scatters; and fire-cracked rock generally considered indicative of roasting pits.

Pinto period sites in southern Nevada seem to be located near water sources such as drainages and remnant pluvial lakes. Unusually arid conditions are thought to have driven the settlement pattern (Ezzo and Majewski 1996). The toolkit contains items for hunting and processing game as well as milling implements indicating some reliance on plant food sources requiring processing. Milling stones and mortars increase throughout the Archaic. Sites with features and ground stone are much more common than during the Paleo-Archaic, suggesting a shift toward increased processing activities. These sites are widespread and occur in multiple ecological zones, showing the growing importance of plant foods (Lyneis 1982; Roth 2012). Sites with features and ground stone in the piñon-juniper zone indicate piñon use during this period (Roth 2012).

Late Archaic 4950-2350 BP (?) (3000-400 BC ?)

The question marks in the date range indicate that the date range is uncertain. The Late Archaic, or Gypsum period (table 8.1), is discussed as having a climatic shift toward greater precipitation and an increased diversity of plant resources available to southern Nevada groups. Thus, the period shows a continuing, increased emphasis on both plant and hard-seed processing and a greater occurrence of milling implements on Gypsum sites (Ezzo and Majewski 1996). Mortars and pestles indicate mesquite bean processing. Greater use of valley floors also may indicate a growing importance of mesquite in the diet, although it was not a staple resource until later periods (Roth 2012). Piñon was still exploited in the uplands, and one site in the Gold Butte area of the eastern portion of the project area also has agave roasting pits indicating the use of agave during the period. In addition, hunting of both large mammals (such as big horn sheep) and small mammals appears to have played an important role in resource procurement during the period (Harper and others 2006).

Gypsum Cave, the type site for the Gypsum Point, is located east of the northeastern edge of the Las Vegas Valley (Ezzo and Majewski 1995; Harrington 193; Roberts and Ahlstrom 2007) and has Late Archaic radiocarbon dates. Gypsum period components also occur in the Corn Creek Dunes area, along Duck Creek, in the southeastern corner of the Las Vegas Valley (Brooks and others 1975), in the Ash Meadows region, the Yucca Mountain/Forty Mile Wash area and around the Muddy and Virgin Rivers (Roth 2012). Late Archaic sites include caves, rockshelters, campsites, roasting pits, hearths, and scatters of flaked and ground stone. Site locations indicate that groups continued a mobile strategy seasonally exploiting ecological zones from a wide range of elevations and landforms (Ezzo and Majewski 1996; Roth 2012). The Gypsum period is also the time when long-distance trade goods, such as marine shell from California, appeared in the region (Lyneis 1982). Ceremonial sites appear during the time period indicated by caves used for ritual purposes, rock art, and specialized artifacts such as intentionally broken and painted dart fragments. Split twig figurines occur in the region (Fowler and others 1973; Roth 2012).

Sites of the Middle and Late Archaic can be difficult to identify because the generally small, mobile groups who produced them tended to leave a scanty and dispersed occupation record. In addition, and similar to Paleo-Archaic archeological remains, identification is also difficult if no diagnostic projectile points are present. Thus, many Archaic sites may be misclassified (Lyneis 1982). These problems apply most particularly to surface lithic scatters identified during archeological surveys.

Late Archaic/Early Agricultural 2350 (?)-1450 BP (400 (?) BC-AD 500)

The question marks in the date range indicate that the date range is uncertain. From this point on, Las Vegas Valley and Mojave Desert research use a different chronological scheme and are discussed separately in following sections. The Early Agricultural encompasses the Lowland Virgin Moapa phase 1600-1400 BP (AD 350-550), which corresponds to the Basketmatker II (BM II) and the first half of the BM III in the Pecos Classification used on the Colorado Plateau and in the Four Corners area. These time periods represent the beginning of the Virgin Branch Ancestral Puebloan [(Virgin Anasazi), referred to as the Western Virgin Puebloan archaeological culture by Ahlstrom and Roberts (2012)]. This occupation is located in portions of northern Arizona, southwestern Utah, and southern Nevada (Ezzo and Majewski 1996). The Lowland Virgin area (Lyneis 1995) lies at the western edge of the Virgin Branch occupation, comprising the Virgin and Muddy River Valleys and surrounding areas. On the east, the Virgin Branch is bordered by the Kayenta Ancestral Puebloan. On the north, west, and south mobile groups bordered the region (Ezzo and Majewski 1996).

The Early Agricultural and earlier portions of the Moapa phase, like BM II, lack ceramics and retain use of the atlatl as reflected by larger, corner and side-notched dart points (Lyneis 1995). Pit structures and rockshelters with semi-subterranean storage cists are associated with BM II and the Early Agricultural in the area. Pit structures are found in groupings of one to five with interior hearths and clay floors. These groupings generally lack separate storage features, which may suggest seasonal or temporary use (Clark 1984; Ezzo and Majewski 1996; Lyneis 1995; Shutler 1961). There is substantial evidence of maize farming during the period with materials coming from the Upper and Lower Moapa Valleys and from the uplands east of the Virgin River Valley. This evidence is derived from radiocarbon dates obtained directly from maize samples indicating the presence of maize horticulture by the AD 200s and possibly in the AD 100s. Remains of beans and cucurbits (squash/pumpkin/gourd) are also present (Ahlstrom and Roberts 2012).

Studies indicate mobility in the Moapa phase with small groups probably occupying sites on a temporary and/or seasonal basis. Access to both upland resources and farm land in the valleys is shown by site locations. This indicates a weaker commitment to agriculture than in later times (Myhrer 1986). Wild plant species maintained an important role in subsistence as did hunted game (Lyneis 1995).

Muddy River Phase 1400-1200 BP (AD 550-750)

The Muddy River phase corresponds roughly to the latter portions of BM III with many of the same diagnostic attributes. Grayware ceramics, the bow and arrow, two-handed manos, and basin and slab metates (grinding implements) appear in the archeological record during this time period. Small, stemmed and notched points suggest use of the bow and arrow (Lyneis 1995; Shutler 1961).

Both pit structures and Basketmaker components have been identified from this period. Fourteen pit structures from four different sites in the Upper and Lower Moapa Valley were excavated by Harrington and associates (Shutler 1961). Also, 17 sites were found to contain Basketmaker components in the Moapa Valley, indicating that sites tended to be evenly distributed throughout the valley (Clark 1984). The excavated pit structures varied in size with some designated as habitations, while other, smaller ones are considered to be storage structures. The information obtained from these studies indicates that pit structures usually occurred in small groups of five or fewer as in the previous phase, had plastered floors, and were generally circular in shape with some

having hearths (Ahlstrom and Roberts 2012; Ezzo and Majewski 1996). Two pit structures excavated on Black Dog Mesa in the Upper Moapa Valley date to the BM III and possibly the later Pueblo I Lost City Phase (Ahlstrom and Roberts 2012). Both structures provided botanical evidence for the cultivation of maize and cucurbits, as well as the use of amaranth and tansy mustard.

Pit structures were located on mesas above the valley and on low knolls in the valley, suggesting that farming of the valley floor agricultural land was becoming more important (Shutler 1961). The observation that sites were evenly distributed throughout the valley (although the best agricultural land is in the lower portion of the valley) indicates that foraging and use of a wide range of ecological zones remained important during the phase (Clark 1984). Upland resources such as agave were used throughout the period (Ahlstrom and Roberts 2012). The settlement pattern and resource use were not significantly different from that of the previous phase. Interaction with other groups is demonstrated by ceramics presumably imported from areas to the east (Lyneis 1992b).

Lost City Phase 1200-800 BP (AD 750-1150)

The Virgin Branch Lost City phase corresponds to Pueblo I-II of the Pecos classification. During this phase the Virgin Branch population peaked and expanded into the Las Vegas Valley. Settlements became larger and surface structures appeared during the later portions of the phase (Harper and others 2006; Lyneis 1995). The technological changes of the prior phase continued with increased ceramic variation in both imported and locally produced varieties. Increases in ceramics and ground stone milling implements demonstrate an increasing emphasis on agriculture (Myhrer 1989).

Habitation sites tended to be located on low knolls on the valley floor in proximity to agricultural land, with a greater concentration in the lower part of the Moapa Valley than in the Muddy River phase. This locational preference is considered to be another indicator of the growing importance of agriculture (Clark 1984); although upland resources, such as agave, were used throughout the period (Ahlstrom and Roberts 2012). Irrigation in the form of small diversion dams along the slow-flowing, spring-fed Muddy River is inferred during these times (Ezzo and Majewski 1996; Lyneis 1995; Shutler 1961).

Pit structures, with associated storage cists or above-ground masonry storage rooms, were used for habitation during the early portion of the phase (Lyneis 1995). The storage cists are often arranged end-to-end in an arc, sometimes attached to the pit structure itself (Lyneis 1995). During the later portion of the phase, surface living rooms were generally placed within a curving alignment of storage rooms that defined a courtyard space shared by small groups of one or a few families.

A well-known site of the period that is located on the Muddy River in the Lower Moapa Valley is Main Ridge. The site is unusual because of its large size and capacity to house up to 100 people in a series of courtyard groups, which are as closely placed as the topography allows. Subsistence remains from the site indicate cultivation of maize, squash, and beans and exploitation of a variety of wild plants such as cattails, prickly pear cactus, amaranth, saltbush, goosefoot, tansy mustard, and grasses. Faunal remains included those of desert bighorn, rabbits and hares, birds, and desert tortoise (Harry 2008; Harry and Watson 2010). Ceramics date the site to a relatively brief period around 900 BP (AD 1050) (Lyneis 1992b). Main Ridge is described as being ideally suited for interaction with settlements along the Lower Virgin River and to the east. Non-local goods indicate interactions with other groups and include ceramics from the Kayenta and northern San Juan areas, as well as beads and shell ornaments from the south and west (Lyneis 1992b).

*Mesa House Phase 800-750/650 BP (AD 1150-1200/1300)**

Population in the Lowland Virgin area declined and the extent of occupation decreased during the Mesa House phase, which corresponds to Early PIII in the Pecos Classification (*More recent information by Lyneis (2012) discussed in Ahlstrom and Roberts (2012) has extended PIII in the area to AD 1300). By the end of this phase, the Virgin Branch cultural tradition was no longer apparent in southern Nevada (Harper and others 2006). Material culture during the phase was similar to that produced during the previous Lost City phase, especially in terms of flaked and ground stone tools. The difference between artifacts of the phases centers on ceramics with the presence of new types of decorated wares originating in the upper Virgin area and the Kayenta area to the east. Both turquoise and salt were mined and possibly traded (Ezzo and Majewski 1996; Shutler 1961). Maize, squash, and beans were cultivated and a variety of wild plants were exploited including those from upland areas. An increase in the number of projectile points during the Mesa House phase led Hayden (1930) to suggest increasing warfare during the time period.

Known sites are located in the Lower Moapa Valley and are situated on mesas or other landforms above the valley floor, which suggests a defensive location (Lyneis 1996). These include Mesa House, Three Mile Ruin, and Adam 2. Rooms are primarily surface habitation and storage structures that almost completely enclose a courtyard. Sites are considered to be larger than simple households but still relatively small. For example, of 33 structures in Mesa House's formal layout, only three to five are habitation rooms (Lyneis 1986, 1995, 1996; Shutler 1961). The available research indicates that kivas (religious/ceremonial structures) are not present in Lowland Virgin Branch occupations (Lyneis 1995).

Ezzo and Majewski (1996) discuss various views on the end of the Virgin Branch or "abandonment" in the area. Warfare with other groups moving into the region (Shutler 1961), climatic deterioration in the form of severe drought (Larson and Michaelson 1990), and collapse of Ancestral Puebloan society at the end of PII with a breakdown of links with Mexico are briefly presented. Lyneis's discussion of the topic (1992a,b, 1995, 1996) is most convincing with consideration of climatic and environmental change, demography, changes in trade networks, and assimilation or competition with the Paiute. She argues that none of the models alone is sufficient to explain the end of the Virgin Branch in the area stating that "just as for other parts of the northern Southwest, understanding the processes of abandonment and the fate of the populations remains a major challenge" (Lyneis 1995: 235).

Las Vegas Valley—Terminal Late Archaic 1949-1450 BP (AD 1-500), Ceramic Period 1450-100 BP (AD 500-1850)

North Mojave—Late Archaic to 1450 BP (AD 500), Late Prehistoric-Ceramic 1450-150 BP (AD 500-1800)

Terminal Late Archaic—The Terminal Late Archaic in the Las Vegas Valley encompasses the period during which pit structures, agriculture, and the bow and arrow came into use in the area, with the introduction of ceramics at the beginning of the following time period. Evidence of farming in the southeastern corner of the Las Vegas Valley on the bank of Las Vegas Wash has radiocarbon dated contexts that produced maize pollen or charred kernels. The earliest of the date ranges in this area are from 2050-1700 BP (100 BC-AD 250) and from 2300-2000 BP (350-50 BC) (Ahlstrom and Roberts 2012).

In the Mojave the bow and arrow appear between 1650-1450 BP (AD 300-500) (Ahlstrom 2005) with the appearance of ceramics several centuries later. Sites and components from the Las Vegas Valley include a campsite and a pit structure at the Clark County Wetlands Park in Las Vegas Wash. The site is consistent with those from the Muddy River in demonstrating use of pit structures and the bow and arrow prior to ceramics (Roberts and Ahlstrom 2007).

Ceramic Period—The Early Ceramic (1450-950 BP, AD 500-1000) corresponds to the following sequences: Patayan I, Basketmaker III and Pueblo I, and the Muddy River and early Lost City phases in the Moapa and Virgin Valleys. It also corresponds to the early portion of the Late Prehistoric-Ceramic in the Mojave sequence. Sites from this time period include pit structures, rock shelters, roasting pits, storage features, rock rings, hearths, and artifact scatters located throughout the Las Vegas Valley. Maize was grown during the period and wild plant foods, such as mesquite pods, hedgehog cactus fruit, and chenopods, remained important (Ahlstrom and Roberts 2012).

The earlier portion of the Ceramic period in the Valley features Rose Spring arrow points and prehistoric Puebloan grayware, while the later portion has Cottonwood Triangular and Desert Side-notched points with Paiute and some Tizon brownwares. In earlier times (pre-750 BP, AD 1200), these sites show more intensive, longer term use and are considered to be habitations; later sites reflect less intensive, shorter term use and are designated campsites (Roberts and Ahlstrom 2007). During the early portion of the Late Prehistoric, Ceramic from 1450-750 BP (AD 500-1200) in the Mojave Desert projectile point assemblages contain corner-notched Rose Spring and un-notched Cottonwood Triangular points, along with milling stones, manos, and mortars and pestles (Ahlstrom and Roberts 2008; Warren and Crabtree 1986).

Grayware pottery, primarily Virgin Branch, occurs more frequently on sites in central and northern portions of the Valley from Las Vegas Springs north. Buff and brownwares (Patayan, Paiute brownware, and Tizon Brown) are more prevalent on sites in the southern portion of the Las Vegas Valley. These differences suggest contacts with Patayan groups to the south along the Lower Colorado River as indicated at sites in the Duck Creek and Lower Las Vegas Wash areas. Patayan archeological remains are associated with ancestral Yuman-speaking groups, who live along the Lower Colorado today (Roberts and Ahlstrom 2007).

Sites with a predominance of grayware indicate contacts with Virgin Branch peoples to the northeast in the Moapa Valley. These contacts demonstrate routes of travel between the areas (Roberts and Ahlstrom 2007). Various sites have mixed assemblages of Patayan, Virgin Branch, and Paiute brownware pottery, indicating repeated short-term movement into the Las Vegas Valley by different groups (Seymour 1997). Conversely, the Las Vegas Valley could have had a resident population that established contacts with both Virgin Branch groups to the northeast in the Moapa and Virgin River Valleys and with groups to the south along the Colorado River (Roberts and Ahlstrom 2007). At the Corn Creek Dunes site in northern Las Vegas Valley both Great Basin Brown Ware and Pueblo utility ware (grayware) were made locally (Lyneis 2011). There is still considerable discussion and uncertainty about the cultural affiliation of some sites in the Valley and discussion over whether indigenous populations adopted or acquired outside technology or whether migrant populations moved into the area.

The ceramic data seemingly show that outside contacts in the Early Ceramic period were with the Virgin Branch area and those in the Middle and Late periods were with the Patayan area to the south along the Lower Colorado River. In the Middle Ceramic, Paiute pottery appeared in the Valley. However, there is considerable debate about the entrance of the Paiute into the valley, as well as the cultural affiliation of sites, which is discussed in a following section.

In the Northern Mojave during the early Late Prehistoric-Ceramic there is evidence of contact with Virgin Branch populations in the form of pottery that has been found across southern Nevada and into southeastern California (Warren and Crabtree 1986). These pottery sherds could represent trade or the presence of Puebloan groups foraging in the area (Warren and Crabtree 1986).

The Middle Ceramic (950-450 BP, AD 1000-1500) in the Las Vegas Valley roughly matches the Patayan II period and Pueblo II and III. In the Virgin Branch sequence the Middle Ceramic corresponds with the late Lost City and Mesa House phases up to abandonment by the Virgin Branch at roughly 750/650 BP (AD 1200/1300). The Middle Ceramic also corresponds to the Late Prehistoric-Ceramic from 750-450 BP (AD 1200-1500) in the Mojave sequence. Both Ancestral Puebloan and Patayan ceramic types often occur with equal representation on sites of this time period perhaps indicating ties to both groups (Roberts and Ahlstrom 2007). In the later part of the period, after the end of the Virgin Branch occupation of the Lowland Virgin area, Patayan and Paiute pottery become more prevalent.

Most Middle Ceramic sites are located in well-watered locales, such as near springs, and consist of pit structures, rockshelters, roasting pits, and hearths. Two apparent multi-room pueblo structures are located at the Big Spring Site toward the center of the Las Vegas Valley. Sites of the period indicate the use of both wild and domesticated resources including maize, cucurbits (squash/pumpkin/gourd), yucca fruits and pods, hedgehog cactus, and C*henopodium* or *Amaranthus* seeds. There is substantial evidence for the consumption of desert tortoise (Roberts and Ahlstrom 2007). Defining artifact characteristics of this period in the Mojave area include continuing use of Cottonwood Triangular points with the addition of Desert Side-notched points by around 750 BP (AD 1200).

With the later pre-European contact periods, sequences and archeological information converge in the Las Vegas Valley, the Muddy and Virgin River Valleys, and Ash Meadows National Wildlife Refuge area in the Northern Mojave. In the Las Vegas Valley, the Late Ceramic corresponds to the Patayan III period. However, the frequency of Patayan types actually declines as the frequency of Southern Paiute Brownware rises (Roberts and Ahlstrom 2007). After the abandonment of the region by the Virgin Branch Puebloan groups, archeological remains indicate a return to a more mobile foraging way of life with a subsistence base of hunting and gathering supplemented by small-scale agriculture (Ezzo and Majewski 1996). Late Ceramic sites comprise rockshelters, roasting mounds, and open shelters. These sites have evidence of the use of both domesticated and wild resources such as agave, mesquite seeds, prickly pear cactus seeds, domestic squash seeds, coyote melon, and desert tortoise (Roberts and Ahlstrom 2007).

The Northern Mojave produces evidence for occupation during the post 750 BP (AD 1200) times of the Late Prehistoric-Ceramic in the form of both projectile points and pottery. The Ash Meadows area crosses the territories of the Western Shoshone and the Southern Paiute in the 1800s (Livingston and Nials 1990). Evidence demonstrates a nomadic foraging lifeway with horticulture in small fields near well-watered areas (Ahlstrom and Roberts 2008; Livingston and Nials 1990).

The entry of the Southern Paiute into southern Nevada is a topic of continuing interest that has been reviewed and debated by a number of researchers. Aikens and Witherspoon (1982) and Goss (1977) argue that the group arrived in Southern Nevada in the Early or Middle Archaic based on linguistics, settlement patterning, and persistence of certain projectile points through time. Lyneis (1982, 1994) and Warren and Crabtree (1986) argue that they arrived no earlier than 950 BP (AD 1000) and possibly not until after abandonment by the Virgin Branch Ancestral Puebloan based on the view that Virgin Branch and Southern Paiute material culture items do not co-occur and that where items

from both groups are present, the Southern Paiute artifacts overlie those of the Virgin Branch (Ezzo and Majeweskis 1996). Southern Paiute sites in the region are difficult to identify with respect to time period because of a lack of chronological control, leading to uncertainty concerning their attribution to the prehistoric, protohistoric, or historic periods (Ezzo and Majewski 1996).

Protohistoric and Historic Periods ca. 350-120 BP, ca. 120 BP to present (ca. AD 1600-1830, ca. AD 1830 to present)

The general emphasis of this review is on the primarily pre-European contact periods in southern Nevada that are informed by archeological materials. Thus, the following periods of initial contact with Europeans (Protohistoric) and later Euro-American settlement (Historic) are presented in less detail. At the time of European contact, regional residents were the Southern Paiute Tribe, as well as the Chemehuevi Tribe (included with the Paiute). The Southern Paiute Tribe is made up of independent bands, or groups. Each band has its own government. The Southern Paiute Tribe was located in the more southerly portions of the area and the Western Shoshone in the more westerly section (Euler 1966; Kelly and Fowler 1986; Steward 1938). The Mojave and Hualapai Tribes were located to the south and southeast. There was considerable interaction among these groups as they moved in and out of Southern Nevada (Ruppert 1976). Information on the Southern Paiute (Nuwuvi) is the focus of this discussion.

Southern Paiute habitation structures known archaeologically and ethnographically consisted of wickiups (a conical frame of branches covered with layers of bark, grass, or brush) in winter and brush shelters in summer (Inter-Tribal Council of Nevada 1976). Material culture comprised a wide range of basketry forms for storage, transport, resource-gathering, and cooking, as well as ceramics in some groups (Fowler and Dawson1986; Fowler and Fowler 1981; Kelly 1964; Stewart 1942). Baskets were apparently favored over the heavier pottery owing to the nomadic Paiute lifestyle. Other items of material culture included the bow and arrow, nets, woven items, grinding implements, and flint knives, with trade items such as shells and cloth (Euler 1966).

The Southern Paiute subsistence base emphasized hunting, foraging, and farming in the valley bottoms. They used many plants and animals ranging from insects and small mammals to deer and mountain sheep. Wild plant foods were prickly pear, yucca, piñon nuts, grass seeds, agave, acorns, wild grapes, and roots. These wild plant foods, primarily gathered by the women, were the dietary mainstay, with mesquite beans and pods of considerable importance. Men were the hunters. Maize, beans, squash, sunflower, and amaranth were farmed (Kelly 1964; Ruppert 1976).

Resources were generally obtained in a seasonally transhumant round (seasonal movement to gather resources), which varied from group to group and habitat to habitat. Farming was normally not intensive; older people often cared for the fields while the remainder of the group gathered resources in other locations (Ezzo and Majewski 1996; Inter-Tribal Council of Nevada 1976; Kelly and Fowler 1986). Most sources agree that the nuclear family was the primary unit of social organization for the Southern Paiute with aggregation and dispersal of larger and smaller groups throughout the year (Euler 1966; Kelly 1964; Steward 1938). As Euro-Americans increased in numbers in the region, the Native Americans were forced to congregate in bigger groups to survive (Inter-Tribal Council of Nevada 1976).

The first reported direct European contacts were with the Spanish in the late 1700s with the expeditions of Garcés and of Domínguez and Escalante, who were attempt-

ing to establish a route between Santa Fe, New Mexico, and Monterey, California. Although the expedition did not succeed in reaching its goal because of the onset of winter, part of their route became a portion of the Old Spanish Trail, that consisted of previously existing trails used for raiding and trading (Harper and others 2006).

After the explorers, trappers, and traders extended their operations into the area, an active slave trade began that lasted from the late 1700s to the mid-1850s. Captives, often Southern Paiute, were transported along the Old Spanish Trail between California and New Mexico. Prior enemies of the Southern Paiute, such as the Ute and Navajo, conducted slave raids in the region as they went between Spanish, and later, Mexican settlements. These raids seriously impacted the people of the Moapa and Las Vegas Valleys forcing them away from favorable agricultural lands, depopulating some Southern Paiute bands, and increasing their hostility and fear of travelers and other outsiders (Euler 1966; Harper and others 2006; Kelly and Fowler 1986). Slave raiding continued in the region until the mid-1850s when steps taken by the Mormons and the territorial legislature ended the trade (Harper and others 2006; Kelly and Fowler 1986).

Mormon (Church of Jesus Christ of Latter-day Saints) influence in the general region began with their entry into Utah in 1847 and continues today. Mormon activity and settlement in southern Nevada have been well documented by Sterner and Ezzo (1996) drawing on information from the Church Educational System (LDS 1993). Thus, the Mormon Era will not be discussed in detail in this overview other than to note briefly the impact of permanent Mormon settlements on the Southern Paiute.

During the 1850s, the Old Spanish Trail became the Mormon Road, which brought settlers and other travelers to the area (Harper and others 2006). Increased Euro-American settlement displaced the Southern Paiute from long-used agricultural, foraging, and hunting lands, which became depleted by livestock grazing and larger farming operations. Interactions with Mormon settlers increased so that by the 1870s the majority of Southern Paiute had direct contact with Euro-Americans, with some settling near Mormon communities (Kelly and Fowler 1986).

Expansion of Euro-American settlement led to increasing hostilities. In 1873, an executive order was issued setting aside 3,900 square miles (10,101 square kilometers) to form the Moapa River Reservation. The reservation was expanded in 1874 then sharply reduced to 1.5 square miles (2.4 square kilometers) in 1875 to accommodate complaints from white settlers within the reservation lands. In 1982, the reservation was increased to its present size of 112 square miles (180 square kilometers) after a petition to congress from the Moapa Band of the Paiute (Ezzo and Majewski 1996; Inter-Tribal Council of Nevada 1976).

In 1951, the Southern Paiute filed a claim with the Indian Claims Commission, which was resolved in 1965 with a monetary settlement (Inter-Tribal Council of Nevada 1976). Portions of the money from the settlement were invested in improvements to the reservation's business enterprises. In 2011, there were 287 enrolled Tribal members with approximately 180 members living on the reservation. The total population was estimated at 425 residents (http://www.xeri.com/Moapa/moapa.htm). The Southern Paiute have persevered over the years in the face of many obstacles and hardships associated with Euro-American occupation and settlement of the area and are actively working to preserve their heritage in publications detailing their history and culture (Alley 1986; Ezzo and Majewski 1996).

Knowledge Gaps and Management Implications

Knowledge gaps concerning southern Nevada's past, as derived from the archeological record, result from several sources. Chief among them are the extent of archeological survey coverage (the most common means of identifying cultural resources) and the nature of archeological survey itself. Approximately 783,756 acres (317,174.8 hectares) or 7 percent of the lands under consideration have been surveyed for archeological resources (de Dufour, personal communication; fig.8.1). Thus, a large portion of the area has received no coverage. Because Federal agencies are required to assess the effects of their ground-disturbing activities on cultural resources[1], much of this survey coverage is on Federal lands, which may bias the time period, nature, and types of remains found. Managers must always take these regulations into consideration when planning ground-disturbing projects.

Because of the sparse nature of archeological survey coverage, basic inventories of cultural resources are needed. In particular, inventories that are not associated with planned development projects are desirable to expand surveyed lands and address gaps in coverage. Complete coverage of the public lands in the study area is not a realistic goal because SNAP offices manage over 7 million acres. That is a huge area to meet the "complete survey" expectation, which would require over 500 man-years to survey with 30-meter transects at 2-miles per hour (Ronning, personal communication 2012a). In addition, cultural resource recording standards, as well as the sites themselves, will continue to change over time. A more realistic goal for regional-scale inventory would be to expand and improve the sample of lands that have been examined and sites that have been located and recorded. Landscapes could provide context for apportioning the available survey effort, which should be partially based on measuring the redundancy in information collected on cultural resources from particular environmental zones. Because cultural resources represent finite, non-renewable resources that must be protected for the future, an important goal of inventory is to provide baseline information for measuring changes in the condition of sites through time (Lancaster and others 2006).

In addition to the basic need for greater survey coverage, several studies have identified both specific and more general information gaps and have provided recommendations for addressing them. A major recommendation from the working group on the Information and State-of-the-Science Summary developed for the Ecosystem Health Assessment of Southern Nevada Project (Lancaster and others 2006) was to prepare a new Historic Context for the region that would provide current information on cultural groups and chronologies, occupational sequences, settlement patterns, and resource use through time. Such a Historic Context would structure and promote research important to southern Nevada agencies (Lancaster and others 2006). This document has been prepared in draft form, and is used in this review (Roberts and Ahlstrom 2012a).

Other general recommendations from the working group include compiling region-wide data sets featuring both survey and excavation data. This data base would also include layers suitable for GIS with information on plant communities, springs, surface geology, soils, and other pertinent resource information reflective of the close association between archeological sites and their environmental surroundings. It is planned that the Nevada Cultural Resource Inventory System (NVCRIS) will meet this function. This

[1] Section 106 of the National Historic Preservation Act of 1966 (NHPA) requires Federal agencies to take into account the effects of their undertakings on historic properties, and afford the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment. The historic preservation review process mandated by Section 106 is outlined in regulations issued by ACHP. Revised regulations, "Protection of Historic Properties" (36 CFR Part 800), became effective January 11, 2001.

project is managed by the Nevada State Historic Preservation Office (SHPO), which is in the process of compiling the data from the Cultural Resource Management (CRM) records. The work is funded by the Preserve America project with money provided by the Southern Nevada Public Land Management Act (SNPLMA) project (Ronning, personal communication 2012b). The working group also recommended producing "finder's guides" to identify locations of existing collections of materials and records to assist researchers in locating available information on the region's cultural resources. Another suggestion was to foster interdisciplinary studies of past environments and encourage interaction among archeologists, paleoenvironmentalists, and those who analyze biological specimens from archeological contexts (Lancaster and others 2006).

More detailed discussions of needed research are found in the draft Prehistoric Context for Southern Nevada (Roberts and Ahlstrom 2012a). The Context presents research themes focusing on chronology, settlement patterns/systems, subsistence, technology, contacts and exchange, the magico-religious realm, and archeological cultures and ethnicity (Roberts and others 2012). Each topic is discussed by time period—Paleoarchaic and Archaic, Puebloan, and Post-Puebloan—with data requirements presented for each theme by time period.

In another chapter, Roberts and Ahlstrom (2012b) review various data gaps in southern Nevada archeology and suggest detailed data recovery and analytic methods to obtain the maximum information possible. They review a broad range of research questions including effects of climate changes, identification of non-diagnostic lithic scatters, and the need for greater emphasis on subsistence studies in the core Virgin Branch area, etc. The authors also recommend methods for survey, testing, and excavation, including backhoe trenching, where appropriate, to identify buried features. In order to locate deeply buried Paleo-Indian and Archaic sites during intensive surveys, examination of the geomorphological characteristics of the study areas before fieldwork begins to explore the possibility of completely buried sites is suggested (Eckerle and others 2011). They also suggest more extensive test excavations when there is a potential for intact buried deposits (Wintch 2011). Taking advantage of analytic techniques such as radiocarbon dating of perishables like baskets and sandals and recovering DNA samples from agave quids and coprolites (fossilized feces) is discussed. Such techniques can be applied to both recently discovered and curated items (Roberts and Ahlstrom 2012b).

The most common data recovery technique on Federal lands is still the archeological survey. By their nature, archeological surveys locate surface remains, although additional information may lie buried beneath the surface. Cultural resource sites may be missed because they are difficult to identify from the surface. Sites from the earlier time periods in particular, such as Paleo-Indian, Middle Archaic, and Late Archaic, can be difficult to find because there are fewer of them, they are generally smaller, and may be buried more deeply. The commonly found surface lithic scatters, often produced by nomadic hunting and foraging groups but also produced by more sedentary peoples, can be notoriously difficult to date or assign to a particular cultural group if no diagnostic projectile points or potsherds are present. Managers in the area must take the limitations of archeological surveys into consideration when planning ground-disturbing projects to ensure that all sites are protected and free from damage as required, or that potential damage is mitigated by data recovery as mandated under the Federal regulations of Section 106[1].

Interpretive scenarios must also take into account the ongoing possibility that discovery of previously unknown resources will alter time lines and chronological schemes. The previously discussed recommendations made in the Draft Prehistoric Context for Southern Nevada (Roberts and Ahlstrom 2012a) address these issues and make recommendations to assist managers in dealing with the difficulties inherent in interpreting the archeological record.

References

Ahlstrom, R.V.N. (ed.). 2005. Desert oasis: the prehistory of Clark County Wetlands Park, Henderson, Nevada. HRA Papers in Archaeology No. 4. Las Vegas, NV: HRA, Inc., Conservation Archaeology. 428 p. Online: http://hraarchaeology.com/reports.html [2012, Nov 14].

Ahlstrom, R.V.N.; Roberts, H. 2008. Prehistoric culture history. In: Lyon, J.D.; Roberts, H.; Ahlstrom, R.V.N.; Harper, C.; Eskenazi, S.; Davide, R.; Fowler, C.; von Till Warren, E. (preparers). Shared place: an Archaeological survey of the Ash Meadows National Wildlife Refuge, Nye County, Nevada. HRA Archaeological Report No. 07-24. Las Vegas, NV: HRA, Inc., Conservation Archaeology. 396 p.

Ahlstrom, R.V.N.; Roberts, H. 2012. Puebloan Period (A.D. 200-1300). In: Roberts, H.; Ahlstrom, R.V.N. (eds.). A Prehistoric Context for Southern Nevada (draft). Las Vegas, NV: HRA, Inc., Conservation Archaeology and Carson City, NV: Gnomon Inc.: 115-164.

Aikens, C.M.; Witherspoon, Y.T. 1982. Great Basin and Numic prehistory: linguistics, archaeology, and environment. Unpublished paper on file at: Department of Anthropological Studies, University of Nevada, Las Vegas, NV.

Alley, J.R., Jr. 1986. Tribal historical projects. In: D'Azevedo, W.L. (ed.). Great Basin. Handbook of North American Indians. Washington, DC: Smithsonian Institution Press: 601-607. Vol. 11.

Altschul, J.H.; Fairley, H.C. 1989. Man, models, and management: an overview of the archaeology of the Arizona Strip and its cultural resources. Washington, DC: U.S. Department of the Interior, Bureau of Land Management. 396 p.

Basgall, M.E. 2000. The structure of archaeological landscapes in the north-central Mojave Desert. In: Schneider, J.S.; Yohe, R.M., II; Gardner, J.K. (eds.). Archaeological passages, a Volume in honor of Claude Nelson Warren. Publication in Archaeology Number 1. Hemet, CA: Western Center for Archaeology and Paleontology: 123-138.

Brooks, R.H.; Larson, D.O.; Olson, K.; King, J.; King, G.; Leavitt, R.; Anderson, P. 1975. Prehistoric and historic research along the Navajo-McCullough transmission line right-of-way. Nevada Archaeological Survey Report No. 4-2-1. Las Vegas, NV: University of Nevada Press.

Church of Jesus Christ of Latter-day Saints. 1993. Church history in the fullness of time: the history of the Church of Jesus Christ of Latter-day Saints. Salt Lake City, UT: Church of Jesus Christ of Latter-day Saints, Church Educational System. 661 p.

Clark, J.W. 1984. Prehistoric settlement in the Moapa Valley. Anthropological Papers No. 19. Carson City, NV: Nevada State Museum. 136 p.

Cordell, L. 1997. Archaeology of the Southwest. 2nd ed. San Diego, CA: Academic Press. 522 p.

de Dufour, K. 2011. [E-mail to Carol Raish]. March 01. 1 leaf. On file at: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Albuquerque Laboratory, Albuquerque, NM; RMRS-4853 files. 1

Eckerle, W.; Finley, J.; Hanna, R.R. 2011. Data collection strategies for assessing artifact zone spatial and associational integrity on sand occupational substrates. In: Seddon, M.; Roberts, H.; Ahlstrom, R.V.N. (eds.). Archaeology in 3D: Deciphering buried sites in the western U.S. Washington, DC: SAA Press: 167-182.

Euler, R.C. 1966. Southern Paiute ethnohistory. Glen Canyon Series No. 28. Anthropological Papers No.78. Salt Lake City, UT: University of Utah Press. 187 p.

Ezzo, J.A. 1995. A class I cultural resources survey for the Southern Nevada Water Authority treatment and transmission facility, Clark County, Nevada. Technical Series No. 55. Tucson, AZ: Statistical Research Incorporated, SRI Press. 276 p.

Ezzo, J.A., (ed.). 1996. A class I cultural resources survey of the Moapa and Virgin Valleys, Clark County, Nevada. Technical Series No. 58, Tucson, AZ: Statistical Research Incorporated, SRI Press. 209 p.

Ezzo, J.A.; Majewski, T. 1995. Prehistory, protohistory, and ethnography. In: Ezzo, J.A. (ed.). A Class I cultural resources survey for the Southern Nevada Water Authority Treatment and Transmission Facility, Clark County, Nevada. Technical Series No. 55, Tucson, AZ: Statistical Research Incorporated, SRI Press: 35-74.

Ezzo, J.A.; Majewski, T. 1996. The cultural resources of the project area: prehistory, protohistory, and ethnography. In: Ezzo, J.A. (ed.). A Class I Cultural Resources Survey of the Moapa and Virgin Valleys, Clark County, Nevada. Technical Series No. 58, Tucson, AZ: Statistical Research Incorporated, SRI Press: 35-77.

Fowler, C.S.; Dawson, L.E. 1986. Ethnographic basketry. In: D'Azevedo, W.L. (ed.). Great Basin. handbook of North American Indians. Vol. 11. Washington, DC: Smithsonian Institution Press: 705-737.

Fowler, C.S.; Fowler, D.D. 1981. The Southern Paiute: AD 1400-1776. In: Wilcox, D.R.; Masse, W.B. (eds.). The Protohistoric Period in the North American Southwest. Anthropological Research Papers No. 24. Tempe, AZ: Arizona State University Press. 445 p. plus 10 plates.

Fowler, D.D.; Madsen, D.B. 1986. Prehistory of the Southeastern area. In: D'Azevedo, W.L. (ed.). Great Basin. Handbook of North American Indians. Vol. 11. Washington, DC: Smithsonian Institution Press: 173-182.

Fowler, D.D.; Madsen, D.B.; Hattori, M. 1973. Prehistory of southeastern Nevada. Reno, NV: Desert Research Institute Publication in the Social Sciences No. 6.

Goss, J.A. 1977. Linguistic tools for the Great Basin prehistorian. In: Fowler, D.D. (ed.). Models and Great Basin Prehistory: a Symposium. Publications in the Social Sciences No. 12. Reno, NV: Desert Research Institute: 49-70.

Grayson, D.K.1993. The desert's past: a natural prehistory of the Great Basin. Washington, DC: Smithsonian Institution Press. 356 p.

Harrington, M.R. 1933. Gypsum Cave, Nevada. Southwest Museum Papers No. 4. Los Angeles, CA: Southwest Museum.

Harry, K.G. 2008. Main Ridge 2006 research project: condition assessments, test excavations, and data analyses for the UNLV Fall 2006 Field School. Prepared for the Lake Mead National Recreation Area. Las Vegas, NV: Department of Anthropology and Ethnic Studies and the Public Lands Institute, University of Nevada Las Vegas.

Harry, K.G.; Watson, J.T. 2010. The archaeology of Pueblo Grande: past and current research within Nevada's "Lost City." Kiva. 78(4): 403-424.

Harper, C.; Ahlstrom, R.V.N.; Eskenazi, S. 2006. Introduction. In: Harper, C. (ed.). A room with a view: data recovery of an early historical rockshelter site located in the Upper Moapa Valley, Clark County, Nevada. HRA Papers in Archaeology No. 5. Las Vegas, NV: HRA, Inc., Conservation Archaeology: 1-14.

Hayden, I. 1930. Mesa House. Southwest Museum Papers. 4(2): 26-92.

Haynes, C.V. 1969. The earliest Americans. Science. 166: 709-715.

Inter-Tribal Council of Nevada. 1976. Nuwuvi: a Southern Paiute History. Salt Lake City, UT: University of Utah Printing Service. 177 p.

Jones, R.C.; Edwards, S.R. 1994. A Clovis Point on the Nevada Test Site. Nevada Archaeologist. 16: 18-23.

Kelly, I.T. 1964. Southern Paiute ethnography. Glen Canyon Series No. 21. Anthropological Papers No.69. Salt Lake City, UT: University of Utah.

Kelly, I.T.; Fowler, C.S. 1986. Southern Paiute. In: D'Azevedo, W.L. (ed.). Great Basin. Handbook of North American Indians. Vol. 11. Washington, DC: Smithsonian Institution Press: 368-397.

Lancaster, J.; Mouat, D.; Buck, P. (eds.). 2006. Information needs and state-of-the-science summary developed for the Ecosystem Health Assessment for Southern Nevada Project. Report on First Workshop—May 3-4, 2006. Reno, NV: Desert Research Institute. 31 p.

Larson, D.O.; Michaelson, J. 1990. Impacts of climatic variability and population growth on Virgin Branch Anasazi cultural developments. American Antiquity. 55: 227-249.

Livingston, S.D.; Nials, F.L. 1990. Archaeological and paleoenvironmental investigations in the Ash Meadows National Wildlife Refuge, Nye County, Nevada. Quaternary Sciences Center Technical Report No. 70, Las Vegas, NV: Desert Research Institute. 212 p.

Lyneis, M.M. 1982. Prehistoric southern Nevada study units. In: An archaeological element for the Nevada Historic Preservation Plan. Submitted to Nevada Division of Historic Preservation and Archaeology, Carson City, Nevada. Las Vegas, NV: University of Nevada: 161-206.

Lyneis, M.M. 1986. Residual archaeology of the Main Ridge Locality, Pueblo Grande de Nevada. Western Anasazi Reports. 3: 183-259.

Lyneis, M.M. 1992a. Social complexity among the Virgin Anasazi. Kiva. 57: 197-212.

Lyneis, M.M. 1992b. The Main Ridge Community at Lost City: Virgin Anasazi architecture, ceramics, and burials. University of Utah Anthropological Papers No. 117, Salt Lake City, UT: University of Utah. 96 p.

Lyneis, M.M. 1994. East and onto the plateaus? An archaeological examination of the Numic expansion in Southern Nevada, Northern Arizona, and Southern Utah. In: Madsen, D.B.; Rhode, D. (eds.). Across the West: Human population movement and the expansion of the Numa. Salt Lake City, UT: University of Utah Press: 141-149.

Lyneis, M.M. 1995. The Virgin Anasazi, far western Puebloans. Journal of World Prehistory. 9 (2): 199-241.

Lyneis, M.M. 1996. Pueblo II-Pueblo III change in southwestern Utah, the Arizona Strip, and southern Nevada. In: Adler, M.A. (ed.). The Prehistoric Pueblo World, AD 1150-1350. Tucson, AZ: University of Arizona Press: 11-28.

Lyneis, M.M. 2011. Ceramics. In: Roberts, H.; Lyon, J. (eds.). Archaeological Excavations at the Corn Creek National Register Site, Desert National Wildlife Refuge, Clark County, Nevada. Archaeological Report No. 08-22. Las Vegas, NV: HRA, Inc. Conservation Archaeology: 156-184.

Lyneis, M.M. 2012. Appendix D. In: Roberts, H.; Ahlstrom, R.V.N. (eds.). A prehistoric context for southern Nevada (draft). Las Vegas, NV: HRA, Inc., Conservation Archaeology and Carson City, NV: Gnomon Inc.: D 1-20.

Madsen, D.B.1986. Prehistoric ceramics. In: D'Azevedo, W.L. (ed.). Great Basin. Handbook of North American Indians. Vol. 11. Washington, DC: Smithsonian Institution Press: 206-214.

Myhrer, K. 1986. Evidence for an increasing dependence on agriculture during the Virgin Anasazi occupation in the Moapa Valley. Las Vegas, NV: University of Nevada. Thesis.

Myhrer, K. 1989. Basketmaker and Puebloan occupation at the Steve Perkins site, Moapa Valley, southern Nevada. Unpublished draft report on file at: Museum of Natural History, University of Nevada, Las Vegas, NV.

Roberts, H.; Ahlstrom, R.V.N. 2007. Native Americans in southern Nevada before 1492. In: Roberts, H.; von Till Warren, E.; Eskenazi, S. (preparers). Coyote named this place *Pakonapanti*: Corn Creek National Register Archaeological District, Desert National Wildlife Refuge, Clark County, Nevada. Las Vegas, NV: HRA, Inc., Conservation Archaeology. 27-47. Online: http://hraarchaeology.com/reports.html [2012, Nov 14].

Roberts, H.; Ahlstrom, R.V.N. (eds.). 2012a. A prehistoric context for southern Nevada (draft). Las Vegas, NV: HRA, Inc. Conservation Archaeology and Carson City, NV: Gnomon Inc. 364 p.

Roberts, H.; Ahlstrom, R.V.N. 2012b. Recommendations. In: Roberts, H.; Ahlstrom, R.V.N. (eds.). A prehistoric context for southern Nevada (draft). Las Vegas, NV: HRA, Inc., Conservation Archaeology and Carson City, NV: Gnomon Inc.: 293-300.

Roberts, H.; Ahlstrom, R.V.N.; Roth, B. 2012. Prehistoric research themes for southern Nevada. In: Roberts, H.; Ahlstrom, R.V.N. (eds.). A prehistoric context for southern Nevada (draft). Las Vegas, NV: HRA, Inc., Conservation Archaeology and Carson City, NV: Gnomon Inc.: 277-292.

Roberts, H.; von Till Warren, E.; Eskenazi, S. (preparers). 2007. Coyote named this place *Pakonapanti*: Corn Creek National Register Archaeological District, Desert National Wildlife Refuge, Clark County, Nevada. Las Vegas, NV: HRA, Inc., Conservation Archaeology. 187 p. Online: http://hraarchaeology.com/reports.html [2012, Nov 14].

Ronning, C. 2012a. Personal communication. [Comment on manuscript]. July 9. Manuscript on file at: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Albuquerque Laboratory, Albuquerque, NM; RMRS-4853 files.

Ronning. C. 2012b. SNAP review team. May 9. On file at: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Albuquerque Laboratory, Albuquerque, NM; RMRS-4853 files.

Roth, B. 1993. A Clovis Point from east central Arizona. Kiva. 58: 495-499.

Roth, B. 2012. Paleoindian and Archaic Periods. In: Roberts, H.; Ahlstrom, R.V.N. (eds.). A prehistoric context for southern Nevada (draft). Las Vegas, NV: HRA, Inc., Conservation Archaeology and Carson City, NV: Gnomon Inc. 364 p.

Ruppert, D.E. 1976. Lake Mead National Recreation Area: an ethnographic overview. Tucson, AZ: U.S. Department of the Interior, National Park Service, Western Archeological Center. 90 p.

Seymour, G.R. 1997. A reevaluation of Lower Colorado Buff Ware ceramics; redefining the Patayan in southern Nevada. Las Vegas, NV: University of Nevada. Thesis.

Shutler, R., Jr. 1961. Lost City: Pueblo Grande de Nevada. Anthropological Papers No. 5. Carson City, NV: Nevada State Museum, Department of Anthropology. 85 p.

Sterner, M.A.; Ezzo, J.A. 1996. Religion, ranching, and railroads: the history of the Muddy and Virgin River Valleys. In: Ezzo, J.A. (ed.). A Class I cultural resources survey of the Moapa and Virgin Valleys, Clark County, Nevada. Technical Series No. 58. Boulder City, NV: Statistical Research Incorporated, SRI Press: 79-130.

Steward, J.H. 1938. Basin-plateau aboriginal sociopolitical groups. Bureau of American Ethnology Bulletin No. 120, Washington, DC: Smithsonian Institution Press. 355 p.

Stewart, O.C. 1942. Culture element distributions, XVIII: Ute—Southern Paiute. University of California Anthropological Records. 6(4): 231-356.

Turner, K.; LaVoie, A.M.; Ronning, C.J.; Sharp, R.M.; Palmer, C.J.; Miller, J.M. 2009. SNAP Science and Research Strategy (Strategy). Southern Nevada Agency Partnership. Online: http://snap.gov/upload/SNAP-S-R-Strategy-2009r.pdf. [2011, April 6].

Warren, C.N.; Crabtree, R.H. 1986. Prehistory of the Southwestern area. In: D'Azevedo, W.L. (ed.). Great Basin. Handbook of North American Indians. Vol.11.Washington, DC: Smithsonian Institution Press: 183-193.

Wintch, K.L. 2011. The importance of testing to cultural resource management. In: Seddon, M.; Roberts, H.; Ahlstrom, R.V.N. (eds.). Archaeology in 3D: Deciphering buried sites in the western U.S. Washington, DC: SAA Press: 183-194.