

An Assessment of the Imperial Sand Dunes as a Native American Cultural Landscape

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EXECUTIVE SUMMARY

The ethnographic literature indicates the Imperial Sand Dunes (the Dunes) are within, or near, the traditional boundaries of the territories of various tribal groups, including the Quechan, Chemehuevi, Mohave (Colorado River Indian Tribes), Cocopah, Kumeyaay, Kamia, and Cahuilla. There is some notation in the literature that migration and trade trails passed through or around the Dunes. Otherwise there are only sparse references to uses or other connections of Native Americans to the Dunes. These references include mention of using the Dunes for hunting, gathering, planting, burial grounds, religious and other spiritual uses, and trade and travel. Ethnographic interviews with individuals from the Cahuilla, Chemehuevi, Cocopah, Cucapá, Kumeyaay, Mohave, and Quechan tribes indicate that the Dunes are an area of cultural importance because of the past associations of these groups with the Dunes. These connections include references to beings that inhabited the Dunes (Sand Coyote, “little medicine people” and “water babies”); use of the area for burials, plant gathering, and hunting; and use as a travel route for trade and migration. The literature review and ethnographic interview data identified seventeen (17) sites or places used by Native Americans in or within about 1 mile of the Imperial Sand Dunes. Seven (7) of these are sites associated with religion, ritual, and mythology; one (1) is a habitation site; four (4) are resource gathering or planting areas, four (4) are trails; and one (1) is a historical event. Many of these places have only a very general location. As part of the regional physical and cultural landscape for these tribes, the Dunes are one important factor in maintaining the cultural identity of each group. None of those interviewed, however, indicated that the Dunes were more important than the numerous other physical and cultural features of their landscape. Any assessment of the criteria for nomination to the National Register indicates that based on currently available information, the Dunes do not qualify as a Traditional Cultural Property. However, the mythological events, including the Sand Coyote narrative of the Quechan and the as yet not fully identified role of the Dunes in Quechan, Cocopah, and possibly other origin and migration song cycles, may be

of sufficient cultural importance to meet Criterion a under the *Bulletin 38* guidelines. Further information on the cultural context of these narratives, however, is not forthcoming within the context of the current study. Given the apparent loss of cultural information among most of the tribes interviewed, further work may not reveal data sufficient to qualify the Dunes for the National Register of Historic Places.

Ethnographic interviews indicate some Native American management concerns about the Dunes. These concerns include the potential for damage to undiscovered cultural resources, damage to plants and animals from off-road vehicle activity, concern for the resilient ecology of the Dunes in management decision making, containment of off-road vehicle activity to areas currently used, and increased consultation with Native American tribes regarding management of the area.

The cultural landscape study was supported by a Class II archaeology survey. This survey documented 41 previously recorded prehistoric and historic period cultural resources and identified several new sites and isolates. Prehistoric ceramic scatters are the most frequent site type. These attest to Native American use of the dunes over the past 1,000 years or so.

THE IMPERIAL SAND DUNES AS A NATIVE AMERICAN CULTURAL LANDSCAPE

BACKGROUND

What was once Lake Cahuilla is believed to be the source of the sand that now forms the Imperial Sand Dunes¹ located in southeastern Imperial County and extending into northeastern Baja California Norte, Mexico. These Dunes are part of a larger desert, river, and mountain ecosystem once used exclusively by Native Americans who lived along the Colorado River and in areas to the west and east. These Native Americans include the Cahuilla, Chemehuevi, Cocopah, Colorado River Indian Tribes (CRIT), Kamia, Kumeyaay, Mohave, and Quechan. These and other groups have occupied this region and used its resources for more than a thousand years. During this time landscape features have changed, some from natural processes and others (e.g., damming of the Colorado River and construction of irrigation canals) from larger-scale human activities. During the later 19th century and the early part of the 20th century, Imperial County experienced growth that also changed the cultural geography of the region: new migrants used the lands for large scale agriculture and built highways, roads, railways, airports, new towns, and golf courses. The Dunes are now part of this multiuse landscape that has meanings and values for a wide range of area residents and visitors. Residents include Native Americans who live on reservations along the Colorado River and in the areas inland from the Dunes.

This focus of this project is to develop the past and present cultural connections of Native Americans to the Imperial Sand Dunes as well as their present-day management concerns about this landscape.

¹ Various sources refer to the Dunes as either the Sand Hills, the Algodones Dunes, or the Imperial Sand Dunes. We generally refer to the Imperial Sand Dunes as "the Dunes" but in different sections these terms are used interchangeably.

Management of the Dunes requires consideration of the interests of parties with connections to or interests in this landscape. This is especially the case with such a multiuse area in which there are recreational, cultural, commercial, and other interests. There is limited information about what, if any, Native American cultural resources are within or near the Dunes, current uses or cultural values about the Dunes, or particular Native American concerns regarding management of this area. Consequently, this project provides useful information for land managers who may need to consider the interests of Native Americans regarding the Imperial Sand Dunes. To address this topic, this project uses the concept of the Dunes as a Native American Cultural Landscape. This concept addresses the beliefs, values, world views, practices, uses, and other cultural connections of a group within a specific geographic area. The cultural landscape concept, discussed in more detail below, organizes our approach to this project as well as the presentation of material in this preliminary report.

PROJECT AREA LOCATION

The Dunes cover an area that is more than 100 square miles in the southeastern corner of California and into northeastern Baja California Norte, Mexico. On the eastern side of the agricultural lands of the Imperial Valley, the Dunes stretch some 40 miles in length and are up to 5 miles wide. The northern boundary of the Dunes is near the town of Calipatria, and they extend south to and just across the international border. The Dunes in the United States are federal land, administered by the Bureau of Land Management (BLM). Low humidity, high summer temperatures, and strong westerly and northwesterly winds create a desert environment for the Imperial Sand Dunes. In addition to expanses of desert sand dunes, the project area and vicinity also include broad basin floors and desert washes that support shrubs and trees including desert willows, mesquite, and ironwood. Approximately 32,000 acres to the north of Highway 78 is designated as the North Algodones Wilderness area. An area south of Highway 78 is designated for off-road vehicles

(ORV)² and this attracts a high volume of dune buggies, dirt bikes, and other ORV to the area. Communities bordering the dunes include Brawley, Holtville, El Centro, and Yuma.

Native Americans reside on several reservations in the vicinity of the Dunes. To the east along the Colorado River there are the Quechan (Yuma, Arizona), the Cocopah (Somerton, Arizona), the Mohave (Needles, California and adjacent areas of Arizona), as well as the CRIT (Parker, Arizona) Reservations. North of the Dunes near the head of the Salton Sea there are Cahuilla Reservations at Torres Martinez, St. Augustine, Cabazon, 29 Palms, and Agua Caliente, as well as other reservations such as the Morongo Reservation near Banning. To the west there are multiple Kumeyaay Reservations in San Diego County such as the ones at Campo, Barona, Jamul, and Viejas. There are also tribes in Mexico that may have had an association with the Dunes in the past, including the Cocopah, Kumeyaay, Kamia, and Paipai. The Dunes are thus situated near a diverse population of contemporary Native Americans who may have past or present cultural connections to the project area.

PROJECT PERSONNEL

James Cleland had overall responsibility for the project while John Russell managed the day-to-day activities of project implementation and report preparation. Clyde Woods, John Russell, and Mike Wilken completed the fieldwork and composed the description and analysis presented in the Contemporary Native Americans section. Dr. Woods worked with the Quechan and Mohave. Dr. Russell worked with Cahuilla, Cocopah, Chemehuevi, Mohave, and Kumeyaay. Mr. Wilken worked with the Cucapá in Mexico. John Russell prepared the Introduction as well as the Summary and Implications section for the report as well as portions of the Contemporary Native Americans

Section. Dr. Woods and Dr. Wilken composed sections of the Contemporary Native Americans Section based on their fieldwork. Jackson Underwood and Dr. Russell researched and prepared the material about the physical setting and geography of the Dunes. Dr. Underwood prepared the materials on early explorers and Carrie Gregory prepared material on the historic background of the Imperial Sand Dunes. The review of ethnographic materials was prepared by Dr. Underwood. Dr. Woods prepared the Inventory of Ethnographic Resources and worked with Dr. Cleland to complete the Traditional Cultural Property evaluation. The bibliography was prepared by Gay Hilliard. Members of the Cocopah, Cucapá, Cahuilla, Chemehuevi, Kumeyaay, Mohave, and Quechan tribes made substantial contributions of time and information that was essential to preparation of this report. Their gracious hospitality and willingness to share thoughts and feelings were greatly appreciated by all of the research team. Russell Kaldenberg, State Archaeologist of BLM's California State Office, conceived of the landscape study and provided guidance and direction throughout the project, although the content of this document remains the responsibility of the project team. Margaret Hangan of the BLM El Centro office provided much appreciated information and technical assistance. Joan Oxendine, California Desert District Archaeologist, provided much appreciated comments. Richard Brook, BLM's Washington Headquarters office, obtained the necessary funding. Marisa Fabrigas provided essential word processing expertise and Dan Brady integrated photographs and other graphics into this document.

CULTURAL LANDSCAPE CONCEPTS

The Dunes are part of the physical landscape within areas Native Americans used for migration, trade, and possibly other types of activities. If there are cultural connections to the Dunes with past or present Native Americans, then this area can be assessed as a "cultural landscape." While the concept of a "cultural landscape" might apply to other users or interested parties as well, the intention of this work is to apply the cultural landscape concept as a means both to assess Native

² Off-road vehicles (ORV) and off-highway vehicles (OHV) are used interchangeably.

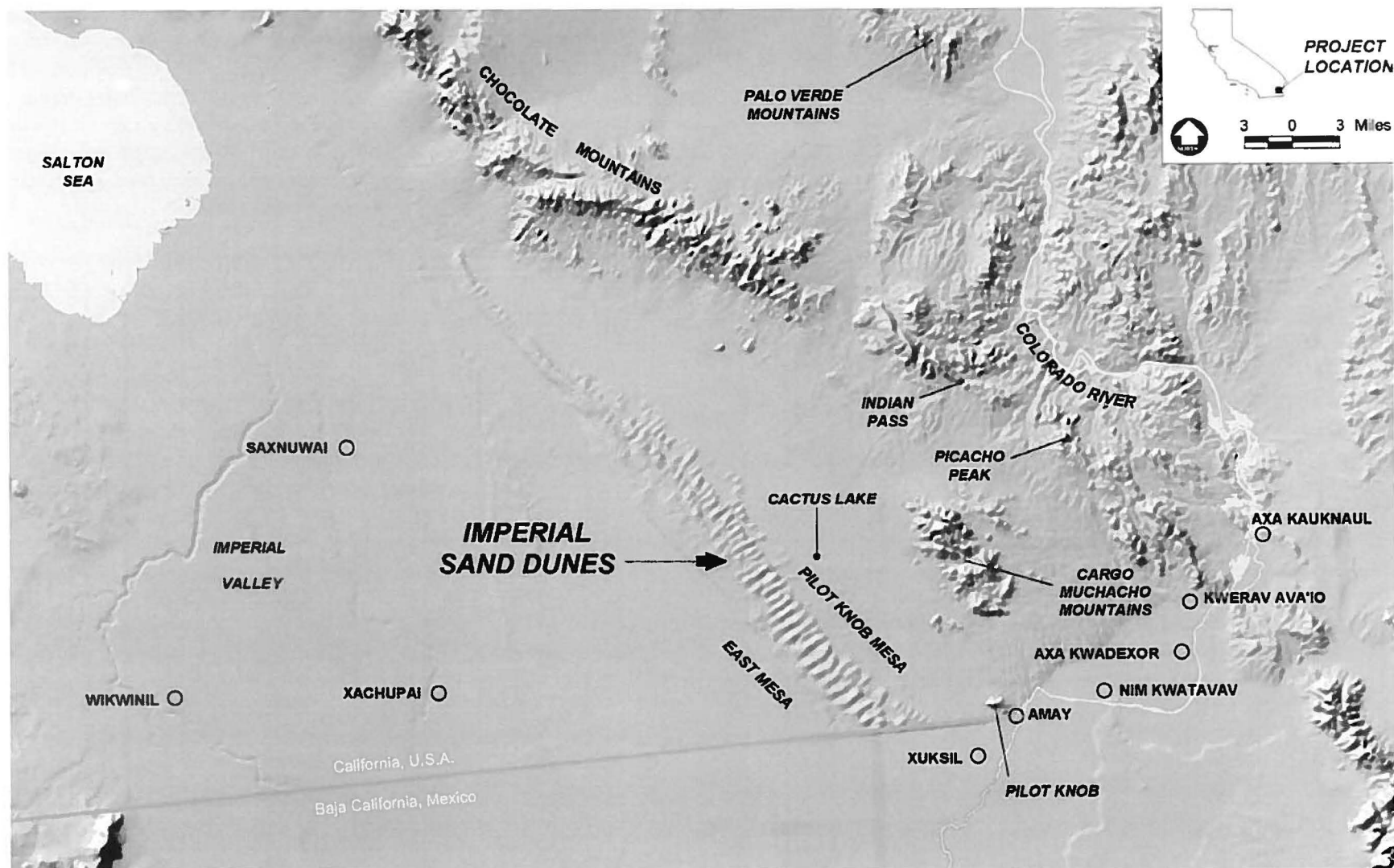


Plate 1. The Imperial Sand Dunes in relationship to other geographic features and places of cultural importance for Native Americans. (Native American Place Names are Approximate Locations)

American interests in the Imperial Sand Dunes and to identify any traditional cultural properties that may be eligible for the National Register. This focuses our definition of the concept to one that applies to each of these purposes. A starting point for this work is the “cultural landscape” concept used by the National Park Service in its Preservation Brief 36:

A geographic area (including both cultural and natural resources and the wildlife or domestic animals therein), associated with a historic event, activity, or person exhibiting other cultural or aesthetic values. There are four general types of cultural landscapes, not mutually exclusive: historic sites, historic designed landscapes, historic vernacular landscapes, and ethnographic landscapes.

The four types of cultural landscapes identified in this definition are as follows:

Ethnographic landscape: a landscape containing a variety of natural and cultural resources that associated people define as heritage resources. Examples are contemporary settlements, religious sacred sites and massive geological structures. Small plant communities, animals, subsistence and ceremonial grounds are often components. They can be a single property such as a farm or a collection of properties such as a district of historic farms along a river valley. Examples include rural villages, industrial complexes, and agricultural landscapes.

Historic vernacular landscape: a landscape that evolved through use by the people whose activities or occupancy shaped it. Through social or cultural attitudes of an individual, a family, or a community, the landscape reflects the physical, biological, and cultural character of everyday lives. Function plays a significant role in vernacular landscapes.

Historic Designed Landscape: a landscape that was consciously designed or laid out by a landscape architect, master gardener, architect, or horticulturist according to design principles, or an amateur gardener working in a recognized style or tradition. The landscape may be associated with a significant person(s), trend, or event in landscape architecture; or illustrate an important development in the theory and practice of landscape architecture. Aesthetic values play a significant role in designed landscapes. Examples include parks, campuses, and estates.

Historic Site: a landscape significant for its association with a historic event, activity, or person. Examples include battlefields and president’s house properties.

These concepts are oriented to particular policy issues, specifically the nomination of a landscape for the National Register. However, land managers also benefit by understanding the meanings and values associated with landscapes that influence how groups may construct or respond to land management options or issues. These cognitive and affective aspects of a group’s orientation to space and place can motivate actions by posing goals that then become a basis for action³ that have direct implications for assessments of or response to land management issues.

³ D’Andrade’s explanation of the relationship between cultural schema – which for our purposes is a group’s explanation of landscape issues or their “landscape schema” – succinctly states this relationship between beliefs and action:

... the central idea being presented here is that the identification of motives proceeds through the identification of schemas. The theoretical argument goes as follows: (1) schemas, which form the reality-defining system of the human, provide information about what states of the world can and should be pursued; (2) because of the centrality of schemas in determining appropriate action, top-level schemas tend to function as goals; (3) drives, affects, and other kinds of investigations to action function by activating goal-schemas, not by instigating behavior directly, since for humans appropriate action depends on role and setting contexts which require elaborate cognitive interpretation prior to action (D’Andrade 1992:33).

Consequently, an approach to landscape and culture that includes issues of meaning, values, and the mental images of a particular landscape is also useful (c.f., Basso 1996; Feld and Basso 1996; Jackson 1994). This approach entails consideration of concepts and knowledge about landscape in particular and the interaction of people with places and particular spaces. The interaction of thoughts, experiences, and history is a process that invests a place with meaning and enables interpretation of the significance places and particular spaces. This cultural approach to landscape is thus focused as much on the meaning of place as it is on the types of sites and past or present uses of a location such as the Dunes. The approach of this project to address the cultural landscape concept thus directly addresses the need to identify any important Native American cultural resources or other assets within the Imperial Sand Dunes. It also directly addresses other aspects of Native American culture that can influence connections and attachments to the Dunes and assessments of land management issues.

To implement this approach, this project uses two principal data sources. One is a review of existing ethnographic literature about Native Americans in the project area to identify particular references to the Imperial Sand Dunes. These references are incorporated into an inventory of sites and other references to the Dunes from all data sources. The review is also the basis for ethnographic sketches of relevant tribal entities that are background and context for discussion of the ethnographic interviews with contemporary Native Americans. These ethnographic interviews are the second major data source for information about the Imperial Sand Dunes as a Native American Cultural Landscape. Consultants identified through a contact and consultation program were interviewed about past or present cultural associations of their group with the Dunes. These interviews are ethnographic in the sense that they are intended to develop from the point of view of the consultants, cultural information, and assessments about management issues concerning the Imperial Sand Dunes.

In the following sections of this Final Report, the geophysical characteristics and location of the Imperial Sand Dunes are presented

followed by a discussion of prehistory and historical events associated with the Dunes. Next, an ethnographic overview of tribal entities in the vicinity of the Imperial Sand Dunes is presented, followed by a discussion of contemporary Native American connections to the Dunes. The last two sections present (1) an inventory of sites and references to the Dunes derived from the literature review and ethnographic interviews and (2) a brief summary of the findings and land management implications of this Final Report.

THE PHYSICAL ENVIRONMENT

In this section we briefly develop three topics about the physical environment of the Imperial Sand Dunes: (1) an overview of the geophysical characteristics of the Dunes describing their location, geological characteristics, and ideas about their origin; (2) flora and fauna in the environs of the Dunes; and (3) water resources near the Dunes. This is background for understanding the types of resources that may have a relationship with past or present Native American ways of life associated with this landscape.

GEOPHYSICAL CHARACTERISTICS

The Dunes cover an area from approximately three to 6 miles wide and nearly 40 miles long. The vast majority of the Dunes are in Imperial County, California, but they extend a few miles into northeastern Baja California Norte, Mexico. The Dunes trend northwest to southeast along the east side of the Salton Sink (Jaeger 1980:14). The northern boundary is at Mammoth Wash, at about the same latitude as Calipatria and some 18 miles northwest of Glamis. The southern boundary is approximately 5 miles south of the international border and is northwest of Baja California Highway 8.

The Dunes consist of wind-blown sand that forms hills over 200 feet (60 meters) tall. In the vicinity of Glamis, for example, dunes are over 450 feet in elevation, while West Mesa, immediately west of the Dunes is at an elevation of approximately 100 feet and the foothill areas just east of the dunes are at an elevation of approximately 270 feet (Glamis NW and Acolita, USGS 7.5-minute series topographic maps; Morton 1977:22). Geologically, the sand consists of 60 to 70 percent quartz and 30 to 40 percent feldspar with traces of biotite, magnetite, garnet, and epidote. An iron oxide coating is present on some 25 to 60 percent of the particles, giving the Dunes an orange cast. Approximately 60 percent of

the grains are subrounded to subangular and nearly all grains are frosted or pitted (Morton 1977:22).

Sand dunes form in two basic ways: They are generally related to persistent eddies in the local wind pattern where the wind has a substantial sand load or they form in the lee of ancient lakeshores or ocean beaches (Jaeger 1980:28; Tarbuck and Lutgens 1992:335). The Imperial Sand Dunes are thought to have derived primarily from beach sand associated with sea stands from the late Pleiocene and Holocene and freshwater lake stands that occupied the Salton Sink on a sporadic basis for tens of thousands of years (Jaeger 1980:27).

The Salton Sink or Trough is a downthrown block, or graben associated with three right-lateral fault systems (Morton 1977). The well-known San Andreas Fault Zone runs along the west edge of the sand dunes (the east side of the Salton Sink). This local manifestation of the San Andreas Fault is sometimes called the Sand Hills Fault. Down the middle of the Salton Sink is the San Jacinto Fault and along the west side of the valley and through the Peninsular Mountains is the Elsinore Fault. There are a number of local faults associated with these major systems (e.g., the Brawley, Imperial, Superstition Hills, Superstition Mountain, Laguna Salada, and Sierra Juarez faults). These fault systems and the Salton Sink are associated with the plate tectonics and sea floor spreading that created Baja California. The Baja California peninsula has been rifted from the mainland of Mexico in a northwest direction (Morton 1977:22). Paleontological evidence suggests that the Sea of Cortez may have covered portions of the area that became the Salton Sink as long ago as the Miocene (approximately 25 million years ago), although magnetic data suggest that the mouth of the Sea of Cortez did not open until approximately 4 million years ago. Similarly, northern portions of the San Andreas Fault system are thought to be older than southern portions (Morton 1977:22-23). The Imperial Formation is a yellow and gray claystone interbedded with sandstone and oyster reef. A marine formation, it has been noted in wells throughout Imperial Valley but does not crop out in the eastern Salton Sink area. It has been dated to the late Miocene to Pliocene (Waters 1980).



Plate 2. Oblique Satellite Image of Salton Trough. View to north. Dunes are visible between the agricultural Imperial Valley on left and the Chocolate Mountains on upper right. Gulf of California in lower right. Salton Sea in upper left. Source: NASA.

During the Pliocene (2+ million years ago), the Colorado River delta aggraded to a sufficient height to exclude the entry of sea-water into the Salton Trough (Waters 1980). Depressed sea-levels associated with the glacial advances of the Pleistocene probably contributed to the extension of the delta to the south. A series of very high freshwater lake-stands have been documented within the Salton Trough during the late Pleistocene (Morton 1977; Waters 1980). Waters (1980) refers to the Pleistocene lakes as "Lake Cahuilla," while others have used the term "Lake LeConte," reserving the former name for the Holocene lakes that subsequently occupied the Salton Trough. These high lake-stands were due either to aggradation of the Colorado delta, which forced the river to flow into the Imperial Valley, or to increased local precipitation and reduced evaporation associated with the Pleistocene ice-ages - possibly to a combination of both causes. Ranging in elevation up to 170 feet above sea-level, the Pleistocene shorelines date to between 25,000 and 45,000 years ago (Waters 1980), well before the earliest accepted date for the migration of human beings into the New World. It is generally accepted that the formation of the Imperial Sand Dunes would have begun by this time. Periodic desiccations of these high lake-stands, combined with westerly and northwesterly winds would have created the conditions necessary to the dunes to begin to form. The terminal Pleistocene and early Holocene periods have not been well documented, but it seems unlikely that stands of Lake Cahuilla occurred during this time.

The record for the late Holocene is more clear. During this time, Lake Cahuilla filled to 40 feet above sea level several times and for extended periods. These lakestands were due to the shifting course of the Colorado River. The actual number of fillings is still a matter of some discussion, however. On the basis of 31 radiocarbon dates from archaeological contexts, Wilke (1978) suggested three Lake Cahuilla stands for the late Holocene: the first occurs between 100 B.C. and A.D. 600; the second between A.D. 900 and A.D. 1250; and the third between A.D. 1300 and A.D. 1500. Waters (1983) obtained a series of nine radiocarbon dates derived directly from lakeshore strata containing *Anodonta* shell (freshwater mussels) and an additional five from

archaeological hearths. His Lake Cahuilla chronology consists of four lake stands: the first from ca. A.D. 700 to A.D. 940; the second between ca. 940 to 1210; the third from ca. 1210 to a partial recession at ca. 1430; and the last from ca. 1430 to 1540. Schaefer (1986, 1994) argued for the existence of another partial lakestand (up to sea level) based on excavations at Dunaway Road in western Imperial County. He suggested a date of 1516 to 1659 for this filling of Lake Cahuilla based on radiocarbon data. He also called attention to a map from ca. 1762 drawn by John Rocque showing the Combined Gila and Colorado Rivers flowing north into an inland sea (Schaefer 1994:73). While it is quite clear that there were numerous filling episodes, the number of these lake stands and their dates remains an important topic for further research (Schaefer 1994:73).

	Wilke Model	Waters Model	Schaefer
1 st Stand	100 B.C.-A.D. 600	A.D. 700-A.D. 940	
2 nd Stand	A.D. 900-A.D. 1250	A.D. 940-A.D. 1210	
3 rd Stand	A.D. 1300-A.D. 1500	A.D. 1210-A.D. 1430	
4 th Stand	None	A.D. 1430-A.D. 1540	
5 th Stand			A.D. 1516-A.D. 1659
6 th Stand			A.D. 1762

The geology surrounding the Dunes consists for the most part of Quaternary alluvium. This consists of Pleistocene and Holocene (< 10,000 years old) deposits of sand, clay, silt, and gravel derived from local sources (Jennings 1967; Strand 1962). On the southeast side of the Dunes in the vicinity of Pilot Knob and the Cargo Muchacho Mountains, one finds Pilot Knob Mesa. This mesa consists of Pleistocene nonmarine deposits consisting of older alluvium and fanglomerate with well-developed desert pavement in places. These gravel hills and terraces are dissected by numerous desert washes (Strand 1962). On the northeast side of the Dunes, a strip of Quaternary alluvium lies between the sand dunes and the Pleistocene terraces and foothills. This varies from a mile up to a few miles wide (Jennings 1967). The boundary between the sand dunes

and the alluvium is much less distinct to the west. Here one finds smaller dune deposits alternating with alluvium extending over 10 miles west from the main dune formation in the vicinity of Interstate 8. Beyond these scattered sand and alluvial deposits, one encounters Quaternary lake deposits associated with Lake Cahuilla. On the west side of the Salton Sink are various hills and mountains that compose the local manifestation of the Peninsula Ranges. These are composed primarily of uplifted Mesozoic granitic rocks (ca. 190 to 345 million years old); however there are smaller outcrops of various sedimentary and metamorphic formations, including the Pliocene marine deposits alluded to earlier.

FLORA AND FAUNA

The Dunes are not completely barren. There exists a variety of specialized plant life that adapted to the drier climate created by the raising of the mountains and the sinking of the Salton basin. Creosote, a variety of desert sunflower, desert buckwheat, as well as varieties of primrose and verbena are examples of some of the flora that exist in the Dunes. There are also some relatively rare plants such as the silver-leaved dune sunflower (*Helianthus niveus* ssp. *tephrodes*), Peirson's milkvetch (*Astragalus magdalenae* var. *peirsonii*), and the parasitic sandfood (*Pholisma sonora*) that taps the roots of other desert plants, often desert buckwheat. There are some desert trees in the flat areas east of the Dunes where runoff provides water for ironwood, mesquite, and a type of desert willow.

The specialized geology, flora, and climate of the Dunes influence the types of animal life found there. Shovelnose snake, banded sand snakes, geckos, desert iguanas, fringe-toed lizards and a variety of other reptiles are found in the Dunes along with hairy scorpions, sand wasps, and other desert adapted insects. The vegetation along the Dunes periphery supports deer that may attract the Yuma Mountain Lion. Coyotes, migratory birds, as well as raptors that feed on rodents and insects also inhabit the Dunes and its periphery. Thus, far from being a barren landscape, a complex desert ecology characterizes the Dunes. Along the

eastern edge of the Dunes there are numerous desert washes. These originate in the Chocolate Mountains to the east and flow in a southwest direction. They are truncated by the dune formation. In their lower reaches, many of these drainages contain rich desert riparian vegetation dominated by ironwood (*Olneya tesota*), and blue palo verde (*Cercidium floridum*) trees. In some localities, one also sees smoketrees (*Dalea spinosa*) and desert willow (*Chilopsis linearis*). The latter is actually in the Bignonia family and is not related to true willows (Bowers 1993:119). The seeds of both ironwood and palo verde were used as food by Native Americans but were considered a less desirable resource (Castetter and Bell 1951:195-196).

WATER RESOURCES: THE COLORADO RIVER

The distribution of water is of critical importance for human populations residing in arid environments like the project area (Bean 1972, 1978; Bean and Smith 1978; Benedict 1924; Lawton and Bean 1968; Lee 1979; Taylor 1964). The main water resource in southeastern California, southern Nevada, and southwestern Arizona is the Colorado River. As the river passes along what is now the southeastern border of California, it goes through areas of narrow rocky terraces interspersed with broad floodplain areas. These floodplains were important settlement and planting areas for prehistoric inhabitants of the region. The river influenced human populations in a huge area, including the Dunes. At their southern end, a few miles south of Pilot Knob, the Dunes are less than a mile west of the present course of the Colorado River. While the river trends in a northerly direction in the project-vicinity, the Dunes trend northwest, so that at the northern end of the Dunes, the river is some 36 miles east. The Dunes terminate in the north at Mammoth Wash, approximately the latitude of Calipatria and Ocotillo Wells and Highway 78.

A few miles below Pilot Knob, the river begins to form a broad fan of braided channels, most of which lead to the head of the Gulf of California, some 60 miles south in Baja California Norte. Two major channels head

north into the Salton Sink. One of these is now known as the Alamo River (Alamo means “cottonwood” in Spanish). It branches off the Colorado just south of the Dunes and flows east for approximately 40 miles before it begins to flow north along the east side of Imperial Valley. The New River (it is not new) begins on the southern delta in a maze of sloughs associated with the upper Hardy River. It flows northwest and crosses the international border at Mexicali and flows north along the west side of the Imperial Valley (Gifford 1931). Both the New and the Alamo Rivers now empty into the Salton Sea. During years of moderate to high flow in the Colorado River, these and other tributaries provided valuable water resources to desert populations. As discussed below, major settlement areas of the Kamia were located here.

Prior to extensive dam building beginning in the 1930s, the Colorado River had a flood cycle typically beginning toward the end of April, with a maximum toward the end of June. This flood was highly variable from season to season both in terms of its timing and amount of water it contained; in some years, there was no flood at all. When the river was wild, it carried an immense silt load of some million tons or more per year. This mud was

deposited in the floodplain and delta to form very rich riparian soils. This supported a dense vegetation along the river of importance to aboriginal inhabitants of the area. Native horticulture was also undertaken in these rich floodplain areas. Dam building has dramatically altered the river, eliminating its flood cycles and its immense sediment load.



Plate 3. A square hundred-mile ribbon of sand dunes separates the Chocolate Mountains from the Imperial Valley.
Courtesy of the National Archives and Records Administration.

PREHISTORY, EXPLORERS, AND RECENT HISTORY

PREHISTORY

Malpais (Early Man) Pattern

The term Malpais was first coined by Malcolm Rogers to refer to very early materials; he later dropped the term and reclassified these materials as San Dieguito I (Rogers 1939). The term was later resurrected by Julian Hayden to refer to assemblages of heavily varnished choppers, scrapers, and other core-based tools typically found on old desert pavement areas. Malpais materials are posited to predate the San Dieguito materials (e.g., Begole 1973, 1981; Childers 1974, 1977, 1980; Davis 1978; Davis, Brown and Nichols 1980; Hayden 1976; von Werlhof et al. 1977). Unfortunately, obtaining dates for these materials has proven very elusive and many scholars are skeptical of posited early occupations (e.g., Schaefer 1994).

Paleoindian Period

The earliest part of the Paleoindian period in the region is termed the Fluted Point Tradition. Fluted points have been well documented and dated for the Rocky Mountain and Great Plains areas (Haury 1975; Hester 1972; Jennings 1978; McGuire and Schiffer 1982). Indeed, since the discovery of fluted points near Folsom, New Mexico, in 1926 (Figgins 1927), fluted points have been found in every state and province of North America (Moratto 1984:79). In the Great Plains and Rocky Mountain regions, they are often associated with big game kill sites and are interpreted to reflect a Big Game Hunting Tradition. However, in the Great Basin and California, their dating and economic significance is more problematic. They are typically found along the shorelines of Pleistocene playas, along fossil streams, and in passes connecting these kinds of places (Davis 1978; Fredrickson 1973; Riddell and Olsen 1969).

Some researchers suggest that this reflects a lacustrine or riparian adaptation ancestral to the Western Pluvial Lakes Tradition or San Dieguito Tradition that developed after ca. 12,000 B.P. No fluted points have been found in the Colorado Desert but this artifact type has been found in the Mojave Desert to the north. The fluted-point tradition in the Far West contains many of the artifact types found in the assemblage of the following period: flaked stone crescents, gravers, perforators, scrapers, and choppers (Moratto 1984:93).

Our understanding of the later Paleoindian culture history in the region is largely based on the work of Malcolm Rogers at the San Diego Museum of Man. He conducted a number of surveys in the Colorado and Mojave Deserts of California in the 1920s and 30s and defined what he called the San Dieguito Complex or Tradition. Similar materials occurring in the Mojave Desert-southern Great Basin have been termed the Lake Mohave Complex (Bedwell 1973; Campbell et al. 1937; Warren 1967; Warren and Crabtree 1986:184). Sites dating to this period in the vicinity of the Dunes area are not well documented, but many surface sites both to the east and west have been assigned to the San Dieguito complex (Pendleton 1986).

The San Dieguito-Lake Mohave Tradition is thought to have existed 12,000 to 7,000 years ago in this area during a time of greater effective moisture than the present (Warren and Crabtree 1986). Archaeological materials from this period have been found around dry inland lakes, on old desert terrace deposits, at Ventana Cave in the vicinity of Tucson, and also near the California coast, where they were first documented at the Harris Site (Rogers et al. 1966; Warren 1966). The assemblage consists of heavy percussion, core, and flake-based tools: domed and keeled choppers, planes, and scrapers. One also finds light-percussion flaked spokeshaves, flaked-stone crescentics, leaf-shaped projectile points, and the distinctive Lake Mohave and Silver Lake projectile points. Fluted points are also occasionally found on Lake Mohave-San Dieguito surface sites. Whether they represent a distinct cultural tradition (Davis 1969, 1978; Warren and Ranere 1967), a distinct function, or economic adaptation (Bedwell 1973; Hester 1973), or are

best considered an integral part of the Lake Mohave-San Dieguito complex remains problematic at this point. Milling equipment was thought to be rare or absent (Warren and Crabtree 1986:184), but recent work at Fort Irwin, north of Barstow, consistently revealed small amounts of groundstone (Basgall and Hall 1992). Groundstone implements have also been recently noted on the coast (Smith 1987; Warren et al. 1993:III-24). Subsistence was generally thought to have been focused on highly ranked resources (e.g., large mammals), but the faunal assemblage from Fort Irwin suggested an emphasis on small, not large game. How this applies to the Colorado Desert is unclear.

Archaeological sites in the vicinity of the Dunes that are posited to belong to the Lake Mohave-San Dieguito period consist primarily of trail complexes and cleared areas. These sites contain few diagnostic artifacts. The temporal placement of these materials in the desert is based primarily on degree of weathering and patination (Hayden 1976; McGuire 1982; Rogers 1939) — a rather tenuous proposition. Suffice it to say that the Lake Mohave-San Dieguito period is poorly understood and more research will be required before questions about settlement, economic, and other basic cultural systems can be resolved.

Archaic Period

The Archaic period is manifest as the Pinto Complex (7000 to 4000 B.P. and the Amargosa Complex (4000 to 1500 B.P.) in the Colorado and Mojave Desert areas and the southern Great Basin. There is an apparent shift to a more generalized economy and in a gradually increased emphasis on the exploitation of plant resources. The manos and basin metates are more common, suggesting a greater use of hard seeds (Warren et al. 1993:III-33). Projectile points consist of the distinctive Pinto series atlatl points made with crude, percussion technique. The assemblage also contains scrapers, knives, scraper-planes, and choppers. The mixed core-based tool assemblage of the Pinto Complex may indicate a range of adaptations to a more diversified set of plant and animal resources brought about by a generalized desiccating trend in the West, punctuated by occasional more mesic times.

The following Amargosa Complex is characterized by the presence of fine, pressure-flaked Elko and Humboldt Series and Gypsum type projectile points; leaf-shaped points; rectangular-based knives; flake scrapers; T-shaped drills; and occasional large scraper-planes, choppers, and hammerstones. Manos and basin metates become relatively common and the mortar and pestle are introduced late in the complex (Warren 1984:416). The florescence of tool types and the increase in hard seed processing equipment suggests a more generalized and effective adaptation to desert conditions in the Greater Southwest. From the Grand Canyon area, southern Nevada, and the California deserts, one finds pictographs of mountain sheep and rabbits and split-twig figurines suggesting a widespread hunting ritual complex from these times.

In nearby southern Arizona, the Archaic period is manifest as the Cochise complex, dating from as early as 9000 B.C. to about A.D. 1 (Haury 1983:159; Sayles and Antevs 1941). In this very long period, three Cochise culture stages have been defined on the basis of technological changes and geological and radiocarbon dates: Sulphur Spring, Chiricahua, and San Pedro (Antevs 1983; Wasley and Sayles 1983). The Sulphur Spring stage is characterized by flat slab metates and small flat manos; pebble hammerstones; and percussion-flaked, plano-convex knives, scrapers, and choppers. Projectile points are conspicuously absent. Chiricahua stage artifacts include shallow basin metates, small manos, both plano-convex and bifacial percussion-flaked tools and hammerstones, with relatively rare pressure-flaked projectile points. San Pedro stage materials are characterized by large, deep oval basin metates and larger manos. Mortars and pestles also appear. Flaked stone implements became much more frequent and pressure flaking became more important. Projectile points with rounded or flat bases and broad lateral notches are present. Storage and cooking pits are in evidence and pit houses appear (Thompson 1983).

At White Tanks, California, 12 miles southeast of Blythe, both San Pedro series projectile points and points more typical of the Amargosa to the west (e.g., Elko series projectile points) have been found together (Schaefer 1994) leading some to suggest an Archaic period cultural

boundary. Archaic sites with dart points are rare in the Colorado River zone itself.

Patayan Period

The Patayan cultural pattern dates from approximately 1500 B.P. (A.D. 500) to the Historic period. It is characterized by marked changes in economic and settlement systems. Paddle and anvil pottery was introduced, probably from Mexico by way of the Hohokam Culture of the middle Gila River area (Rogers 1945; Schroeder 1975, 1979). A subsistence shift from hunting and gathering of desert and river resources to floodplain horticulture took place at this time. The bow and arrow was also introduced at approximately A.D. 800. Around the same time period, burial practices also shifted from inhumations to cremations. Other culture traits generally associated with this period include increasingly elaborate kinship systems, rock art including ground figures, and expanded trading networks (McGuire and Schiffer 1982).

A preceramic phase has been suggested in association with the introduction of Cottonwood Triangular Series projectile points (Rector et al. 1979; Rogers 1945:175; Warren 1984:401). However, this transitional phase has been difficult to identify in the Colorado Desert given the paucity of stratified sites and controlled excavation (Moriarty 1966; Schaefer 1992; Warren 1984). This nonceramic Patayan phase has been demonstrated for the southern Great Basin-Mojave Desert at the Oro Grande site near Victorville (Rector et al. 1979) and, less convincingly, at Southcott Cave and Rustler Rockshelter (Donnan 1964). However, the applicability of these findings to the Lower Colorado area, and the existence of a preceramic Patayan in the area may be best viewed as a working hypothesis.

The first well-documented occurrence of pottery on the Lower Colorado River was at Willow Beach, some 25 kilometers below Hoover Dam. Intrusive Virgin Branch Basketmaker III, Verde Gray pottery, and Cerbat Brown Ware Patayan pottery were noted here dated before A.D. 750, in association with arrow points similar to Rose Spring and Eastgate types.

A local Lower Colorado ware, Pyramid Gray, shows up in deposits dated to A.D. 900 (Schroeder 1961). Cottonwood Triangular Series, Desert Side-Notched Series projectile points, and the characteristic buff and brown ware pottery evidently also appear at about A.D. 900 in the Colorado Desert. The Cottonwood Series apparently predates the Desert Side-Notched Series and probably the advent of pottery, and Tizon Brown Ware may predate Lower Colorado Buff Ware (Warren 1984:423).

The settlement system of the early Patayan is characterized by small mobile groups living in dispersed seasonal settlements along the Colorado River floodplain. Numerous trail systems throughout the Colorado Desert suggest the growing importance of long and short distance travel for trading expeditions, religious activities, visiting, and warfare. Pot-drops and trail shrines attributed to the Patayan pattern can be found at sites along these routes, a number of which are located east of the Dunes in the Chocolate Mountains.

Major population disruptions and persistent warfare along the Lower Colorado and Gila Rivers took place in the 17th through the mid-19th centuries. This may have been linked to filling and desiccation cycles of Lake Cahuilla (Aschmann 1966:245; Castetter and Bell 1951:30; O'Connell 1971:180; Schaefer 1994:72-73; Stone 1981; Weide 1976:89; White 1974; Wilke 1974). By the time of the final desiccation of Lake Cahuilla, floodplain horticulture was well established along the Lower Colorado. Since the floodplain areas were extensive, it is difficult to argue that farm land scarcity was a factor in warfare (Bee 1981:12; Castetter and Bell 1951:74-75). Prior to the desiccation of Lake Cahuilla, the Colorado River south of the confluence of the Gila (at Yuma) was probably uninhabitable because little or no water flowed south of the Alamo River. The people who lived in the delta region at the time of the first Spanish entrada, the Cocopah, Halyikwamai, Kohuana (Kahwan, Cajuenche) and Kamia, were probably living along the shores of Lake Cahuilla or were above the Yuma area on the Colorado River when the lake was full (Castetter and Bell 1951:30).

EARLY HISTORICAL CONTACTS

The first Spanish entrada into the Lower Colorado area began when Alcaron sailed up the river to about the Parker area in 1540. Melchior Diaz marched from Sonora, Mexico, to the confluence of the Colorado and Gila Rivers to meet Alcaron, but they did not make contact. Both explored the delta area to some extent. Diaz probably visited the Volcano Lake area (Sykes 1937:9). There is little in either of these accounts about the flora, fauna, geography, or Native Americans west of the river (Sykes 1970) and we do not really know where on the river they went (Forbes 1965:88-92), but they did describe the delta. There, they described perhaps seven or eight different tribes between the mouth of the river and the Pilot Knob area. It is difficult to tell just who these tribes were because of the terms that were used, but Forbes (1965:96) believes that the Halyikwamais and Kohuanas were there, along with the Kamia and perhaps the Cocopah. Alcaron mentions mountain people staying in the area. These were probably Paipai, or perhaps Kiliwa.

In 1604, Juan de Oñate arrived at the Colorado River by way of the Bill Williams Fork. There he contacted the Amacavas (Mohave), who were very friendly and visited the Europeans in large numbers (Bolton 1908; Forbes 1965:102). South of the Mohave were the Bahacecha, who Forbes (1965:104) suggests might have been Quechan; Bandelier supposed them to be Maricopa (Bolton 1908:275). South of them were the Ozaras, probably Ootams. Below the Gila River were the Halchidhoma. South of them were the Kohuanas. South of the Kohuanas were Haglli or Agalles. Bandelier thought they might be the Quechan; Forbes thought they were the Maricopa or Kaveltcadom (Forbes 1965:105; see also Bolton 1908:276). Nearby to the south were the Halyikwamais. Below them in the delta were the Cocopah (Bolton 1908:276; Forbes 1965:105). There is little to establish the whereabouts of the Quechan at this point in time (Forde 1931:98; Kroeber 1920:783).

The next Spaniard to visit the area was Father Eusebio Kino. He made two journeys to the delta region in 1701 and 1702. At that time, he found the Halchidhoma above, not below the confluence. The Quechan were in

their traditional territory at the confluence, as well as up the Gila River for some distance. Below the Quechan were the Halyikwamai; nearby and probably associated with them were the Kohuana. At the mouth of the Colorado River were the Cocopah (Kroeber 1920:484).

The chief changes in the century between the Oñate and Kino are the following: The non-Yuman Ozara have disappeared from the Colorado; their place at the mouth of the Gila has been taken by the Yuma; and the Halchidhoma moved from below to above the Gila (Kroeber 1920:484).

One of Kino's lasting contributions was to do away with the myth that California was an island (Sykes 1937:11). He also introduced wheat to the Quechan and Halyikwamais in 1703; a few years later he learned that it was being grown successfully (Forbes 1965:124).

In 1744, Father Jacobo Sedelmayr visited the Halchidhoma from the Gila River by means of the Cocomaricopa Trail. At that time Halchidhoma (the Quechan call them the Matxalycadom) territory was centered around the present-day town of Parker on the west side of the river (Kroeber 1920:478).

In 1768 and 1770, Father Francisco Garces visited the Gila River and, during the latter visit, met some Halchidhoma. In 1771, he returned to the Gila and traveled downstream to the Colorado. He met the Quechan and headed south along the sloughs to the Cocopah area, perhaps the Mesa Andrade area. He then turned northwest and traveled to the Volcano Lake/Cerro Prieto area to a Kamia village called San Jacome. He may have entered the Imperial Valley in the vicinity of Signal Peak before returning to the Yuma area.

The only documented crossing of the Dunes in the Spanish and Mexican periods took place in 1771. Archaeological evidence suggests Colorado River people had been occasionally crossing the Dunes at Buttercup Pass for at least a few hundred years (Underwood 2002). Sebastian Taraval was a Cochima Indian who had accompanied the Portola expedition from his home in Baja California to San Diego and on to Monterey in

1769. In August 1771, he fled from the mission at San Gabriel along with his wife and brother. They followed a trail to the Kamia village of San Sebastian. Taraval would later lead de Anza and Garces out of the desert to the same Kamia village, and de Anza named the village after Sebastian in gratitude. The trail he took would become part of the de Anza Trail. From San Sebastian, the three escapees attempted a direct route toward the Quechan settlements in the Yuma, Arizona, vicinity. The heat of the Colorado Desert can be formidable in August. Sebastian's wife perished in the Dunes, but Sebastian and his brother made it to the river. Salvador Palma, the Kwoxot or leader of a band of Quechan, took him to Altar, in Sonora, where he joined the first de Anza expedition. He went on to guide Garces on most of his later travels.

The first de Anza expedition began in 1774. Garces and Sebastian Taraval were somewhat experienced and were acting as guides along with Palma and a party of Kohuanas and Quechan. They stayed at Palma's settlement on a small island on the northeast side of the confluence of the Gila and Colorado. Then the party headed southwest to *Xuksil*, just south of Pilot Knob. From there the Spaniards continued southwest, away from the Colorado into an area of sloughs, perhaps the "headwaters" of the Alamo River. They searched for the village of San Jacome, which Garces had visited three years earlier, but Garces could not find it. It was a dry year and the residents had moved to San Sebastian. The party pushed on to the northwest, when they encountered large sand dunes and high winds.

...at half past eleven, after having crossed many sand dunes, we came to another, larger and higher, which it was necessary to cross in order to reach the small range where they told us the water hole was. It appeared that the range was about five leagues away (i.e., 15 miles to Signal Peak) and that in the weak condition of the riding animals, they would not be able to get over the sand dunes, and much less the loaded mules (de Anza in Bolton 1930b:61).

There is some confusion about where these particular dunes were (Bolton 1930b:57), but Bolton suggests they were some 15 miles southwest of Signal Peak, and 12 miles north of Cerro Prieto or Volcano Lake. They were not the Imperial Sand Dunes, but they caused de Anza to limp back to the river with considerable loss of animals. De Anza, aware of Sebastian Taraval's tragic crossing of the dunes, and aware of how close he came to disaster, gave them a wide berth from then on (Bolton 1930b:65). This example was followed by subsequent Spanish and Mexican travelers. There is no available published record of any Spanish or Mexican travelers trying to cross the Imperial Sand Dunes. What became known as the de Anza Trail probably passed along the Rio Paredones to Santa Olaya some 10 to 12 miles south of the international border before heading west. Years later, what became the Sonoran Road also headed well south of the Dunes, some 5 to 7 miles south of the border, then followed the Alamo River to the west.

Early in 1779, Father Garces and Juan Diaz, with 12 soldiers and some native interpreters, went to the Quechan area to establish two missions. Early on, the Quechan seemed to enjoy trading and visiting with the Spanish and at first furnished the poorly prepared padres with food and other necessities. The hospitality turned to enmity as more and more ill-equipped settlers and soldiers became the guests of the Quechan. There was extensive damage to Quechan crops by Spanish livestock, floggings, and disputes over land ownership. Tensions were exacerbated by crop failure in the winter of 1780-1781 because the Colorado River did not flood and irrigate many Quechan lands as it normally did. On July 17, 1781, the Quechan Revolt began and within a few days the 4 Franciscan priests, some 31 Spanish soldiers, and 20 settlers were dead. Some 76 people were taken prisoner and became slaves. The Spanish and their successors, the Mexicans, were never again able to control the Quechan (Forbes 1965:205).

The Quechan and Mohave had long-standing hostilities with the Halchidhoma (Matxalycadom) and Maricopa-Cocopah-Pima. The long-standing conflict between the Mohave-Quechan alliance and the Cocopah-Maricopa-Halchidhoma was dominated by the Mohave-

Quechan for many years. The raiding and pitched battles back and forth apparently caused or exacerbated extensive population shifts in the region at least over a period of some 300 years. Between 1827 and 1829, the Halchidhoma pulled out of the Colorado River area under a major military offensive of the Mohave and Quechan. They moved first down to Mexico then up the Gila River to join their friends, the Maricopa. Two very small delta groups, the Halyikwama and Kavelchadom also left the river area under pressure from the Quechan and took up residence with the Maricopa, at about this same time (Forbes 1965:125; McGuire 1982:70; Stewart 1983a:1-2). Spier (1933) argues that the Kavelchadom first moved to the Gila River between the Quechan and the Maricopa, and later moved from there to join the Maricopa. The Kohuana, another small delta group, joined the Maricopa in 1838 (McGuire 1982:70). The last battle in this conflict took place in 1857 when a large combined force of Quechan, Mohave, and Yavapai marched against the Maricopa (with their refugee friends the Halchidhoma, Kohuana, Halyikwamai, and Kavelchadom). The Maricopa, with their Pima allies, soundly defeated the aggressors.

RECENT HISTORY OVERVIEW

The first established American routes through the area around the Dunes were created by military expeditions from Yuma to San Diego during the aftermath of the Mexican War. The first route through the Dunes was that taken by Captain Cooke and his Mormon Battalion in 1847. Called the "Old Emigrant Road" by Lt. Amiel W. Whipple of the U.S. and Mexico boundary survey team in 1849, this route began at "Middle Crossing" (the middle of three routes that crossed the Colorado River). It then continued for about 15 miles across the Sand Hills to Cooke's Wells, at which point it coincided with General Kearny's route of 1846, which was known as the "Main Emigrant Road." Kearny had bypassed the deep shifting dunes by skirting the edges about 5 miles south of Cooke's route. The two routes converged at Cooke's Wells, and then headed east toward Alamo Mocho (Ellis 1995:19-25; Heilbron 1936:381).

The Gold Rush of 1849 brought heavy traffic to the Main Emigrant Road, as it was the preferred route for wagons on their way from southern Arizona to central and northern California. Most emigrants were not prepared for the horrendous conditions of the Colorado Desert. Few brought enough water and even fewer knew that they should only travel in the cooler hours of the day. Little was known about the desert or the Dunes by the emigrants heading toward the riches of California (Ellis 1995:19-25). It was not until the 1850s, during government-sponsored surveys, that detailed descriptions of the Dunes were recorded. William P. Blake, Geologist and Mineralogist for the railroad surveys in southern California, provides this geological description during his explorations in 1853.

These hills are remarkable for the beauty of their wave-like outlines and the purity of the sand. It is free from fine, earthy dust, and being perfectly dry moves about before the wind... The color varies somewhat at different localities, but is generally a light buff or reddish yellow, similar to ordinary river sand. A large proportion of the grains are translucent, and some are transparent; many are dark-red and appear to be carnelian; others are black, green, and brown... All the little asperities and sharp edges are seen to be worn away, and their surfaces are rounded by attrition, so that many of the grains are perfect spheres... The most formidable and extensive accumulation is that between Pilot Knob and the Alamo. This constitutes what has been known as the "Sand-hills of the Desert." ...This accumulation of sand-hills borders the emigrant road on the north side for several miles; it is a part of a long crescent-shaped belt of sand, that extends from Pilot Knob to the vicinity of the Alamo (1857:240-241).

It seems that William H. Emory, Major First Cavalry and United States Commissioner, disagreed with Blake on the origin of the sand, but his 1855 description of the Dunes provides valuable information for the traveler. Major Emory led the U.S. and Mexican Boundary Survey:

Between the ridges of mountains the traveller (*sic*) occasionally encounters vast plains, which, when the sun is above the horizon, producing the phenomenon of the mirage, present to him all the appearance of the sea... Occasionally in these plains we encounter sand-dunes, called by the Spaniards *medanos*, extending over a large area of country, and encircling what might at first sight be supposed the shores of dried-up lakes. But an examination of the sand with a microscope of sufficient power, dispels this idea. The grains seem to be angular, and are not rounded by the attrition of water (Emery 1859:47).

Also quite helpful to those about to travel on the emigrant roads was the climatic data provided by Lorin Blodget, Officer of the Medical Department of the Army. He included the following meteorological conditions in his report to the Surgeon General of the United States Army, during his 1853-1854 observations.

Within this line of 85°, at Fort Yuma, the maximum mean temperature of 90° for the summer is attained. The exposure here favors the most extreme accumulation of heat, as sands and arid plains surround the post for great distances, and the principal winds bring only sand storms at this season. Little rain falls in summer, and the air is distinguished by the intense aridity belonging to districts between the oscillations of tropical and temperate rains—the summer rains of Mexico approaching near this point on the south without reaching it, and the winter rainy season of the coast also near it, but never present (1855:706).

The first overland mail line began in 1857, contracted to Mr. James Birch. Although the route from San Diego to San Antonio, Texas, included the waypoints of Pilot Knob and Fort Yuma, the route was described as bypassing the scorching deserts of sand. Birch's mail route, commonly called "Jackass Mail," and officially called U.S. Mail Route No. 8067, was only operational through 1861 (Heilbron 1936:105-109). In 1858, the Butterfield line started carrying mail from Los Angeles to Yuma, by way of Kearny's route, south of the Sand Hills (Ellis 1995:19-25). Mail

crossing the Colorado River and the Colorado Desert began to remove the stigma of being isolated from the eastern part of the country, felt by those early settlers of southern California.

Once established, the mail lines advertised stagecoach service to those headed for California. It is reported that a new wagon road to Fort Yuma was completed in 1870 (Elliot 1883:75). The sand dunes seemed to have been a memorable feature to those who traveled overland from the east. Observations typically included discussions of heat, sand, death, and the lack of life and water (Clifford 1870; Frémont c. 1890; Rusling 1877; Taylor 1850). Some of the travelers noticed, as Emory did, the plentitude of mirages. For some, like Josephine Clifford, who traveled by stagecoach across the desert in 1870, the mirage was found to be the most fascinating element.

...this Fata Morgana of the Plains and Deserts of our own country became a most curious and interesting study to me. I could write a volume on the "dissolving views" I have seen... Out of the clouds, on the horizon, would sometimes loom up, majestically, a tall spire, a heavy dome, or a vessel under full sail; and changing into one fantastic shape after another, the picture would slowly fade into vapor at last. Whole cities have sprung up before my eyes... (1870:540).

For James Rusling, who traveled 15,000 miles overland and along the Pacific coast, it was the lack of life in the Dunes that caught his attention.

Here we struck the southern California or great Colorado Desert, and thence on to Yuma—we might as well have been adrift on the Great Sahara itself. ...as we approached the Desert ... the very genius of desolation seemed to brood over the landscape. ...To the south, all was a (*sic*) dead level, panting and quivering beneath the sun, as he (*sic*) neared the zenith, except where here and there a heavy mirage obscured the view, or vast whirlwinds careered over the desert, miles away—their

immense spirals circling upward to the very sky. ...We had already here and there found the sand drifted into ridges, like snow-banks, where sand-storms had preceded us... This was now the Colorado or Yuma Desert in earnest, without bird, or beast, or bush, or sign of life anywhere-nothing, in fact, but barrenness and desolation, as much as any region could well be. ...we had frequent exhibitions of mirage, on a magnificent scale... (1877:344-346).

Until 1873, the only form of communication available that crossed the southern California desert was U.S. mail, by way of the mail lines. In 1873, construction was completed on the Military Telegraph from San Diego to Fort Yuma (Elliot 1883:75). The survey for a continental telegraph, which crossed the Sand Hills, was completed in 1848 by John C. Fremont (Anonymous n.d.a:2). The line was constructed by soldiers of the Military Department, with the transportation of materials by contracted civilians. The line followed the wagon route until the route continued south into Mexico. At this point, known as Indian Wells, the line was installed across the Sand Hills, staying north of the U.S. and Mexican boundary. In 1879, a repair team was dispensed to check the line. Due the shifting sand, many poles were found either lying on the ground, or completely buried in the dunes. Although the wires were found above and below the sand, it did not impede communication. It was noted that the sand was so dry, it did not obstruct the passage of electricity (Elliot 1883:75).

Traveling along the northeastern edge of the Dunes, the Southern Pacific Railroad crossed the Colorado River in May 1877 (Pourade 1964:50;120-126). Although the railroad did not run directly through the sand dunes, the passengers were still affected by the shifting sands. A 1960 article by Roscoe G. Willson included a transcript of events related by a passenger, which had appeared in an 1889 article of the Kansas City Star.

In the late afternoon we pulled out of Yuma and were spinning along in good style close by what appeared to be a replica of the

Sahara Desert when all at once our vision through the car windows became obstructed by what appeared to be the leaping into the air of the sand banks and ridges through which we were passing. At first we thought nothing of it, but as the wind increased in intensity the car rocked, sand hit the windows with a crackling sound, and at times we feared the train would be blown from the tracks. The conductor and brakeman came charging into the car and began hurriedly closing the overhead transoms and seeing that all windows were tightly closed. They then pulled their guns and warned the passengers not to open the doors or windows stating they would shoot anyone who attempted to do so. By this time the fury of the storm had increased to such an extent that we were traveling through a perfect inferno of swirling dust and sand. In spite of the closed doors, windows and all openings, the fine sand soon sifted into the car and filled it with a yellow fog. For an hour or more the train proceeded slowly in the blinding storm and finally came out of the flying desert sands into a comparatively calm atmosphere.

The railroad ran so close to the dunes, that at least one of the sidings (Glamis) was located within the Dunes. Glamis became the center for supplies and communication for the area between the sand dunes and the Colorado River. Along with the construction of a siding at Glamis, the railroad installed a Western Union telegraph line and houses for section workers and their families (Allen 1983:13;33). Glamis became a town, supplying water and workers for the train. It soon became the central supply source for the region. When the Palo Verde Irrigation District began building in Blythe during the early 1900s, materials for the district's structures were delivered to Glamis and hauled by freight wagon to Blythe. Glamis was the primary supplier for the town until the Santa Fe Railroad reached Blythe from the north in 1910 (Allen 1983:26).

Although the sand dunes became part of the newly formed Imperial County in 1907, very little activity besides that around Glamis occurred

within the Dunes from 1877-1912. The Southern Pacific Railroad, in conjunction with the established stagecoach routes, was the only means of travel around the sand dunes until experiments with a road across the Dunes began in 1912. Spurred on by the continuing rivalry with Los Angeles and the coming of the Panama-California Exposition in 1915, San Diego was ready for an automobile road that came directly from Yuma across the Sand Hills. Some cars had followed the route of the military telegraph poles, but generally, travel by automobile across the Sand Hills was unsuccessful (Pendleton 1986:5). Not only did the sand provide little traction, but the sand and heat were also damaging to engines. Ed Boyd, Imperial County Supervisor, came up with three plans. The first plan to combat the traction issue was that of a brush road.



Plate 4. Two autos using the second Plank Road to cross the shifting sands. Courtesy of Bureau of Land Management, El Centro Field Office.

Mats of arrowweed were to be placed over troublesome spots. The brush mats were only a temporary fix, as the weeds became brittle and broke. The second plan was to modify Model Ts into “dune buggies.” Apparently, a prototype was completed and taken for a trial run. All seemed well until it stalled and had to be pulled out (BLM 1985:11-12).

Boyd’s third plan was a plank road of two parallel tracks the width of automobile tires that would run across the dunes (BLM 1985:12). Construction of the road began in 1913, and it was completed six months later by volunteers (Westerners 1950:77). As the first plank road began to deteriorate, plans for the second plank road began in 1916. The California Highway Commission was active in this effort (Pendleton 1986:6-7). Construction began on prefabricated sections at Ogilby, another Southern Pacific siding south of Glamis. This road was constructed of planks laid side by side, bolted to stringers, and banded to larger sections. The second plank road was completed in 1916, with improvements beginning as early as 1917 (BLM 1985:15). Improvements included the addition of turnouts and oil surfacing. Continued maintenance included trimming away splinters, adding a layer of crushed rock and gravel, and clearing sand from the surface (Pendleton 1986:6-7).

An article in American West magazine quotes an experience on the plank road by Marshall Trimble, author of a book entitled *Arizona*.

If two vehicles met in between the sidings one would hopefully extend the courtesy of reversing his direction, allowing the other to pass. However it is known that on at least one occasion when two drivers couldn't agree on who was to back up one pulled a pistol on the other and 'backed him' to the siding (Anonymous n.d.b:80).

E.Q. Sullivan, Division Engineer for the Highway Commission, studied the Sand Hills for a new route during 1923-1924. It was found that the current route across the dunes was the best route. An experimental survey in 1924 measured the elevation changes of the shifting dunes, providing a guide to the most stable ground for the new road (Pendleton 1986:6). He found that the smaller dunes shifted continuously; a dune less than 10 feet high could travel 100 feet per hour during a sand storm. Dunes over 30 feet high did not move more than 1 inch a year (Rigg 1939). This study led to the construction of the first graded road across the sand dunes. A 1926 article in *The Literary Digest* quoted N.M. Harkins of Los Angeles (author of *Good Roads*). It provides the best description of this construction:

Not the least of the worries of the engineers was the complete absence of water. Regardless of the type of pavement adopted, water was a necessity; and the nearest available water supply in sufficient quantities was several miles distant in Imperial Valley. It was first planned to pipe this water to the scene of the road-building operations, but before the final plans were made, it was decided to attempt to find water in Open Valley, a small space in the center of the dunes. Drilling was started, and to the surprise (*sic*) of those who scoffed, a flow of 500

gallons per minute was struck at 153 feet, thus removing the water hazard and bringing the building of a highway one step nearer. Construction work was then started which called for the building of a grade ten feet in height, on the top of which the road would be laid. The sand was thoroughly drenched with water and packed, and the side slopes of the grade mixed with oil, forming a heavy cake to prevent erosion and shifting. Upon this compacted grade the pavement, twenty feet in width, was placed in two courses, with a total thickness of six inches. The edges were thickened to nine inches and hand-tamped when placed. The seven-mile stretch of road was built at a cost of \$340,000 and was constructed in 100 days, altho (*sic*) shifts of



Plate 5. The black asphalt band of U.S. Highway 80 illustrates man's incursion across the sand. Courtesy of Bureau of Land Management, El Centro Field Office.

workmen often toiled twenty-four hours daily, and a great part of the work was accomplished at night, due to the intense heat in that section (Anonymous 1926:25).

This paved road, with names such as “Coast-to-Coast” or “Ocean-to-Ocean” Highway, “All-Year Southern Route,” and “Scenic Sunshine Route” was commissioned U.S. Highway 80 by federal and state highway officials on November 11, 1926. From Tybee Island, Georgia, to San Diego, California, the new highway covered 2,500 miles across eight states (Finley 1997:xiv-xv).

The next major construction across the sand dunes was facilitated by the Boulder Canyon Project Act of 1928. Construction of the All-American Canal began in 1934, with water first delivered for irrigation in 1940. The canal extended from the Imperial Dam (about 20 miles north of Yuma) west for approximately 82 miles, and ended at a point past Calexico, California. This public reclamation project included Boulder Dam, Imperial Dam, All-American Canal, and Coachella Canal. The objective of the All-American Canal was to provide desilted water to irrigate land in the Colorado River Basin (ASM 2001).

Beginning as early as 1900, water from the Colorado River was brought west to East Mesa by way of a canal. The Imperial (or Alamo) Canal, bridging the gap between the channels of the Colorado River and the Alamo River, also dipped south into Mexico, thereby avoiding the sand dunes. As early as 1908, surveys for a more direct route from the Colorado River to east Mesa were conducted. In 1913, the Imperial Irrigation District conducted a survey just north of the international border, with the proposed canal paralleling the boundary line. An All-American Canal Board, formed in 1918, continued authorizing surveys through 1931. The final route, using a route north of the border through the sand dunes, had the canal beginning at the site of the proposed Imperial Dam. This starting point would reduce the required depth of excavation through the sand dunes (ASM 2001).

Excavation of the All-American Canal through the Dunes was underway in 1937. The canal extended through 10 miles of the Dunes, with the first half heading northwest through inter-dune zones. A bridge across

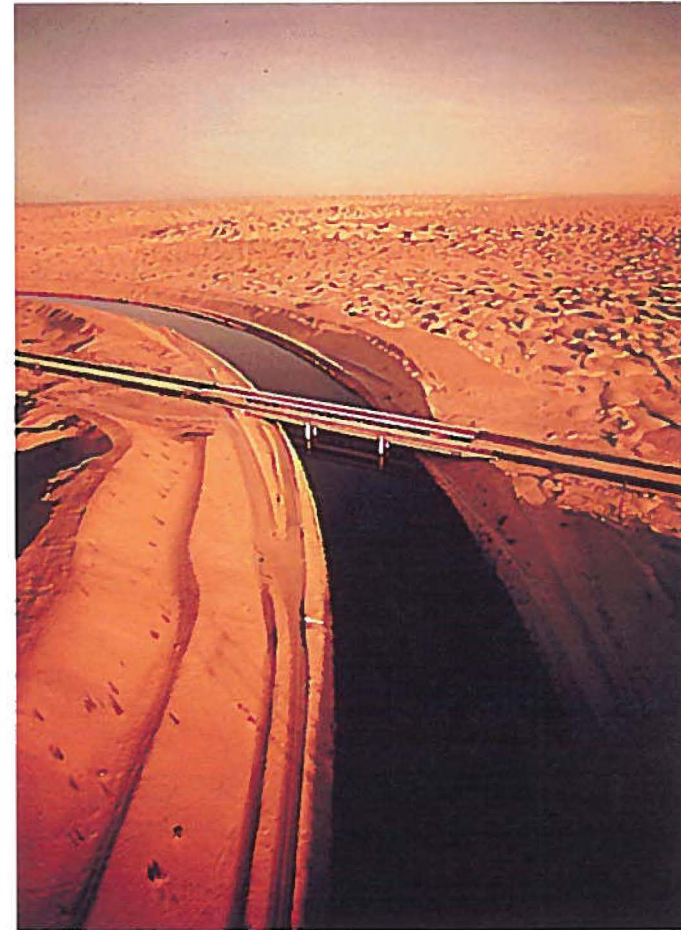


Plate 6. The desolation of the Imperial Sand Dunes is punctuated by the All-American Canal, which traverses from the Colorado River to the Imperial Valley. Courtesy of the National Archives and Records Administration.

the canal was built for U.S. Highway 80. From here, the canal turned southwest toward the border, heading through the highest dunes. The 10-mile section of the canal traversing the dunes was unlined with a bottom width of 130 feet and a water depth of 16.6 feet (ASM 2001).

The installation of transmission lines through the Sand Hills, authorized by the Parker Dam Power Project of 1935, closely followed the construction of the All-American Canal (Linenberger 1997:9-23). The line generally ran parallel to the canal and consisted of H-frame tangent wooden-pole structures with crossbars that supported 600 conductors (300 each) (WAPA n.d.). The Gila to Drop No. 4 (Gila-Drop 4) transmission line was part of a network that brought hydroelectric power from Parker and Davis Dams on the Colorado River to substations in Arizona and California. The Bureau of Reclamation awarded the construction contract of the Gila-Drop 4 line to Fritz Ziebarth in 1942. The line was completed in June 1943 and energized in July (Linenberger 1997:9-23).

World War II brought General George S. Patton to the Colorado Desert in 1942 for maneuvers that simulated conditions of the North African deserts. The first training area consisted of the Desert Training Center (DTC), located northeast of the Dunes. By 1943, the area was expanded east into the larger California-Arizona Maneuvering Area (C-AMA). The southwest boundary of the DTC and C-AMA was the Southern Pacific Railroad, which was utilized by Patton. Railroad sidings were used for supplies, storage, mail, and headquarters for various army groups. Glamis siding, located within the Dunes, leased 1,000 feet of spur track to the army (Bischoff 2000:1-23;122-126). Recorded use of Glamis by the army is limited to soldiers using the Glamis Post Office, which opened in 1940. Mail service was apparently faster through Glamis than through the army (Allen 1983:34-40). Although the sand dunes were adjacent to the training area, there is no documentation to support Patton's use of the dunes, although local folklore suggests that this did indeed occur.

The activity in the Dunes post-1950 included the bombing by Yuma Proving Ground, the completion of Glamis Road (U.S. Highway 78), the construction of Interstate 8, and the continued popularity of ORV recreation. A portion of the Dunes was utilized by the Yuma Proving Ground as a practice range from 1951-1964. When they discontinued using the area, the Dunes were combed for shells, rockets, and practice bombs before reverting to public land (Finley 1997:50-51). The Glamis Road was completed in 1958 "through the heart of the Algodones sand mountains" (Weight 1959:32). The highway was constructed approximately 20 miles north of U.S. Highway 80 and went through the community of Glamis. The Glamis Road differed from U.S. Highway 80 in that it did not follow the contours of the dunes but rose and fell

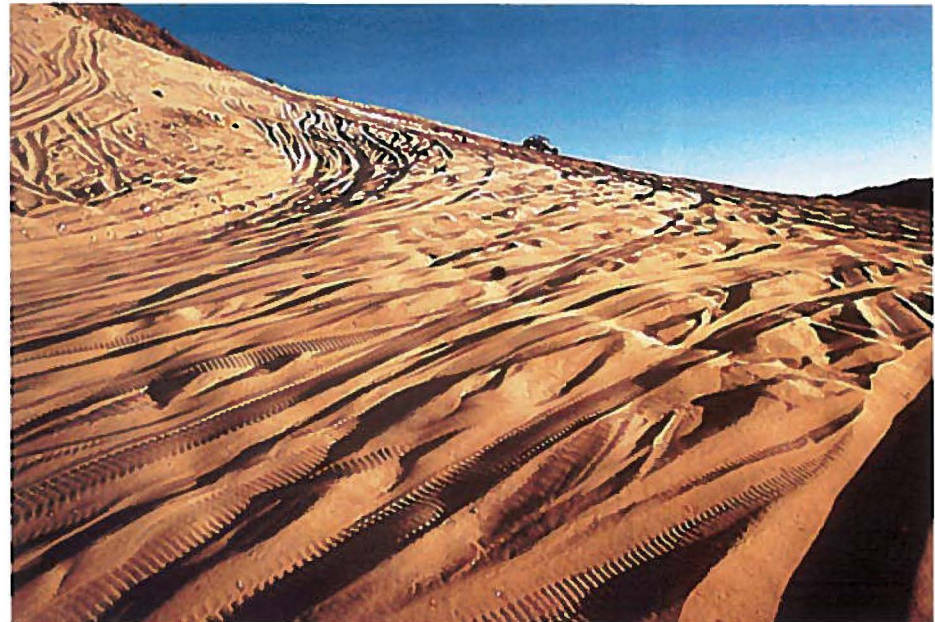


Plate 7. The dunes have become a playground for Off-Road Vehicle (ORV) use, one of the most popular activities of the area. Courtesy of the National Archives and Records Administration.

along with them. The route was made by scraping and bulldozing a quarter of a mile swath through the dunes. Water from the Coachella Canal, 14 miles away, was used to repeatedly soak and compact the sand (Weight 1959:32-33). Construction of Interstate 8 was completed in the mid-1970s, bypassing and occasionally eliminating U.S. Highway 80 (Finley 1997:xiv-xv).

The most prevalent use of the Dunes since the 1950s has been recreational vehicle activity. Highway 78 provided even greater access to the sand dunes. The first documented dune buggy was owned by Ed Boyd in 1912 and was used to cross the Dunes. The second recorded use of a dune buggy is that of Al Allen, longtime owner of Glamis Store. Sometime around 1940, Mr. Allen modified a Model T Ford truck for use across the dunes from his store to the well located on the property. Adapters were constructed to accommodate dual wheels and tires. He also placed larger tires over the original tires to create a wide and oversized tread. The roof and bed were removed, leaving what his wife called, "Al's custom-made sand buggy" (Allen 1983:33;81).

NATIVE AMERICANS AND THE IMPERIAL SAND DUNES: THE ETHNOGRAPHIC RECORD

In this section we present an ethnographic overview of tribal groups in the project area. This discussion includes ethnographic sketches of the tribes most likely to have included the Imperial Sand Dunes in their traditional use areas. These groups would be expected to have known places, stories, and songs that relate to the Imperial Sand Dunes. In short, each of these tribes was expected to have traditional associations with the Imperial Sand Dunes. The sketches also include a discussion of known settlement and use areas in or around the Dunes. Literature sources comprise the major source for this section, although some past and present interview materials have been incorporated.

STUDY AREA TRIBES

A number of groups lived in the vicinity of the Dunes and used them or traveled through them from time to time. An ethnographic sketch of these groups and their traditional territories is presented below. Most of the cultural groups associated with the Dunes speak languages of the Yuman family of the Hokan language stock. This would include the Kumeyaay, Kamia, Cocopah, Paipai, Quechan, Halchidhoma, and Mohave (Kroeber 1920; Shipley 1978:86). The Cahuilla speak a language of the Cupan group of the Takic family of the Uto-Aztecan language stock. The Chemehuevi, a recent offshoot of Southern Paiute, speak a language from the Numic family of the Uto-Aztecan stock (Shipley 1978:86).

It should be noted that native boundaries were fluid and indistinct, particularly in areas on the periphery of a group's territory or areas that contained few resources. There were also major migrations during the Late Prehistoric and Early Historic periods. Some of these may be associated with filling and desiccation cycles of Lake Cahuilla, described

in the previous section. In addition, the dramatic fluctuations in water flow in the Colorado River had implications for floodplain planting both along the river, and in the Imperial Valley. Scholars agree that warfare was an important factor in population movements (Forbes 1965; Forde 1931; Kroeber 1920), which may be associated with times of low flow in the Colorado River (White 1974) or with the slave trade with Spanish settlers in Sonora beginning by the early 1700s (Font 1775-1776 in Bolton 1930c:102; Forbes 1965:133-135). Doubtless, all of the above were factors in population movements along the Colorado River and Imperial Valley from 1605 to the mid-19th century.

What follows next are ethnographic sketches of tribes associated with the Dunes according to published sources, archival materials, and past and present interviews. Primary ethnographic literature sources are listed, followed by a discussion of tribal territories and basic subsistence practices. Where appropriate, settlement and resource use areas situated in or around the Dunes are described. Major water sources are listed with the Kamia sketch, since all but one are within Kamia traditional lands. Since most of the tribes are Yuman, we have included a short essay on Yuman Spirituality at the outset that is context for some of the interview data presented in the *Contemporary Native Americans and the Imperial Sand Dunes* section.

YUMAN SPIRITUALITY

The cosmology and spirit life of the Yuman tribes are dominated by a belief in a plural reality: one is the "normal" material existence, and the other is the spiritual-mystical existence. This spiritual level of reality is accessed by means of dreams (Bee 1982:49-50; Forbes 1965:63; Forde 1931:201-204; Kroeber 1925:754; Stewart 1983:65). Dreams figure prominently in legend and song, in the pursuit of knowledge, and in the acquisition of good and bad luck. The dream experience is also the major source of power (Bee 1982:49-50; Forbes 1965:63; Forde 1931:201-202; Kroeber 1925:754). The best and most significant dreams come unsolicited, during sleep at night, but intentional dreaming in

pursuit of knowledge and insight is also occasionally done. This is somewhat analogous to prayer among other religious traditions, although no direct supplications to deities are made (Forde 1931:180-181, 202). However, vision questing for supernatural power, such as pursued among the Plains tribes was not done (Forde 1931:202). Kroeber (1925:755) spoke to the role of dreams:

Dreams, then, are the foundation of Mohave life; and dreams throughout are cast in mythological mold. There is no people whose activities are more shaped by this psychic state, or what they believe to be such, and none whose civilization is so completely, so deliberately, reflected in their myths.

Among the pan-Yuman peoples, dreams are tied closely to the natural and cultural landscape. Exact places and moments in time are related in dreams. Personal dreams parallel Yuman religious myth and legend in the sense that most are about journeys of spiritual discovery, often along trails leading to mountains of religious significance where important spirits reside. Kroeber (1925:754-755) points out:

Myths are enormously long, and almost invariably relate the journey of either a single person, or of a pair of brothers with or without a following, beginning with their coming into existence and ending with their transformation into an animal or a landmark. This journey, which is sometimes described as occupying two or three days, but is really a timeless life history of the hero, is given with the greatest detail of itinerary; but incidents of true narrative interest are few, often irrelevant to the main thread of the story... But each locality reached, whether on the river, in the desert, or among distant mountains, is named, and its features are frequently described.

Dream travel, trails, and spirit mountains remain significant parts of this spiritual life among contemporary Yuman peoples. Spirit mountains and other places that occur in epic story and song cycles form an important part of the pan-Yuman cultural landscape.

There are several widely recognized mountains known to have pan-Yuman spiritual significance in the vicinity of the Dunes project area: Pilot Knob (*Avi kwala*, no gloss) with its associated site of *Avi kwinur* (inscribed rock), located some 11 miles west of the present-day town of Yuma, and a couple of miles east of the south end of the Dunes; Picacho Peak (*Avi milyket*, high rock one can see from a distance), located approximately 26 miles north of Yuma and some 16 miles east of the Dunes; and Tank Hill or Sierra Prieta (*Avi kwaxa*, cottonwood hill or peak) located within the town of Yuma (where the town water tanks are) some 8 miles northeast of the Dunes (Bee 1982:50). Further afield are Muggins Mountain some 23 miles east of Yuma; Castle Dome Peak some 38 miles east of Indian Pass; Monument Peak, a chimney rock in the Whipple Mountains, called *Avi Haritat* in Quechan, located some 10 miles north of Parker; and Black Peak, southwest of the Buckskin Mountains located some 5 miles southeast of Parker called *Avi Suquilla* in Mohave.

Pilot Knob (*Avi kwala*) was the starting place for the traditional *Keruk* ceremony reenacting the death of the pan-Yuman creator god *Kukumat* and the procession carrying his body back to *Avi Kwame* (Newberry Peak or Spirit Mountain) located some 30 miles north of Needles in Mohave territory. A major ceremonial stop on the pilgrimage was Picacho Peak (*Avi milyket*). The trails linking these sacred mountains with each other and with various village areas are of particular spiritual significance. These trails were utilized for actual religious pilgrimages associated with the *Keruk* ceremony, the most important and deeply religious of all pan-Yuman ceremonials, and they were also utilized for dream travel.

THE KUMEYAAY

Primary ethnographic sources consulted for the Kumeyaay are Gifford (1918), Spier (1923), Kroeber (1925), Strong (1929), Waterman (1910), and Cline (1984). In addition to Cuero (1970), Shipek (1988) has published numerous other articles on the Kumeyaay and Kamia.

Luomala (1978) provides a summary overview and extensive bibliography. Almstedt (1982) offers an overview with some valuable previously unpublished information. Ethnographic notes made in 1948-49 on Kumeyaay groups in northern Baja California have recently been published (Hohenthal 2001).

It is useful to think of the Kumeyaay as three closely related groups based on differences in dialects (Langdon 1970, 1975; Luomala 1978; Spier 1923) and geography (Barker 1976; Gifford 1931): the northern Kumeyaay or Ipai, the southern Kumeyaay or Tipai, and the Desert Kumeyaay or Kamia. The northern and southern Kumeyaay were subjugated by the Franciscan missionaries and Spanish imperial forces at San Diego, so they were until recently known as Diegueño. They occupied mountain and coastal areas of what is now San Diego County and are chiefly distinguished from each other in terms of dialectical differences (Langdon 1970, 1975; Luomala 1978; Spier 1923). The term Kamia, like Kumeyaay, has been used to refer to all three divisions (e.g., Forbes 1965) but now is most commonly used to refer only to the desert division. The word Kamia is a Lower Colorado variant of the term Kameyaay. The Quechan call the coastal Kameyaay *Kamya ahwe*, while the Mohave call them Kamia ahwe or Kamia *ahkwe*, which means remote or foreign Kamia (Kroeber 1920:478; Luomala 1986:607-8).

Traditional Kumeyaay territory covered the southern two-thirds of San Diego County, from Agua Hedionda (south of Carlsbad) south to some 20 miles below Ensenada, Baja California Norte. On the west, it started at the Pacific Ocean and extended to the mountains of the Peninsular Range and into the desert just beyond (Cline 1984; Gifford 1931:1-2; Spier 1923:298). Northwest of the Kumeyaay (or Ipai) were the Luiseño. To the north were the Cupeño. To the northeast were the Cahuilla. These people all spoke Takic languages. To the east were the Kamia and to the south were the Paipai (*Akwa'ala*), both Yuman-speaking groups.

Subsistence for mountain and valley people focused on gathering plant foods. Acorns were particularly important. These became ripe in September and fell to the ground in October (Luomala 1978:600; Spier

1923:334). They were stored until February at which time they were dry enough to pound into meal. Seeds from sages, grasses, and other plants were also dietary staples. Agave (mescal) was also an important food found along the arid eastern slopes of the Peninsular Range. Hunting contributed to the diet in a minor way. It was focused on small game, primarily rabbits. These were taken with bow and arrow or rabbit stick (*macana*). Hunting of large game was somewhat less important, with deer and Bighorn Sheep taken on occasion.

Trade was an important feature of Kumeyaay subsistence. Coastal groups traded salt, dried seafood, dried greens, and abalone shells to inland and desert groups for products such as acorns, agave, mesquite beans, and gourds (Almstedt 1982:10; Cuero 1970:33; Luomala 1978:602). Travel and trade were accomplished by means of an extensive network of trails, some of which traversed Imperial Valley and passed by or through the Dunes. Kumeyaay living in the mountains of eastern San Diego County frequently used these trails to travel down to the Kamia settlement of *Xatopet* to trade and socialize in winter (Castetter and Bell 1951; Gifford 1918:168; Spier 1923:300; Woods 1982).

Kumeyaay Settlement and Use Areas

The Kumeyaay consisted of autonomous bands organized on the basis of over 30 patrilineal clans, some of which had territory or winter rancherias in western Imperial Valley (Spier 1923). Some clans had more than one village (Cline 1984; Luomala 1978). Spier (1923) recorded five clans for the Desert Kumeyaay or Kamia along the New River and Alamo River. The Kumeyaay had no tribal organization, tribal name, or band names, but people identified themselves by clan names (which were also the surnames of clan women) and by places that clans traditionally occupied.

Some Kumeyaay lived in two seasonal settlements during the year. For example, the *Kwamai* (or *Kwaaymii*) clan spent their summers in the Laguna Mountains and their winters in the desert to the east a few miles

(viz. Mason Valley, Vallecito Creek, Carrizo Creek)(Cline 1984:12-19; Spier 1923:306). People residing in the Peninsular Mountains (e.g., the *Kwamai*) would often travel to Kamia villages in Imperial Valley to trade (Cline 1984; Gifford 1931; Spier 1923).

Considering these seasonal migration patterns, the Kumeyaay probably joined their Kamia relatives and friends at places in the Imperial Valley during the colder winter months. On the other hand, there are no specifically Kumeyaay settlement or land use areas in the vicinity of the Imperial Sand Dunes.

THE KAMIA

Primary ethnographic sources consulted for the Kamia include Gifford (1931), Spier (1923), Kroeber (1925), Drucker (1937), and Luomala (1978). Shipek (1982) brings the better part of the information available on the Kamia together in a summary overview. Published sources on the Kamia, however, are scant.

Gifford suggests that the precontact population of the Kamia “could not have been more than a few hundred” (1931:16). Their traditional territory included the southern Imperial Valley from the latitude of the southern half of the Salton Sea, to well below the international border. On the west, it extends to the foothills of the Peninsular Mountains, and to the east, Kamia territory extends up to the Sand Dunes (Forbes 1965; Luomala 1978:593) It includes a piece of territory east of the Cocopah Mountains along New River/Hardy River extending to within perhaps 25 miles of the Gulf of California. They lived at times along the west bank of the Colorado River but their main settlements were along the New and Alamo Rivers.

The Kamia enjoyed excellent relations with the Quechan, and at times, they also lived near or with the Quechan at the village of *Xuksil*, on the west bank of the Colorado River near present-day Algodones (Forbes 1965; Gifford 1931:1). They speak a Yuman language that was most

closely related to the Cocopah and others who lived in the delta area at the mouth of the Colorado River (Halyikwamai, Kahwan). The Kamia, Kumeyaay, and Cocopah form the Delta-California branch of the Yuman languages.

North of the Kamia were the Desert Cahuilla, Takic speakers. Evidently, the Kamia did not have a great deal of interaction with the Cahuilla. To the east were the Quechan. South in the Colorado River delta there were several small cultural groups, including the Halyikwamai and Kahwan, that, in the 18th century, became extinct or amalgamated into other local groups such as the Quechan and Cocopah, or with the Maricopa on the upper Gila River. To the south in the late 19th century were the Cocopah, with whom the Kamia were often at war. To the west, were the close relatives of the Kamia, the Kumeyaay. They carried on a lively trade with one another and had strong social and economic ties.

Subsistence among the Kamia consisted of hunting and gathering and floodplain horticulture (Barker 1976; Gifford 1931). As mentioned above, in normal years, the Colorado River would overflow its banks in the spring and early summer. This would also fill the delta tributaries of rivers such as the New and Alamo Rivers. When the floodwater receded, the Kamia would plant in the mud. A dam was maintained at *Xatopet* on the east/west portion of the Alamo River to control water flow and allow farming in years when water flow was insufficient. Likewise, small dams and ditches (*acequias* in Spanish) used to irrigate crops were also reported in the vicinity of Algodones/Pilot Knob (Castetter and Bell 1951:43). Gifford (1931:22) and Castetter and Bell (1951:43) suggested these were recent adaptations and not traditional. Bean and Lawton (1973), Lawton and Bean (1968), and Shipek (1988) argue that irrigation was indigenous.

For all the Colorado River people, including the Kamia, the major food staple was mesquite and screwbean, called by the Kamia *anxi* and *iyix* respectively (Gifford 1931:23). These were sometimes eaten fresh off the tree in early summer, but primarily, the pods were collected from the ground or shaken from the trees in July. These were pounded into a

flour in a mortar made of a cottonwood tree trunk (Gifford 1931). The seeds were discarded (Castetter and Bell 1951). Seeds of the ironwood (palo fierro) were also used. They were gathered off the ground in October and dried, then parched, ground lightly on a metate to break the seeds apart, then leached to remove the bitter taste. Seeds of the palo verde were also parched and eaten. Neither palo verde nor ironwood were considered particularly desirable food resources (Castetter and Bell 1951:195-196). Acorns were at times an important food. They were gathered in the mountains to the west of Kamia territory in October and acquired through trade from the southern Kumeyaay.

Hunting contributed to the diet in a minor way in terms of overall caloric intake, but provided valuable protein, and skin and bone for clothing, blankets, and tools. Small game, primarily rabbits, were most frequently taken, using bow and arrow or rabbit stick (*macana*). Sometimes fires were set along sloughs to drive rabbits out. Individuals with bow and arrow also hunted deer and mountain sheep. Fish were also taken in sloughs with bow and arrow, by hand, hooks, basketry scoops, and seine nets. Salt was obtained 2 to 3 miles southwest of Algodones (Gifford 1931:24).

Kamia Settlement and Use Areas

The primary settlements of the Kamia were on the New River and the Alamo River in three locations (Barker 1976:25; Gifford 1931:5). These were not compact villages, but large planting areas dispersed along the sloughs.

Saxnuwai was at the general latitude of Brawley on the Alamo River and stretched to the south for a considerable distance. It included Mesquite Lake, a large ephemeral lake on the west side of the Alamo River and French Lake, a small ephemeral lake on the east side of the Alamo River (Barker 1976:25; Gifford 1931:5; Spier 1923). The *Saxnuwai* area was about 15 miles west of the Dunes.

Xachupai was on the west side of Imperial Valley, along the west bank of New River about 6 miles north of the international border, along a major east/west travel corridor. The *Xachupai* area was approximately 30 miles west of the Sand Dunes. It was a center for trade with the southern Kumeyaay (Gifford 1931:5-6). Indian Wells was in the center of this sprawling planting and settlement area.

Xatopet was along the east/west stretch of the Alamo River in Mexico, about 10 miles south of the Imperial Sand Dunes. The term *Xatopet* means dam (Gifford 1931). Some Native American consultants mentioned a village named *Hatopit*, also on the Alamo River, which is most likely a reference to *Xatopet* (Woods 1982). Early explorers document a number of minor settlements, some of which were mentioned in the water resources section.

Wikwinil is a minor settlement and planting area in the vicinity of Blue Lake, a small, ephemeral lake on the east side of New River in western Imperial Valley (Gifford 1931:6). It was located a few miles northwest of Indian Wells and *Xachupai*, approximately 6 miles west southwest of El Centro, and 7 miles west northwest of Heber (Gifford 1931, Plate 1). This would place *Wikwinil* about 35 miles west of the Dunes.

Springs, Wells, Lakes, and Tinajas

Within the Dunes, there are no known springs, seeps, or tinajas (“earthen water jars” in Spanish, and used by early explorers as “water storage places”). There are small exposed pans in the vicinity and these may have contained water for short times after rains. However, prehistoric wells are documented for a number of nearby locations. These water resources were very important places in this hot, arid environment. Many had more or less permanent Kamia settlements nearby, while others were rest stops on trails across the desert. Most of the major prehistoric water resources of Imperial County and others near the Dunes were located in or around traditional Kamia territory and are listed here.

San Jacome

This was a Kamia village with a well some 35 miles west southwest of Pilot Knob, on the north shore of what is now known to Americans as Volcano Lake (Bolton 1930a, 1930c; Forbes 1965:153; Garces 1771, 1774 in Coues 1910). Garces visited this area in 1771, but when he tried to find it on another trip in 1774, with the first de Anza expedition, the well had dried up and the people had moved to San Sebastian (Bolton 1930a:123, 136). San Jacome was about 30 miles southwest of the Sand Dunes.

Indian Wells

This was a well complex on the west bank of the New River about 6 miles north of the international border (Barker 1976:25; Gifford 1931:5-6; Woods 1982). Indian Wells was in the center of the large settlement and planting area called *Xachupai*. The word *Xachupai* means “well” (Gifford 1931:9). Indian Wells was approximately 6 miles southwest of El Centro and 5 miles west of Heber (Gifford 1931, Plate 1). This would place it some 35 miles west of the Dunes.

Seven Wells

Located on the Alamo River, Seven Wells was associated with the Kamia settlement and planting area called *Xatopet*. The word *Xatopet* means, “dam.” This was about 10 miles southwest of the south end of the Dunes (Gifford 1931:9, Plate 1).

Sunset Springs

The springs, close to Dear Peak on contemporary maps, centers an extensive desert and mountain hunting area of the Kamia called *Xakwinimis*. The area has mythic associations for groups such as the Kumeyaay, Kamia, Quechan, and Maricopa (Desert Planing Staff Notes 1979). It may also have contained minor settlements and planting areas. Sunset Springs was situated southeast of Brawley, approximately 6 miles west of the Dunes (Barker 1976:25; Gifford 1931:6-7, Plate 1; Lawton 1978 Figure 3). This general area is included in the inventory.

San Sebastian

This was a Kamia village with an aboriginal well and/or spring. It was located at the junction of San Felipe Creek and Fish Creek and near the area now known as Harper’s Well in the western Imperial Valley (Bolton 1930a:145; Garces 1774 in Coues 1910; Gifford 1931). This is several miles southwest of today’s Salton Sea, and about 40 miles west of the Dunes. San Sebastian was named by de Anza in honor of Sebastian Taraval, a Cochimi Indian from Baja who served as guide to de Anza and Garces (Bolton 1930a:145).

San Anselmo

Garces visited this spring on his return to the Colorado River area from the first de Anza expedition (Bolton 1930a:162). It is 4 miles east of San Sebastian and is now known as Kane Springs. This is a few miles southwest of today’s Salton Sea, and about 35 miles west of the Dunes.

Yuha Well

Located south of Plaster City in southwestern Imperial Valley, this was an important stop on the de Anza Trail, called Santa Rosa by de Anza (Bolton 1930a:143, 1930c:34). Before that, it was a stop on the important Kumeyaay/Kamia trail from *Jacumba* to *Xachupai* on the New River. It is approximately 50 miles west of the Sand Dunes.

Mesquite Lake

Located in the general vicinity of *Saxnuwai*, this large ephemeral lake was on the west side of the Alamo River, approximately 6 miles southwest of El Centro and 5 miles west of Heber (Gifford 1931, Plate 1). This would place it about 35 miles west of the Dunes.

French Lake

This small ephemeral lake was also located in the general vicinity of *Saxnuwai*. It was on the east side of the Alamo River north of Mesquite Lake. This would be a few miles southeast of the community of Brawley, approximately 6 miles southwest of El Centro, 5 miles west of Heber (Gifford 1931, Plate 1), and approximately 35 miles west of the Sand Dunes.

Blue Lake

This was a small, ephemeral lake on the east or north side of New River in western Imperial Valley. It was located a few miles northwest of Indian Wells, approximately 6 miles west southwest of El Centro and 7 miles west northwest of Heber (Gifford 1931, Plate 1). *Wikwinil* ("black hill"), a minor Kamia settlement and planting area was located there (Gifford 1931:6). Blue Lake was some 35 miles west of the Dunes.

Cactus Lake

This is a small lake (now dry) in traditional Quechan territory at the eastern edge of the Sand Hills on Pilot Knob Mesa. It was a mile or so west of the Cactus Railroad stop and about a mile east of the Dunes. Cactus Lake was identified by Quechan consultants as a cremation and burial ground and is listed in the inventory.

Farther to the north, there are a number of deep, walk-in wells of the Cahuilla in the northern Salton Trough and Coachella Valley (Bean 1972:30), but since these are a considerable distance from the Dunes, they will not be enumerated here.

Quechan consultants have mentioned tanks or *tinajas* in the Cargo Muchacho Mountains, approximately 6 miles east of the Dunes, and the Chocolate Mountains, which parallel the Dunes from approximately 18 miles at the southern end and 6 miles at the northern end (Pigniolo et al. 1997; Malcolm Rogers unpublished fieldnotes, Museum of Man, San Diego). There are intermittent washes along the northeastern side of the Dunes, which may have constituted water resources for limited times after rains. The numerous palo verde and ironwood trees in these washes suggest that the water table may be rather high in these areas.

THE PAIPAI

The ethnographic record contains limited information for the Paipai (Bouscaren 1998; Kroeber 1925:710). Sources consulted include Castetter and Bell 1951; Davis 1961; Forbes 1965; Gifford and Lowie

1928; Gifford 1933; Kendall 1983; Kniffen 1931; and Sample 1950. South of the Kumeyaay and Kamia in the mountains east of Ensenada were the Paipai. The Paipai were also known as the *Akwa'ala*, their name in the Mohave language (Gifford and Lowie 1928:340). They spoke a language closely related to Upland Yuman, a single language with various dialects spoken by upland Arizona tribes: the Havasupai, Walapai, and Yavapai. Linguistic research suggests that Paipai has much in common with Yavapai (Kendall 1983; Winter 1967). This close relationship between the Paipai and northern Arizona Pai suggests they are recent arrivals to the northern Baja California area.

Traditional Paipai territory was in the Sierra Juarez of Baja California in the general vicinity of Santa Catarina, a small village approximately 60 miles southeast of Ensenada. Their traditional area extended perhaps down to the gulf in the San Felipe area on the east, and west to the Pacific Ocean in a northeast/southwest trending band, perhaps 35 to 40 miles wide (Kendall 1983:8). On the Pacific side, the center of their territory was in the vicinity of Cabo Colonet. Their northern boundary on the Pacific side was about 40 miles south of Ensenada, in the general vicinity of Erendira. This territory included a wide variety of habitats and terrain, including the Pacific coastline, a small expanse of gulf shore and delta, the Colorado Desert, the Sierra de Juarez, and coastal foothills and mesas. Politically, the Paipai consisted of patrilineal, nontotemic, nonlocalized, exogamous lineages (Forbes 1965:38). They lived in small seasonal settlements, some of which probably contained more than one lineage. Paipai spiritual life was similar to that of the Kumeyaay.

South of the Paipai, Kiliwa territory also formed a northeast/southwest trending band. On the Pacific coast, their northern boundary with the Paipai may have been in the vicinity of Camalu (Kendall 1983:8). These people were also friendly with the Paipai. Their neighbors to the north were the Kumeyaay, with whom the Paipai carried on trade. To the east were the Cocopah. The Paipai and Cocopah were friends and carried on considerable trade (Gifford 1933:261). The Paipai occasionally had settlements at the western edge of the delta in Cocopah territory (Gifford 1933:262). Garces mentions agave-eating mountain people, who were

probably Paipai, among the Cocopah at the gulf during his travels of 1775 (Coues 1900a:196-197).

The Paipai were hunters and gatherers with a subsistence strategy much like that of the neighboring Kumeyaay (Gifford and Lowie 1928). Subsistence focused on gathering plant foods. Acorns were particularly important. These became ripe in September and fell to the ground in October (Luomala 1978:600; Spier 1923:334). They were stored until February at which time they are dry enough to pound into meal. Seeds from sages, grasses, and other plants were also dietary staples. Agave (mescal) was also an important food found along the arid eastern slopes of the Sierra de Juarez (Gifford 1933:261). Hunting contributed to the diet in a minor way. It was focused on small game, primarily rabbits, although deer and mountain sheep were also taken. Mountain products, most notably tobacco and agave, were frequently traded to the Cocopah for garden produce (Gifford 1933:216).

Settlements and Resource Use Areas

While the Paipai probably traveled in the area of the Dunes, there are no references to Paipai use of the Dunes in the literature sources consulted.

THE COCOPAH

Sources consulted for the Cocopah include Castetter and Bell (1951), Drucker (1941), Forbes (1965), Gifford (1931, 1933), Kelly (1977), Kniffen (1931), Kroeber (1920, 1925), Sykes 1937, and Williams (1983). The work of Kelly (1977) provides the most comprehensive ethnographic treatment.

The Cocopah lived on the west side of the Colorado River delta from the tidewater area, north to a little above the latitude of Volcano Lake or Cerro Prieta, several miles south of the international border (Castetter and Bell 1951:52; Gifford 1933:261; Kroeber 1920). Gifford, working among the Cocopah on an occasional basis from 1916 to 1930, documented 10

traditional settlement areas along the Hardy River and five on the west bank of the Colorado. These two major settlement areas may have been somewhat separate Cocopah divisions. The group living along the Hardy River were called *Kukapa'awiawhe* or mountain Cocopah, because of their proximity to the Cocopah Mountains west of the delta (Gifford 1933:260). People living along the Colorado River were called *Axwatnyamats* or "those who live along the river," or *Kwaenyak*, "easterners" (Gifford 1933:260). Like other river Yumans, the Cocopah settlements were dispersed residential areas, not close-knit villages (Castetter and Bell 1951:53). The Cocopah oral tradition, as collected by Kniffen (1931:52) says that the Cocopah have always been in the delta area, although Gifford (1933:261) mentioned a story that said the Cocopah had once lived in the San Felipe area.

Cocopah neighbors to the north were the Quechan, who along with the Mohave were traditional enemies of the Cocopah. Allied with the Quechan were the Kamia, who also bordered the Cocopah to the north. The Cocopah apparently had little interaction with the Quechan, other than sporadic armed conflicts, but at times they did carry on friendly relations with the Kamia (Kelly 1942). Their neighbors to the east were the Papago and Upper Pima. The Papago were hunters and gatherers who were friendly with the Cocopah. A band that lived in the vicinity of Somerton came down to the gulf to trade for shells (Gifford 1933:262). The Papago were friendly with the Quechan and carried on consistent trade with them. The Pima also came to the gulf to trade for shells with the Cocopah. To the west were the *Akwa'ala* or Paipai. The center of their territory was in the vicinity of Santa Catarina, also in Mexico. The Cocopah carried on a lively trade with these highland hunters and gatherers. In the early 19th century, Hardy (1829) noted Paipai living in Cocopah territory. To the northwest were the Kumeyaay. The Cocopah were on friendly terms with them and also carried on some trade with this tribe.

Cocopah subsistence was similar to other river Yuman people, although their location in the Colorado River delta area had a somewhat different environment from that of the upstream tribes. The Colorado River

frequently changed course within the general floodplain throughout the area below the Grand Canyon. This required occasional adjustment of settlement and field locations among the Mohave, Halchidhoma, and Yuma. The river formed very active meanders in the delta region, however, requiring even more settlement and field movement among the Cocopah and other delta people (Castetter and Bell 1951; Sykes 1937). The delta area contained numerous sloughs and seasonally inundated areas, which were richer in wild foods that grew farther upriver. Mesquite and screwbean grew in profusion and formed a dietary staple of the Cocopah, as it did for other Yuman people. Mesquite and screwbean were eaten green or were dried and reduced to a meal in large wooden mortars. Other important wild food sources of the delta region were “wild rice or wild wheat,” and *quelite* or amaranth. The “wild rice” of the Cocopah is not related to the wild rice of the Great Lakes region or domesticated rice (Castetter and Bell 1951:192). This grass covered extensive areas in the lower delta and was a Cocopah staple (Castetter and Bell 1951:192; Kelly 1977; Kniffen 1931). Castetter and Bell (1951:74) suggest that the Cocopah utilized wild plant foods more extensively than other river Yumans, obtaining only about 30 per cent of their food from agriculture. Hunting was relatively unimportant and was confined primarily to the hills and mountains.

The Cocopah occasionally hunted deer among the sloughs of the delta and mountain sheep and deer in the Sierra de Cocopahs. Most often, big game was ambushed at springs or along trails (Castetter and Bell 1951:216). Bows and arrows were used. Like other river Yumans, the Cocopah had bows of modest strength; these were 4 to 5 feet long and made of willow (Drucker 1941:118; Gifford 1933:269; Kelly 1977). Rabbits were hunted, usually by individuals with a bow and arrow rather than in organized drives. Evidently the Cocopah did not take rabbits with a rabbit stick or *macana*. It has been stated that gophers and wood rats were also taken with bow and arrow (Castetter and Bell 1951:216; Drucker 1941:99; Gifford 1933:269; Kelly 1977). Fish was the most important animal food among Lower Colorado River people. The Cocopah fished in the Colorado and the Hardy Rivers, and occasionally parties would fish long the Gulf of California. Fish were also taken with

bow and arrow, as well as spears, gill nets, and dip nets (Castetter and Bell 1951:216; Gifford 1933:268).

The Cocopah frequently visited the mountainous Paipai country west of the delta to trade and to gather pine nuts and acorns. Tobacco, mescal (roasted agave), and mountain sheep skins were obtained from the Paipai in exchange for delta foodstuffs. The Cocopah also obtained tobacco and eagle feathers from the Kumeyaay (Castetter and Bell 1951:54; Kelly 1977; Kniffen 1931:53; Sample 1950:22). At times, the Cocopah traded shells to the Kamia (Gifford 1931:37). They also visited frequently with their allies, the Maricopa, on the middle Gila River and with the Halchidhoma in the Blythe area.

Like other Yuman people, Cocopah spirituality revolved around dreams and dream travel of people and deities to mountains. However, some of the individual mountains are specific to the Cocopah, including *Awikwil*, near Laveen in central Arizona; *Awiiispa* or Black Butte in Lower California; *Awichauwas* or Feather Mountain, a sharp peak near San Felipe, Baja California; *Awikwame* or Newberry Peak near Needles; and *Sakuppai* or Mount San Jacinto, near Palm Springs, California. In some cases the mountains themselves contain a spirit or deity, in others, a spirit or deity resides there or performed some feat there. Other major deities included Turtle (*Uktyar*), Owl (*Ichupi*), Eagle (*Ispa*), Black Spider (*Heltuts*), Ocean Monster (*Halkwichats*); and a jimsonweed god (Gifford 1933:261,308-309). The Cocopah creation story is told in a vulture or buzzard song cycle that takes from sunset to sunrise to sing (Gifford 1933:308). Four other song cycles are cited by Gifford and, undoubtedly, a number of spiritually significant places are mentioned in these unrecorded song cycles and other unpublished oral literature. Because of the importance of dream travel, the trails that link important secular and sacred places in the Cocopah cultural landscape have spiritual significance as well.

Cocopah Settlement and Use Areas

The Imperial Sand Dunes were just north of Cocopah lands and within their traditional range. There was no reference of the Dunes, however, in the Cocopah literature sources reviewed. Interview material, on the other hand, does provide some information on Cocopah use and perception of the area.

THE QUECHAN

Primary ethnographic sources consulted for the Quechan include Castetter and Bell (1951), Forde (1931), Halpern (1997), Trippel (1889), and Bee (1983). Based on his earlier work and other major sources, Bee (1983) provides a summary overview with an extensive bibliography. An earlier overview (1982) contains information on Quechan settlements not available in other sources. Forde's ethnography is thorough. Halpern's work is focused on the *Keruk* and other Quechan sacred myths and stories.

The Quechan (*Kwatsan*) were formerly called the Yuma Indians. Their territory was centered at the confluence of the Gila and Colorado Rivers (present-day Yuma, Arizona) but extended north on the Colorado about 60 miles, and 10 leagues up the Gila. According to Quechan tradition, the northern boundary was in the vicinity of Blythe, California, the southern boundary reached to Sonora, Mexico, the western boundary extended to California's Cahuilla Mountains, and the eastern boundary was just short of Gila Bend, Arizona (Miguel n.d., cited Bee 1982:37). This description fits the greatest extent of Quechan territory, reached sometime in the first half of the 19th century. In 1853, Heintzelman reported that the Yuma extended along the Colorado from 60 miles above the Gila to 40 or 50 miles below (Forde 1931:302).

The Quechan had a relatively large population, some 4,000 people at contact (Bee 1983:97; Forbes 1965:343) and a stable horticultural and gathering economy. Throughout winter and spring, they lived in large,

seasonal settlements or rancherias located on terraces above the floodplain. These winter settlements were moved from time to time, and establishing their precise locations is problematic (Bee 1982:40-44, 1983:87; Forde 1931:101). When the floodwaters of spring receded, the Quechan left their winter villages on the river terraces and dispersed into camps near their 2- to 3-acre horticultural plots distributed along the river floodplain. Extended families resided in these camps. Planting was done in the mud as the river receded. Major crops included maize, squash, pumpkin, watermelon, and wheat (Castetter and Bell 1951). After the fall harvest season, the Quechan would reconvene in villages on terraces above the river to avoid seasonal flooding (Bee 1983:88; Forde 1931:101).

Quechan Settlements and Use Areas

Quechan villages were actually a collection of houses dispersed along the Colorado and Gila Rivers. Households consisted of composite families who lived together and moved, more or less as a unit, from place to place within a constantly changing floodplain environment. The annual flood of the Colorado constantly changed the gardening areas, eroding some and burying others under tons of silt. This undoubtedly changed the desirability of potential village sites, camp sites, and garden plots from time to time. The Quechan burned the houses and possessions of the dead (Bee 1982, 1983; Forde 1931; Trippel 1889:583), and this also contributed to the movement of villages from time to time (Trippel 1889:583). Like other Lower Colorado Yuman peoples, the Quechan changed territory in a very dynamic cultural landscape.

The largest and southernmost Quechan rancheria was called *Xuksil* (Bee 1983:87; Diaz 1774 in Bolton 1930b:269; Forde 1931:101). *Xuksil* means sandstone or sandy place. It was located just south of Pilot Knob (which Garces called Cerro de San Pablo), on the west bank of the Colorado River, north of the confluence of the Alamo River, and south of the present-day Mexican town of Andrade (Bee 1982:41; Bolton 1930c:48; Castetter and Bell 1951:49; Forde 1931; Font 1775 in Bolton

1930d:69; Garces 1775 in Coues 1910:163). It had a population of more than 800 in 1774 (Diaz 1774 in Bolton 1930b:268; Forde 1931:101). People living in this area were known as *Kavely cadom* (south dwellers) (Bee 1982:42). Forde (1931:101), working in the area in 1928-1929, suggested that a “large number of the Yuma lived until recently” in this settlement. *Xuksil* was the village of the important Quechan chief Pablo and his son, also an important chief during the historic period.

As with all Lower Colorado villages, this one moved from time to time within the same general vicinity and there are indications that numerous satellite settlements were associated with *Xuksil*. At the time of Forde’s work, *Xuksil* was “a few miles south of Algodones [the Mexican village] across the present International Boundary” (Forde 1931:101-102). The Imperial Sand Dunes extend within a few hundred meters of the floodplain in this vicinity, so this would have placed *Xuksil* very close to the southern end of the Dunes. Francisco Garces and Juan Diaz founded a Franciscan mission and little Spanish settlement named Bicuñer in the vicinity in 1776. This mission may have been located somewhere between *Xuksil* and the southern end of the Sand Dunes (Coues 1900:212; Forbes 1965:192). On July 17, 1781, the pueblo and mission were destroyed in the Quechan Revolt against the Spanish (Forbes 1965:191, 201-205). Bicuñer is included in the inventory as an historic event.

A few miles north of *Xuksil*, about 2 miles east of the Sand Dunes, on the west side of the Colorado River, is the small mountain formation known as Pilot Knob (*Avi kwala*). The small mountain just south of the main mass of Pilot Knob is called *Avi kwinuur*. Pilot Knob is a striking physical feature in the visual landscape of the eastern side of the Dunes. A number of tribes of the Lower Colorado region are associated with Pilot Knob in the ethnohistoric record, including the Quechan, Kamia, Halchidhoma, Kaveltcadom, Cocopah, Paipai, and Mohave. It has been identified as a seasonal campground for Cocopah, Quechan, Halchidhoma, and Kamia (Desert Planning Staff Field Notes 1979). Quechan and Cocopah consultants identified Pilot Knob as a boundary between joint Quechan/Kamia holdings and Cocopah land (Woods Field Notes [WFN] 1978-1980).

Pilot Knob is sacred to the Quechan and other Lower Colorado tribes. It is the point of departure and return for the all-important *Keruk* (mourning) ceremony, a place where dreams and visions were received, and figures importantly in the creation myths of the Yuman Tribes of the Lower Colorado region. The mountain contains evidence of habitation sites, rock art, rock rings, trails, and numerous lithic and sherd scatters. There is an important opposition of colors visible on Pilot Knob whereby black is bad and white is good. In Quechan narratives, a white horse represents the Quechan, and a black horse represents their traditional enemy, the Cocopah (Woods 1980:49-50; Woods et al. 1986:2-3).

The Cargo Muchacho Mountains are several miles north of Pilot Knob about 3 miles east of the Dunes. They parallel the Dunes matching their northwest-southeast direction for several miles. The Cargo Muchacho Mountains (*Winsue*) and foothills figure prominently in the creation, mythology, healing, habitation, and subsistence practices of the Quechan. Quechan and other Yumans interviewed in the early 1980s (WFN 1978-1982) identified significant features of the landscape here. Petrified impressions of plants, animals, and people preserved from the time of creation give proof to their eternal presence in these ancestral lands. Included is evidence of a race of giants who populated the land prior to the creation of the Yuman tribes such as giant “stick figures” and the impression of a “giant’s palm” carved into the desert pavement. Feathers were collected to be used for ceremonial purposes in these mountains, and a cave near Pasadena Peak was used for curing and ritual (Woods 1982:A2-34-5).

Northeast of the Cargo Muchacho Mountain range, about 16 miles east of the Dunes, is the important Picacho area, which includes Indian Pass and Picacho Basin. Prominent features in the visual landscape here are Picacho Peak and Little Picacho Peak. Both are clearly seen from the northern part of the Dunes. Prehistoric, ethnohistoric, and historic sites and features are abundant in the Picacho area. Of particular importance are geoglyphs and other rock art features, trail segments, and rock rings indicative of spiritual activities. Picacho figures importantly in creation stories and mythology. There are “footprints” of giants here, including

those of the Creator *Kwikumat*, and some believe that he is buried in a cave here, protected by a racoon. The Picacho area was also an alternate stop on the Keruk Trail (Pignuolo et al. 1997:281-30; Woods et al. 1986:3; WFN 1978-1982). Extending to the northwest from Picacho, Black Mountain is also an important place to the Quechan. Approximately 12 miles east, this mountain is also visible from the northern part of the Dunes.

The Picacho area and Black Mountain are situated at the western end of the Chocolate Mountains, which parallel the Sand Dunes to the northwest for most of their length. At the northern end of the Dunes, the Chocolate Mountains are about 6 miles east of the Dunes. These mountains also comprise an important part of the visual landscape from the Dunes, particularly in their northern reaches.

There were numerous Quechan settlements along the Colorado River stretching north from the village of *Xuksil*, just south of Pilot Knob. *Amay* was located near where Araz Wash flows into the Colorado, a few miles downstream of present-day Winterhaven, and about a mile upstream of the Mexican village of Andrade (Bee 1982). *Nim kwatavav* (two men fishing on each side of the river) was a village thought to be located on or near what is now known as Indian Hill, and the hill directly across the River at Yuma, now spanned by a railroad bridge (Bee 1982:42). De Anza noted approximately 600 people there in 1774 and named the area Puerto de la Concepcion (Anza 1774 in Bolton 1930b:45). The main Spanish pueblo on the Lower Colorado was founded on Indian Hill or Puerto de la Concepcion in 1779. It was also the site of Mission Concepcion. The pueblo and mission were destroyed, like their counterparts near *Xuksil*, in the successful Quechan Revolt of July 17, 1781 (Forbes 1965:201-205). Later Indian Hill became the site of Fort Yuma, which evolved into the Fort Yuma Indian Reservation.

Another large village, named *Axa Kwedexor* (water reed place) is recorded in different locations by various visitors to the area. De Anza (1774) recorded it as being on an island at the confluence of the Colorado and Gila Rivers (Anza 1774 in Bolton 1930b:45-46; Forde 1931:100-

101), which may have been Indian Hill. *Axa Kwedexor* was also noted as being at or near the site of present-day Fort Yuma (Forbes 1965:164; Font 1775 in Forde 1931:100). Bee's Quechan consultants (1982:43) argued it was not near Indian Hill at all, but some 15 miles northeast near Laguna Dam. Some contemporary Quechan also report *Axa Kwedexor* as being upstream a few miles from Indian Hill, perhaps near Potholes (Lorey Cachora, personal communication 1997).

An important village was located "a little east of the present site of Picacho at the foot of the Chocolate mountains" (Forde 1931:102). Forde could find no one who could remember the name of this village. Bee's Quechan consultants, however, suggest the name *Axa Kauknaul* (humped cottonwood) (Bee 1982:42). This village was thought to have been on the east side of the river in the vicinity of present-day Fisher's Landing at the south end of Martinez Lake. Another village was located about 2 miles south of present-day Laguna Dam, near an area known as the Potholes (Bee 1982:42). This village was called *Kwerav ava'io* meaning "pneumonia living" (Bee 1982:42; Forde 1931:102). According to Bee (1982:42) these people were known as *mataxaly cadom* or north dwellers, although recent Quechan consultants have indicated that that term referred to peoples who resided further north along the Colorado River.

Other Quechan settlements were located further north, and a considerable distance east of the Imperial Sand Dunes. *Avi Kwotapai* was located on the west side of the river between the present-day towns of Blythe and Palo Verde. The term *Avi* in the name means mountain or high place, but there is no known gloss for *Kwotapai*. Between 1850 and 1880 some 50 families lived there. *Xenu mala vax* (meaning big lake) was located on the east side of the river in the vicinity of present-day Ehrenberg, Arizona (across the river from Blythe). Apparently, this village shifted at times from the Ehrenberg area to the Cibola area some 20 miles south of Ehrenberg. In the 1850-1880 period, some 60 families lived at this village (Bee 1982:43). *Avi vatai* (Big Rock or Big Mountain) is a village located in the area of La Paz, Arizona, some 6 miles or so northeast of the Blythe-Ehrenberg area. This settlement is

thought to have been established quite early in the Quechan occupation of the Lower Colorado River area, before the Spanish entradas into the area and well before the Halchidhoma and Kohuan occupation of this area during the 18th century. There are geoglyphs associated with this village site that apparently relate to origin legends of the Quechan (Bee 1982:43).

Trade and travel for the pan-Yuman peoples is well documented (Davis 1961; Forde 1931; Forbes 1965; Kroeber 1925; Sample 1950; Stewart 1983; Trippel 1889; Woods 1982). For example, Forde (1931:105-106) documents "sporadic traffic with the western Pueblos" particularly with the Zuni and Hopis. He goes on to say:

Within the river territory, however, the Yuma and the other tribes traveled freely and over long distances. Bands of "Yumas" and "Cocomaricopas" journeyed down to the gulf to meet Kino and his party. War parties would travel for days with very little food, covering over a hundred miles to fight a battle; and in modern times Trippel claimed that the messengers and trailers were expert runners who could cover sixty to seventy-five miles a day when necessary (Forde 1931:106).

Despite the proximity of the Quechan settlements to the Dunes, there is almost no mention of them in these accounts. Woods' Quechan consultants were specifically asked about the Dunes and nearby places. One mentioned that "the Dunes form the western boundary of traditional Quechan territory and are considered sacred because the creator placed them there and called the sand, Quechan Sand" (1982:A2-8). A consultant also mentioned a special burial ground at the southern end of the Dunes (Woods 1982:A2-8). The Dunes were used as a plant gathering area. Desert lily, sandroot, berries, cactus, and cattails were mentioned. Consultants also suggested that the Dunes were used as a planting area (Woods 1982:A2-8, A2-15). Castetter and Bell (1951:43) also report that Malcolm Rogers, of the San Diego Museum of Man, had references to irrigation ditches in the vicinity of Algodones/Pilot Knob. They suggest this was probably a Spanish introduction. Available evidence suggests the Dunes figured in a minor way in the elaborate

Quechan story and song cycles. They are considered important as a boundary and a place in their cultural landscape. However, the Dunes seem marginal to Quechan subsistence and daily life. Quechan trails led south of the Dunes and through them at what is now known as Buttercup Pass.

THE CHEMEHUEVI

The primary ethnographic source on the Chemehuevi is Laird (1976). Roth (1976) reviews early interactions with Whites and with the Mohave. Much of the work conducted with the Las Vegas, Moab, and nearby Southern Paiute bands is more or less applicable to the Chemehuevi (e.g., Drucker 1937, 1941; Lowie 1924; Stewart 1938; Stewart 1942). Kelly and Fowler (1986) provide a summary overview with extensive bibliography. Euler (1966) provides a comprehensive ethnohistory of the Southern Paiute.

The Chemehuevi are the southernmost of the 16 subgroups of the Southern Paiute (Kelly and Fowler 1986). Their traditional territory was a large area southwest of Las Vegas, including the eastern Mojave Desert of California. The Chemehuevi were traditional allies of the Mohave. After the Halchidhoma were driven from the Colorado River area by the Quechan and Mohave, in the early 19th century, the Chemehuevi were encouraged to move into the river area by the Mohave.

At the time of historic contact the Chemehuevi occupied the eastern half of the Mojave Desert with the northern boundary in the Kingston Range south of Death Valley and extended south through the Providence Mountains to about the boundary of present Riverside and Imperial Counties. By the mid-19th century, however, they had settled along the Colorado River in traditional Mohave territory (Kroeber 1925:593-595; Roth 1976:104), primarily in the Chemehuevi Valley but also on Cottonwood Island and in the Palo Verde Valley. Roth (1976:81) suggests that the first place the Chemehuevi settled on the Colorado

River was in the Palo Verde Valley next to the Halchidhoma. Of the Chemehuevi, Laird (1976:7) states that “they had well established settlements in the many bends of the Colorado River and adjacent fertile valleys, on both the east and west sides.”

Between 1859 and 1880, the Chemehuevi were consistently reported in their traditional river areas of the Palo Verde and Chemehuevi valleys, and near the Riverside Mountains in Parker Valley (Euler 1965; Kelly & Fowler 1986; Roth 1976:104). Euler (1966:74) cites a letter from Heintzelman, which places the Chemehuevi 60 miles north of Fort Yuma in 1853. Ives reported that in 1857-1858, the upper end of the Great Colorado Valley (Ehrenberg to Parker) was occupied exclusively by the Chemehuevi (Forde 1931:102-3).

Garces first met the Chemehuevi on February 26, 1776, and was impressed by their appearance and speed (Garces 1776 in Coues 1910:219-220):

...I met some 40 persons of the Chemebet Nation. Six Indians of this nation that were on a hill came down as soon as we called them, with the speed of deer, and regaled me with very good mescal [Agave]. The garb of these Indians is, Apache moccasins (zapato), shirt of antelope skin (vestido de gamuza), white headdress like a cap (gorra blanca a modo de solideo) with a bunch of those very curious feathers which certain birds of this country have in their crest [perhaps quail]. These Indians give me the impression of being the most swift-footed of any I have seen.

Upon moving into the Colorado River area, the Chemehuevi took up floodplain farming and other Mohave cultural attributes (Stewart 1983b:56). Some nonriver Chemehuevi and other Southern Paiute bands also had begun native horticulture in the 18th and early 19th centuries as well, influenced by Quechan, Halchidhoma, and Mohave practices (Kelly and Fowler 1986:371). Garces talked to river Chemehuevi in 1776 and

they said that their territory extended north to another river and they sow crops there as well (Garces 1776 in Coues 1910:221).

Crops included maize, squash, pumpkin, watermelon, and wheat. A small Chemehuevi garden might encompass approximately an acre (Kelly and Fowler 1986:371). Among the river Chemehuevi, gathering wild plant foods, especially mesquite, probably remained more important than agriculture, as it was for their Quechan and Mohave neighbors (Castetter and Bell 1951).

Traditional Chemehuevi subsistence was based on hunting and gathering. Small game was the primary source of protein. Rabbits were taken in drives and by individual hunters and other small game was taken including chuckwalla lizards and desert tortoise (Kelly and Fowler 1986:370; Laird 1976:5). A wide variety of seeds formed the basis of the traditional diet (Steward 1938:183). Indian rice grass (*Oryzopsis hymenoides*), which often dominates sand dune environments (MacMahon 1985:508), was particularly important (Steward 1938:183). Seeds were harvested by the women, who brushed them into a conical basket with a basketry seed beater. Seeds were ground into meal on metates. Pine nuts were gathered in mountain areas in the fall. Pine nut gathering areas were owned by families (Steward 1938:182). Cones were pulled off trees utilizing a long hooked pole, and then cones were burned to extract the nuts. Mesquite grows in well-watered areas along the river and in other areas with a high water table. Mesquite pods were harvested in late summer (Kelly and Fowler 1986:370; Laird 1976:5; Steward 1938:183).

Chemehuevi Settlement and Use Areas

The southernmost Chemehuevi settlements would have been some 45 miles northeast of the Dunes and the vast majority of Chemehuevi gathering activities took place well north of the Dunes. Although available sources do not mention them, it is likely that the Dunes were occasionally crossed or visited.

THE MOHAVE

Primary ethnographic sources consulted include Castetter and Bell (1951), Garces (in Coues 1900a and b), and Kroeber (1920, 1925, 1948, 1951). The only book length ethnography, written for a popular audience, was published by Gerald A. Smith (1977), with many previously unpublished photographs from the collection at the San Bernardino County Museum. A good, modern summary article was produced by Kenneth M. Stewart in the Handbook of North American Indians (1983). There was no mention of the Imperial Sand Dunes in any of these references.

The Mohave had a relatively large population prior to contact, some 3,000 people according to the estimate of Garces in 1776, the first Spaniard to visit them (Garces 1776 in Coues 1900:229). Garces spent little time among the Mohave and may not have been able to provide an accurate estimate. In 1872, they were reported as numbering about 4,000 (Castetter and Bell 1951:47). Their main settlements were in the Mohave Valley, which is about 125 air miles northwest of the Dunes.

The Mohave controlled the area north of the Bill Williams River up to the present Nevada border, but their main settlements were in the Mohave Valley from about Mohave City at the north to the vicinity of Topoc in the south (Castetter and Bell 1951:44; Kroeber 1925; Smith 1977; Stewart 1983:55). According to Kroeber (1959) the region of core Mohave occupation extended on both sides of the Lower Colorado River from south of Davis Dam to Topock. At one time, however, they also occupied Cottonwood Island further north, and the Chemehuevi and Colorado Valleys to the south (Stewart 1969:265-268). The Mohave were encountered by the Juan de Onate Spanish expedition as far south as the present CRIT Reservation in 1604 (Stewart 1969) and intermittently controlled areas as far south as Palo Verde (Kroeber 1959). After the Halchidhoma were expelled from the Parker-Blythe Valley between 1825-1830, the Mohave settled this area for a year or so but then returned to the Mohave Valley. Although Mohave and Quechan bands still made use of the area, the Chemehuevi, who had been west of the Chemehuevi

and Whipple Mountains, moved into the vacated area (Bean and Vane 1982:34).

The Mohave enjoyed a relatively stable horticultural and gathering economy. They lived in large, sprawling settlements located on rises above the floodplain. These settlements were moved from time to time as the river changed course and configuration. When the floodwaters of spring and early summer receded, the Mohave left their winter villages on the river terraces and dispersed into camps near their 2- to 3-acre horticultural plots along the river floodplain. Planting was done in the mud as the river receded, typically in late June or early July (Castetter and Bell 1951:145). There was no canal and ditch irrigation, although a limited type of swale irrigation may have been used at times by Colorado River tribes (Castetter and Bell 1951:132-135). This consisted of constructing small diversion dams to direct floodwater into planting areas located in shallow depressions or swales near the river. The Mohave also sometimes carried water in ollas to their plants if soil moisture was inadequate (Castetter and Bell 1951:135, 152). Major crops included maize, tepary beans, black eyed beans (cowpeas), squash, pumpkin, watermelon, and wheat (the latter two were thought to be native). After the fall harvest season, they would reconvene in winter settlement areas on rises above the river to avoid the seasonal flooding. In addition to major crop planting in July or so, the Mohave also planted a small garden of maize and watermelon near their winter houses in February (Castetter and Bell 1951:146).

For the Mohave, like most Colorado River people, the major food staple was mesquite and screwbean pods, called by the Mohave *ava* and *aisd*, respectively (Castetter and Bell 1951:179). These trees grew in great profusion along the Colorado River floodplain. Unique among the Colorado River tribes, the Mohave owned individual trees. A bunch of carrizo was hung in the tree to mark it (Castetter and Bell 1951:182). Pods were sometimes eaten fresh off the tree in early summer, but primarily, the pods were collected from the ground or shaken from the trees in July. These were pounded into flour in a mortar made of a

cottonwood tree trunk using long pestles of stone or wood (Castetter and Bell 1951:96; Gifford 1931).

Seeds of the ironwood (palo fierro) were also used. The pods were gathered off the ground in October and dried, then seeds were removed, parched, and ground lightly on a metate to break the seeds apart, then leached to remove the bitter taste. Seeds of the palo verde were also eaten. The pods were gathered off the ground in October and dried, then seeds were removed and parched. Neither palo verde nor ironwood was considered particularly desirable food resources (Castetter and Bell 1951:195-196). However, palo verde and ironwood are drought tolerant trees that grow away from the river and dominate many desert wash areas like those along the northeast edge of the Algodones Dunes. As such, they are subject to different environmental stresses than Colorado River plants and might be available when the river flood failed.

Mohave informants of Castetter and Bell (1951) and Kroeber (1925) said that four grasses or annuals were semi-cultivated. Three of these were identified as panic grass, Crowfoot grass, and curly dock (Castetter and Bell 1951:167). Curly dock is an introduced annual. The fourth semi-cultivated grass remains unidentified. These grasses and annuals were sown in mudflats as floodwaters began to recede. These areas were not weeded or looked after. Wild grasses and annuals were also important (Castetter and Bell 1951:167; Kroeber 1925:736).

Travel was an important aspect of Mohave economy and culture. The Mohave are well known for their long-distance travel to places as far away as the Chumash area on the California central coast, and the Yokuts of the southern San Joaquin Valley (Davis 1961:2; Kroeber 1925:727; Sample 1950:4). The Mohave and other Colorado River tribes carried on a lively trade from the Pueblos on the east and to the Pacific coast, as well as up and down the Colorado River. Based on radiocarbon dates on marine shell and on Southwestern ceramic seriation, this trade seems to have been well established by 900 C.E. (Sample 1950:4). The routes over which this extensive trade and visiting took place are discussed in the section on trails. Because of their extensive travels, it is likely that

some Mohave crossed the Dunes and were familiar with them in the Late Prehistoric and Ethnohistoric periods.

Settlement and Resource Use Areas

Major Mohave settlement and use areas were situated well north of the Imperial Sand Dunes. The Mohave did travel to and through the Dunes, however, to meet with other tribes, gather food, and engage in trade.

THE CAHUILLA

Primary ethnographic sources consulted include Bean 1972, 1978; Bean and Lawton 1965; Bean and Mason 1962; Bean and Saubel 1972; Gifford 1918; Hooper 1920; Davis 1961; Kroeber 1908, 1925; James 1960; Sample 1950; and Strong 1929. Other Cahuilla materials can be found in Barrows 1900; Curtis 1907-1930; and Bean 1964. Bean's survey article in 1978 provides a comprehensive overview and annotated bibliography.

Traditional Cahuilla territory covered the northern half of the Salton Sink, from the vicinity of the Riverside/Imperial County line northwest to the vicinity of Riverside. It encompassed the San Jacinto, Santa Rosa, and Orocopia Mountains, the southwestern slope of the San Bernardino Mountains, and the northeastern foothills of the Palomar Mountains (Bean 1978:575-576; Kroeber 1925:693-694). The southern boundary of traditional Cahuilla territory was some 20 miles northwest of the northern end of the Imperial Sand Dunes.

The Cahuilla language belongs to the Cupan subgroup of the Takic family of the Uto-Aztecan Stock (Bean 1978:575; Shipley 1978). Northwest and west of the Cahuilla were the Gabrieleño; to the north were the Serrano. The Cahuilla share cultural traits with these people and social interaction was frequent (Bean 1978:575; Kroeber 1925:578-580). To the southwest, across the Palomar Mountains were the Luiseño. All of these groups had languages and cultures more or less

closely related to the Cahuilla. To the east was the Colorado Desert, beyond which was the Colorado River, some 50 miles away. The closest Colorado River tribe was the Halchidhoma, when they lived in the Blythe/Palo Verde area (i.e., prior to ca. 1840). North of the Halchidhoma were the Chemehuevi. South of the Cahuilla were the Kumeyaay and the Kamia. The Cahuilla interacted, visited, and traded frequently with the Kumeyaay; however, relations with the Kamia were at times hostile and at others cordial (Bean 1972:70; Forbes 1965:80; Gifford 1931:17). The Cahuilla were generally hostile to the Quechan (Bean 1972:70), and apparently there was limited interaction between the Cahuilla and the Kamia or Quechan (Forde 1931:105). For example, when the Romero expedition passed through Cahuilla territory in 1823, Jose Maria Estudillo commented:

They offered to accompany me with armed men to fight against the Yumas, their enemies, and against the Mohaves. I told them I had no order to fight them from the Great Captain who commanded me...(Bean and Mason 1962:38)

The Cahuilla consist of three subgroups: the Mountain, the Pass (or Western), and the Desert divisions (Bean 1972; Hooper 1920:316; James 1960; Strong 1929). The Desert Cahuilla lived in the Lower Sonoran Life Zone, an arid environment ranging from foothill areas of about 3,500 feet, to below sea level near the northern shore of the Salton Sea (Bean and Saubel 1972:11-12; Hooper 1920:316). Oral tradition seems to suggest that some of these people migrated to the desert from foothill and mountain areas (Strong 1929:38). Legends also tell of a time of flooding of the entire Salton Sink, which drove their ancestors up into the mountains. This was probably what we now call Lake Cahuilla (Strong 1929:37). After the lake dried up, the Desert Cahuilla moved back down to their present localities (Strong 1929:37).

Permanent villages were located in places that provided convenient access to water and subsistence resources (Bean 1972:73, 1978:575; Bean and Saubel 1972; Strong 1929:38,43). Settlements would have to be moved from time to time because of changes in water availability, flash floods,

or intergroup strife (Bean 1972:35,78; Strong 1929:38). In the desert region, some Cahuilla settlements were located at the toe of alluvial fans where the water table was shallow enough so that their remarkable walk-in wells would be practical. These had earthen stairs leading deep underground to the water table (Bean and Lawton 1965). The proximity of mesquite *bosques* (forests) was also a factor in desert village placement (Bean 1972:74; James 1960:48; Strong 1929:40).

Cahuilla subsistence focused on gathering plant foods. The most important desert subsistence plants included cactus fruits, palm dates, agave root, seeds from sages, grasses and other plants, and the pods of screwbean and mesquite. Stalks and heads of agave were harvested in spring. Baked in rock-lined pits, agave was highly nutritious and had a sweet taste reminiscent of molasses (James 1960:57). Screwbean and mesquite pods, the most important staples, were harvested in late summer (Hooper 1920:356). Pods were dried, then pounded into a coarse meal in large wooden mortars (Kroeber 1908:40). Acorns were harvested in fall. The preferred species, black oak (*Quercus kellogii*), was called *qwinyily*. In southern California, it grows from about 3,000 feet to 8,000 feet in elevation. Acorns were dried, then ground in stone mortars, sometimes with basketry hoppers. To leach the bitter tannic acid out, meal was placed in large shallow baskets and warm water was repeatedly poured over it.

Acorns were not the most important food for Desert Cahuilla, but most villages owned some oak groves (Bean and Saubel 1972:124; Kroeber 1908; Strong 1929:40). At times, large numbers of people would leave the village for a few weeks to harvest major food resources such as agave, mesquite, and acorns (Bean and Saubel 1972:124; James 1960:56). Desert Cahuilla also traded with Mountain and Pass (Western) Cahuilla for acorns. Acorns, mesquite pods, and other foods were stored in large, basket-like granaries a meter or more in diameter that stood on legs (Bean 1970; Bean and Saubel 1972; James 1960) or sat directly on bedrock (Kroeber 1925:699).

Hunting contributed to the diet in a minor way. It was focused on small game, primarily rabbits. These were taken with bow and arrow or rabbit stick (*macana*). Bows were made of mesquite or desert willow. Arrows were made of carrizo or wood. Some were tipped with stone points for hunting big game (Hooper 1920:358-359; James 1960:58; Kroeber 1908:58). Deer and bighorn sheep were taken by stalking and the use of hunting blinds.

Long distance trade was an important feature of Cahuilla society, but unlike their Yuman neighbors, the Cahuilla were not great travelers. However, two major travel corridors went through Cahuilla territory. The Cocomaricopa Trail began on the Gila River in Arizona and crossed the Colorado River in the vicinity of present-day Blythe. It passed south of the Palo Verde Mountains then proceeded west along the north slope of the Chocolate Mountains, and entered Cahuilla territory north of the Salton Sea. The Halchidhoma and Gabrieleño, with the Cahuilla in the middle, carried on a lively trade along this route (Bean 1972:70).

Another major route entered Cahuilla territory from the south and southeast. It went from the Kumeyaay, Kamia, and Quechan settlements and proceeded north along what is now the western shore of the Salton Sea. It entered Cahuilla territory in the vicinity of Salton City. Apparently this route was mostly used by Kumeyaay since the Cahuilla had less contact with the Kamia and Quechan (Bean 1972:70; Forbes 1965:80; Gifford 1931:17), with whom they had hostile relations at times. Coastal groups traded salt, dried seafood, dried greens, and abalone shells to inland and desert groups for products such as acorns, agave, mesquite beans, and gourds (Davis 1961; Sample 1950).

Cahuilla cosmology like that of other southern California Shoshoneans, focused on a concept that would translate as knowledge/power/energy. It was called in Cahuilla *?iva?a* or *ava* (Bean 1972:161, 1978:582). This *ava* was in itself, neither good nor evil, but it was unstable, so that one had to exercise caution in somewhat unpredictable cosmic and natural environments. People have *ava*, and so do many plants, animals, and other natural phenomena like wind, stars, springs, and mountains.

Animals, plants, and special places also have intelligence, wishes, and consciousness and are considered not only part of the natural landscape, but an important part of the social and cultural landscape as well. Some people, natural phenomena, and cosmic beings had more *ava* than others, and this was reflected in special abilities, talents, and sometimes malevolence (Bean 1972, 1978:582). One could acquire more *ava* by respecting tradition; leading a careful, orderly life; and conducting ritual properly.

Traditional Cahuilla see themselves as an integral part of nature. Human acts and ritual are seen to affect other parts of natural and cosmic systems. They believe that people, animals, and plants have specific roles and reciprocal responsibilities ordained by *Mukat* when he created the world. For example, deer allow themselves to be caught, but man must refrain from taking too many and must conduct ritual properly so that the world works properly. Proper behavior consists of taking only what you need, never needlessly destroying anything, and protecting tradition and the natural order of the world.

Many natural places are represented in the Cahuilla cosmology by primal beings, i.e., beings that were created when *Mukat* created the world. These are called *Nukatem*. For example, *Pa?akniwat* is the spirit of springs who could take various forms including serpent and water baby (sometimes in the vicinity of springs, one hears *Pa?akniwat* crying like a baby). He owns water resources and one must ask permission to use the water. Plants; animals; special places; and such natural phenomena as wind, rain, and rocks are another class of beings created later. These are called *Taxliswetem* (Bean 1972:170). As suggested above, *Nukatem* and *Taxliswetem* represent parts of the natural environment but also are considered more or less active participants in daily life of the Cahuilla. Published sources did not mention any *Nukatem* or *Taxliswetem* associated with the Imperial Sand Dunes. Indeed, the Dunes were not mentioned at all. It would be reasonable to assume, however, that much Cahuilla oral literature has been lost and some surviving material has not yet found its way into print.

Settlement and Resource Use Areas

Primary Cahuilla settlement and use areas were well north of the Imperial Sand Dunes, although they traveled and traded in this area. A Quechan consultant stated that in the past, the Cahuilla camped and hunted in the Cargo Muchacho Mountains about 6 miles east of the Dunes.

NATIVE AMERICAN TRAILS AND PREHISTORIC TRADE

Trade and travel for the pan-Yuman people is well documented (Barker 1976; Davis 1961; Forde 1931; Forbes 1965; Harwell and Kelly 1983; Kroeber 1925; Sample 1950; Stewart 1983; Trippel 1889; Woods 1982, 2001). A number of travel routes that pass near or over the dunes are attested in the ethnographic literature, in recent interviews, and in recent archaeological research. These and other major travel routes are depicted in a map. The term trail is often used to describe major trail systems across the desert, but in reality, the singular trail across the countryside is rare. Generally, there were trail networks of alternative routes connecting important places. Alternative paths came together to form one or very few routes in passes or near springs or waterholes (Davis 1961:10), after which they would again split and fan out over the more open terrain. While the term trail will be used here, it generally refers to a reticulated system of alternative routes. In the discussion to follow, we will describe the major known east/west routes that pass through or around the dunes. There are no north/south routes in the vicinity of the dunes, but north/south routes in the surrounding area will be described. Some of these trails have had several names; we attempt to use better known alternatives or name them ourselves in a way that indicates their location. We will begin with east/west trails proceeding from south to north.

North Cocopah-Paipai Trail

There were several trails linking Cocopah settlement areas along the Colorado and Hardy Rivers and Paipai areas in the Sierra Juarez to the west (Castetter and Bell 1951:57). A northern route led northeast from

El Palomar, a well-watered canyon on the eastern slope of the Sierra Juarez. It proceeded across the salt flats of Laguna Salada to Agua de las Mujeres, a spring on the western slope of the Sierra Cucopa. It crossed the Sierra Cucopa at Canada la Palma and from there it proceeded east to the Colorado River area.

Middle Cocopah-Paipai Trail

Another Cocopah/Paipai route led from the Sierra Juarez across the Laguna Salada, over the pass between the Sierra Mayor and the Sierra Cocopah Mountains, then east to the Colorado River area.

South Cocopah-Paipai Trail

A southern route may have begun in the Sierra Juarez in the Santa Catarina area and led east. One branch led around the north end of the Sierra las Tinajas and the other led around the south end of these mountains (Castetter and Bell 1951:57).

Yuma-San Diego A

A major trail went from Kumeyaay settlements in the Jacumba Valley and proceeded east to *Xachupi* on the New River, by way of In-ko-pah, Mountain Springs, and Yuha Springs, similar to the current route of present-day Interstate 8 (Cline 1982; Gifford 1931:8-9, 17). This route, depicted as San Diego-Yuma A, proceeded east to Yuha Wells, *Xachupi* (at Indian Wells on New River) then to Alamo River and then across the desert to cross the dunes at Buttercup Pass. Once east of the pass, travelers could then go to the Colorado River, approximately 10 miles east or one could go southeast, passing south of Pilot Knob, to arrive at *Xuksil* (Underwood 2001).

Yuma-San Diego B

A route parallel to Yuma-San Diego A also proceeded from Kumeyaay settlements in the Jacumba area and came down the mountains in what is now Mexico, passed by the vicinity of La Rumarosa, then continued east to cross New River in the vicinity of modern-day Mexicali (Cline 1982). This route then headed east to the Alamo River, some eight or 10 miles distant. It followed the Alamo River through the

Xatopet area along the Alamo River, passed south of the Dunes, and headed north to the Quechan settlement of *Xuksil*. As mentioned previously, *Xuksil* was located in various places south and/or southeast of Pilot Knob. It was north of the confluence of the Alamo River with the Colorado River, perhaps in the vicinity of the present-day Mexican village of Andrade (Bee 1982:41; Bolton 1930c:48; Castetter and Bell 1951:49; Cline 1982; Forde 1931; Font 1775 in Bolton 1930d:69; Garces 1775 in Coues 1910:163; Woods 1982).

Cocomaricopa Trail

This heavily traveled east/west trail connected the Los Angeles Basin with the Gila River and Phoenix area. The California portion of the route went from the vicinity of modern-day Blythe, south through the Palo Verde Valley area, then curved west around the Palo Verde Mountains. This route then headed west and west-northwest, south of the Mule Mountains along the north side of the Chocolate Mountains. It passed south of the Orocopia Mountains and into the Coachella Valley and west over San Gorgonio Pass into the Los Angeles Basin. Garces, writing in 1774, mentioned that the Halchidhomas in the Palo Verde area traded continuously with groups on the Pacific coast, and the trip took four days (Bolton 1930e: 242; Forbes 1965:109). An alternative to the Cocomaricopa Trail went from the south end of the Palo Verde Mountains north of the Mule Mountains and rejoined the main trail in the north part of the Chocolate Mountains. East of the Colorado River, the route headed southeast toward the Gila River.

Mohave Trail

Arguably the most important east/west route in California is found well north of the Dunes. Called the Mohave Trail, it proceeded northwest from Mohave settlement areas along the Colorado River in the general vicinity of Needles and across the Providence Mountains (Coues 1900:237). Garces followed a version of the Mohave Trail in 1776 and crossed the Providence Mountains by means of a pass at Rock Spings and Government Holes, then proceeded west, probably to Marl Springs (Coues 1900:237-238, 258). The route then headed west, passing north of the Kelso dunes and south of Cinder Cone Lava Beds into Soda Lake,

where the Mohave River drainage ends. From Soda Lake the route followed the Mohave River west to present-day Barstow and Victorville, over Cajon Pass, and into the Los Angeles Basin. From Soda Lake west to Cajon Pass, Route 66 followed the old Mohave Trail (Davis 1961:48). Near the Colorado River, the highway was several miles south of the trail. A wagon road also followed the Mohave Trail, and this route was traced by Coues in the late 19th century (Coues 1900:xxix).

Xam Kwatchan Trail

The *Xam Kwatchan* Trail or trail network (Baksh 1997; Johnson 2001; Bee 1982; Forbes 1965) was a major travel corridor that connected *Avikwame* (Newberry Mountain near modern-day Needles, California) and *Avikwalal* (Pilot Knob near Yuma). This trail has major cultural and religious significance to Yuman groups, as well as serving to facilitate secular travel. The name is translated from Quechan as “another coming down” (Forbes 1965) and refers to the origin story of the Quechan and other Yuman groups. All peoples were first created at *Avikwame*, and the *Xam Kwatchan* was the route they took as they migrated to the south. Subsequently, religious practitioners returned to *Avikwame* for spiritual guidance, traveling along the *Xam Kwatchan*, physically or in a dream state. In the beginning, when the Creator died and was cremated at *Avikwalal*, the first *Keruk* ceremony was held, including a pilgrimage along the *Xam Kwatchan*. Subsequently, pilgrimages along this trail were part of the *Keruk*. It was said that the pilgrimage took four days to accomplish.

B. Johnson (2002) has mapped a complex series of extant Native American trails that he interprets as part of the *Xam Kwatchan*. Recent archaeological investigations along portions of this trail network confirm the presence of multiple features with probable ceremonial or symbolic function in key areas (Apple et al. 2001; Pigniolo et al. 1997). Quechan consultants have indicated that there were two major routes of the *Xam Kwatchan* north from *Avikwalal* to the vicinity of Palo Verde Peak; the Medicine Trail (also referred to as the *Keruk* Trail) and the Trail of Dreams. The Medicine Trail was more easterly and passed by Picacho

Peak. The Trail of Dreams passed the Indian Pass vicinity. From Palo Verde north to *Avikwame* there was a single main route.

Pilot Knob-Picacho Trail

This was a variant of the *Xam Kwatchan* Trail. It went from Pilot Knob to the vicinity of Picacho Peak, bypassing a major eastward bend in the Colorado River at Senator Wash. Both Pilot Knob and Picacho Peak were sacred to the Quechan and were major centers for ceremonial events (Altschul and Enzo 1993). Religious pilgrimages and dream travel took place along this route (Pigniolo et al. 1997; Woods 1982:A2-31; 2001:9-11). Altschul and Enzo (1993:58) refer to it as the Keruk Trail. It has also been referred to by contemporary Quechan as the "Medicine Trail."

Ogilby Hills Trail

This trail begins at Pilot Knob and proceeds in a northwest direction along the west side of the Cargo Muchacho Mountains and west of the Ogilby Hills. At its closest, it is approximately 7 miles east of the Dunes. It meets the Trail of Dreams and the Indian Pass-San Sebastian Trail north of Indian Pass Road and east of Ogilby Road. This is an area with large numbers of trail segments, lithic scatters, and minor geoglyphs. It has a great deal of spiritual significance to the Quechan (Pigniolo et al. 1997). The Trail of Dreams continues north to meet the Keruk Trail in the Palo Verde Peak area.

Alamo River Trail

This trail in the center of Imperial Valley connects Cocopa settlements in the delta with the Kamia settlement and planting area of *Suxnuwai* (west of Brawley). It continues on to the Salton Sea. On the north side of the international border, it follows the Alamo River (Davis 1961; Gifford 1931; Sample 1950). At its closest, this trail is approximately 12 miles west of the Dunes.

New River Trail

This trail, along the east side of Imperial Valley connects Cocopa and Kamia settlements in the delta to *Xachupi* and *Saxnuwai*. It is roughly parallel to the Alamo River Trail and west of it several miles; like the

Alamo River Trail, it continues on to the Salton Sea. North of the international border, it follows New River (Davis 1961; Gifford 1931; Sample 1950). It crosses the Yuma-San Diego B trail in the vicinity of Mexicali and the Yuma-San Diego A trail in the vicinity of *Xachupi* (the modern-day community of Seeley, west of El Centro).

West Mesa Trail

This trail begins in the Yuha Wells area and proceeds north along West Mesa. It passes through the Kamia settlement area of San Sebastian and then continues north along the western side of the Salton Sea to Cahuilla villages in the Coachella Valley. It has been called the Coyote Trail (Woods 1982:A1-20) and it is also part of the de Anza Trail (Bolton 1930a). From Yuha Wells or Coyote Wells one can proceed east to *Xachupi* and then use Yuma-San Diego A or B to get to the Colorado River (de Anza used a route similar to Yuma-San Diego B, but a bit farther south).

CONTEMPORARY NATIVE AMERICANS AND THE IMPERIAL SAND DUNES

Populations of Native Americans continue to reside in the Lower Colorado River region and in other areas adjacent to the Imperial Sand Dunes. These tribes may have ongoing or past associations with the Dunes that have implications for consideration of the Dunes as a Native American Cultural Landscape and the identification of any traditional cultural properties. In this section we discuss results from ethnographic interviews with consultants from contemporary Native American groups to further identify connections and assess their implications for consideration of the Dunes as a Native American Cultural Landscape. To identify these consultants, the project implemented a contact program described below. Based on this contact program, interviews were scheduled with representatives from several tribal groups. In the remainder of this discussion we describe the contact program and results based on completed interviews.

CONTACT PROGRAM TO IDENTIFY CONCERNED NATIVE AMERICAN GROUPS

A contact program was implemented to identify those groups with a possible interest in the Imperial Sand Dunes as a Native American Cultural Landscape. On October 29, 2001, a letter was mailed to the California Native American Heritage Commission (NAHC) describing the project and asking for assistance to identify potentially concerned groups or possible sites within the project area or its environs. The response from the NAHC indicated possible interest by the Quechan and a contact person of Michael Jackson, Sr., Chairperson of the Quechan Tribe (Fort Yuma Indian Reservation). On November 5, 2001, contact letters were prepared and mailed to Mr. Jackson and 31 other individuals and tribal entities with a possible interest in the project. The basis for the tribal entities and individuals who received these letters is the prior

experience of Dr. Woods and Dr. Cleland with Native Americans in Imperial, San Diego, and Riverside Counties as well as groups in Arizona who reside near the Colorado River. This list indicates groups that might express an interest, including the Kumeyaay, Quechan, Mohave, Chemehuevi, CRIT, Cocopah, and Cahuilla. Follow-up calls were made to all individuals and entities between November 19 and November 30. For multiple entities, second and third rounds of follow-up calls were made to ensure that the materials were received and that the project purpose was clear. Approximately 113 follow-up telephone calls were made to the 32 entities and persons who received the contact letters. Five written responses were received from the following groups: the CRIT; Agua Caliente Band of the Cahuilla; Mohave; Chemehuevi; and Barona Kumeyaay.

The written response from the CRIT indicated the following concerns:

These are our concerns: 1. Traditional trails nearby, Xam Kwatchan Trail. Trails going west and animal trails: 2. Traditionally, native people used sandhills to bury the deceased: 3. In Numic culture, starting around the Salton Sea, Twenty-Nine Palms area, there is the belief that powerful little medicine people make the sand dunes their habitat. It also houses water babies, who are also powerful: 4. Places of extraordinary visual resources carry power: 5. Proper management: 6. Air quality: 7. NAGPRA Issues: 8. Off-Road Vehicles and Recreation Issues.

This information suggests there may be cultural connections of the CRIT with the Imperial Sand Dunes. Based on this response and follow-up telephone conversations, interviews were scheduled with CRIT members to clarify this information and place it within a broader ethnographic context. The response from the Agua Caliente Band was also suggestive:

It is known through available literature and from oral tradition passed on in stories, legends and Cahuilla Bird Songs that

Cahuilla People had an extensive trail system, used for travel to places for gathering, hunting, religious purposes, water sources and to other tribal villages. There is recorded documentation of trade routes linking the Cahuilla to the Colorado River Indian Tribes, San Diego Tribes and tribes in Mexico and Northern California as well. Trails used by the Cahuilla for travel to the Colorado River and to the Chocolate Mountains and Mexico may fall within the area you are surveying.

The area described in your letter of November 5, 2001 is outside the Tribe's traditional use area, however, lies in close proximity to Desert Cahuilla and Chemehuevi lands, therefore I suggest you contact those tribes personally.

A response from the Chemehuevi indicated that the Dunes were on the borders of their traditional area and that contacts should be made with Yuman Tribes, specifically the Quechan, Cocopah, and Kumeyaay. A response from the Mohave stated: *The ... has received and reviewed your November 6 letter, and the dunes are considered a traditional cultural property by the Mohaves. We support and defer to the Quechan Nation on these matters, as the dune field occurs on Quechan ancestral lands.* The response from the Barona Kumeyaay noted, *... As the Imperial Dunes area, in part, is included in the traditional Kumeyaay territory, please notify us if there are any human remains of pre-historic origin found.*

Follow-up calls were the most productive in developing the interest of tribal groups in the project. These calls indicated that further consultation should be undertaken with the Cocopah, Quechan, Mohave, CRIT, Cahuilla, and Kamia. The Campo Band and the Barona Band expressed an interest in follow-up telephone calls and personal contacts, but in general other San Diego County Kumeyaay bands did not express an interest in the project. In these initial contacts, a representative of the Campo Band indicated the Dunes were once a boundary marker for the Kumeyaay. This information was confirmed in telephone contacts with Anita Alvarez de Williams, an ethnographer familiar with the area. Arrangements were made for a follow-up interview to further clarify

information about Kumeyaay connections with the Dunes. Another Kamia/Kumeyaay individual contacted expressed interest in the project and an interview was arranged. The results of this interview are reported in the Kumeyaay/Kamia discussion below. Dr. Woods made arrangements for interviews with the Quechan and Fort Mojave and Dr. Russell scheduled interviews with the Cocopah, Cahuilla, CRIT, and Kumeyaay.

During October and November, the project team also made efforts to identify potentially concerned tribal entities in Baja California, especially the Paipai and Kumeyaay of the Santa Catarina area. Dr. Russell contacted other scholars familiar with the area, including Mike Wilken of CUNA, Steven Bouscarin, Debbie Dozier, Lowell John Bean, Florence Shipek, and Ms. Alvarez de Williams regarding Native Americans (especially the Paipai) and their potential connections to the Imperial Sand Dunes. Mr. Wilken indicated that his contacts with Paipai do not indicate any recent connections with the Dunes. He also noted that in interviews with Paipai an elder remembered a Native word for the Dunes, but this elder had no other recollection or cultural knowledge that would suggest recent Paipai connections with the Dunes or that ethnographic interviews would yield information about current or past Paipai connections with the Dunes. Dr. Bouscarin suggested that the Dunes were perhaps at the periphery of Paipai territory. Since Paipai tended to migrate more east to west rather than north to south, there is a lower probability of any recent connections of Paipai with the Dunes. Ms. Alvarez de Williams, Dr. Shipek, Dr. Bean, and Dr. Dozier indicated they are not aware of specific information about connections of Paipai to the Dunes. Dr. Dozier indicated there may be Kamia groups in Baja California, Mexico, that have had connections to the Dunes in the period when these groups migrated in the southern regions of California. She provided the name of a Native American who might have some information about the Kamia and Kumeyaay in Baja California, but efforts to contact that individual were not successful. Based on further discussions with Ms. Alvarez de Williams, it was decided to investigate the connections of Cocopah groups in Baja California with the sand dunes that extend into Mexico. Unfortunately, Ms. Alvarez de Williams

was unavailable to work on developing data for the Mexico Cocopah. However, Mr. Wilken, who is fluent in Spanish and familiar with the Mexico Cocopah, did complete interviews in late June 2002. The results of those interviews are included in this section.

METHODS AND TOPICS FOR ETHNOGRAPHIC INTERVIEWS

Ethnographic interviews are one of the two project methods to identify Native American connections to the Imperial Sand Dunes. The cultural landscape concept orients the purpose and process of these interviews. There are multiple definitions of a “cultural landscape,” but land management agencies often use the National Park Service definition:

A geographic area (including both cultural and natural resources and the wildlife or domestic animals therein), associated with a historic event, activity, or person exhibiting other cultural or aesthetic values. There are four general types of cultural landscapes, not mutually exclusive: historic sites, historic designed landscapes, historic vernacular landscapes, and ethnographic landscapes

This is a definition oriented to particular policy issues, specifically the nomination of a landscape for the National Register. However, land managers also benefit by understanding the meanings and values associated with landscapes that influence how populations may construct or respond to land management options or issues. These aspects of a group’s place and space orientation can motivate actions that have direct implications for assessments of land management issues. Consequently, an approach to landscape and culture that includes issues of meaning and value and the mental images of a particular landscape is also useful (c.f., Basso 1996). For our purposes, the idea of a cultural landscape incorporates consideration of past human activities, uses, and sites, as well as the current meanings, values, and senses of place associated with the Imperial Sand Dunes. This approach directly addresses the need to identify Native American cultural resources within the Imperial Sand

Dunes. It also directly addresses other aspects of Native American culture that can influence attachments to the Dunes and assessments of land management issues

Ethnographic interviews are a method of developing information that can be used to make nominations for traditional cultural properties and to describe historical associations, current uses, and the significance of the Dunes for Native Americans. The interviews are ethnographic in the sense that their purpose is to elicit how the Native American consultants experience and conceive of a landscape; that is, what is their way of seeing a place and creating a mental image of it. The interviews are intended to develop past and present interactions with the Dunes and surrounding areas, and how Native Americans perceive the landscape in general. Results of these interviews form a basis for describing any identified places or sites of cultural significance, and the consultant’s ideas about landscape that might influence present-day relationships with the Dunes.

Our intention was to conduct these interviews with Native American consultants in the vicinity of the Dunes to facilitate identification of particular places important to them, and as a stimulus to elicit information about the Dunes as a place and landscape. However, some consultants were not available to travel or were too frail to travel the distances from their residences to the Dunes. Where individuals were not available to travel to the Dunes, interviews were usually conducted at tribal offices.

A topic listing was prepared to guide the interviews. The guide was the basis for interviews with different tribal groups by two different ethnographers for United States interviews and a third ethnographer for Mexico interviews. The interviewers pursued similar topics and asked similar questions. Each, however, was guided in this work by their own considerable backgrounds in how to approach ethnographic fieldwork. As such, while the goals were similar, there are some differences in how the data were gathered and presented. We see these different approaches as complementary as well as advantageous in covering the considerable

range of information needed for this kind of study. Additionally, the information presented may also reflect different degrees of cultural association with the Dunes. The Quechan and Mohave data are more specific to the Dunes; whereas, data from other groups are more general.

QUECHAN INTERVIEWS

The Quechan Tribe was contacted by mail on November 5, 2001, with project letters posted to the tribal chairperson and the tribal cultural resources consultant. The latter individual works closely with the tribal council and the tribe's culture committee. In telephone conversations, it was recommended that project representatives first meet with tribal elders during their daily lunch at the tribe's nutrition center. Accordingly, Dr. Woods made arrangements and attended the elder's luncheon on December 14, 2001.

On the following day, December 15, 2001, Dr. Woods met with the tribe's cultural consultant, at which time they conducted a vehicular reconnaissance of the lower half of the Dunes. This involved driving to Ogilby and proceeding northwest along Kipf Road (a dirt road that parallels the length of the eastern side of the Dunes) to Highway 78, then west to the Coachella Canal, and then southeast on another dirt road that parallels the western side of the Dunes back to Interstate 8. We drove in to one of the Campgrounds off of Highway 78 for a view of the Sand Hills Recreation Area. A BLM Ranger there provided some excellent maps of the Sand Hills. The tribe's cultural consultant did not want the interviews tape recorded. On the basis of the field reconnaissance and his own knowledge of the area, the tribe's cultural consultant submitted a brief written report on the Dunes.

Quechan (Kwatsan) Elders Lunch, December 14, 2001

Several people were interviewed before, during, and after lunch. An ex-tribal council member did not recall anything about the Sand Dunes, and noted that most of the old people who knew about the area are gone now.

He did say that the Cahuilla (*Ha-quit*) camped in the Cargo Muchacho Mountains in the past. He provided the names of some of the "old people" but did not think they would know anything about the Sand Dunes. Some information was provided by an ex-Tribal Chairman. This individual had lived off the reservation for many years but is a native speaker currently working with a linguist. Subsequently, I was informed that there are at least two versions of Quechan spoken on the reservation, a "new" version spoken by the younger people and those who had spent time off the reservation, and an older version spoken by those who had stayed on the reservation and learned from the "old people." For this reason, it is possible to obtain different terms for the same referent.

The ex-Chairman confirmed the identification of the *yidut* (see inventory), which is a kind of wild turnip. It has a pinkish flower, which grows just above the sand. He did not know if the plants were still there or if they were still gathered. He volunteered that no area had been set aside in the Sand Hills for gathering and that gathering was not allowed in the Wilderness Area⁴. The Sand Hills were a vague tribal boundary understood by everyone and were the western extent of Quechan lands. The consultant did not think there would be any burials there. The Quechan did not need to hunt in the Sand Hills because there was so much game available along the Colorado River.

This consultant indicated his belief that the animals in the Sand Hills need to be protected. He noted that BLM puts recreation first and the environment second. He would like the area to be left in its natural state. More attention needs to be paid to the ecology of the area and the relationships (symbiosis) among the plant life found in the Dunes. *Yidut*, for example, cannot exist without other plants. Animals found in the Sand Hills in the past were coyotes, snakes, various birds, and rats. Plants include mesquite, devils claw (used for baskets), milkweed,

⁴ Discussion with BLM in El Centro indicates that current management practices are open to consideration of all requests for gathering throughout areas of the Imperial Sand Dunes managed by BLM California.

carrizo, grasses, desert willow, and honey dew. The Quechan used the bark and beans of the desert willow.

Asked about a name for the Sand Hills, the ex-Chairman provided a term, which means mesa land/desert land/palms. It sounds like *amat-ala-ai*, which interestingly, also means paradise. He provided another term for mesa land, which sounds like *xalar-ai*.

Sand Hills Vehicular Reconnaissance, December 15, 2001

A vehicular reconnaissance to the Dunes was undertaken with the tribe's cultural consultant. Other Quechan invited for the reconnaissance did not show. The cultural consultant did not want to tape record our conversations and notes were not taken. He preferred that we observe the area, after which he would prepare a written report with the relevant information based upon our visit, his knowledge of the area, and conversations with other elders. Some notes were recorded from recall following the reconnaissance.

The consultant provided a place name that sounds like *xed-ai* and means sand. He feels that the management of the Sand Hills is alright since it is working and it provides a place for off-highway vehicles (OHV) recreation. He does have concerns for damage to plants and animal habitat due to the OHV activities, and for air and ground pollution, from exhaust, oil, and fuel leaks emanating from the motorized vehicles.

There is a Coyote story (see below) where Coyote came down the Colorado River and returned north through the Sand Hills. There was also a village of "Sand People" situated between the Sand Hills and Pilot Knob, probably on Pilot Knob Mesa. The consultant is interested in finding that village and in participating in the archaeology survey of the Sand Dunes when that takes place.



Plate 8. OHV tracks penetrate many areas south of Highway 78.

Plants gathered in the Sand Hills include mormon tea and creosote, both medicinal plants. Creosote was used to cure many ailments, including colds. The *yidut* plant was used for snakebites. Most of the snakes are probably gone because of OHV activities. There were trails around the southern end near Mexicali, south of Signal Mountain. There were Quechan cremation and burial grounds at the southern end of the Sand Dunes on the Mexican side. These may have been associated with the "Sand People" settlement. Some of the small cleared circles in the desert are animal swirls made by deer and coyotes where they rested. These could be confused with man-made circles identified for sleeping and spiritual uses.

The Quechan had rock art sites over towards the Laguna Mountains, but the Sand Hills were more or less a neutral area between the Quechan to the east and other tribes to the west. The consultant expressed the notion that the BLM should restrict OHV activity to the areas already exposed to contamination and damage, but not open any new areas for recreational use. Steps should be taken to protect what plants and animals are left.

Written Quechan Report submitted January 23, 2002

The Quechan cultural consultant submitted this report. With the exception of some minor editing, it is included intact as it was written.

The Sand Dunes (Xuksily) have been an area of habitation for animals in the Picacho Region for many centuries. This includes humans who dwelled in the region of the Colorado River. Tribal members have said in the past and today that the area is created from remnants of sand that floated downstream from the Grand Canyon millions of years ago.

The Quechan have always had history and stories about the area known as the Sand Dunes. The old ancestors of the Quechan people tell that the area played a role as a place that held medicinal herbs, food sources for animals, and shelter for animals. Small bowl shapes were formed from shifting winds

and sand, which were used by animals to shelter themselves from the elements.

Those who had knowledge of Quechan Creation history saw the beginning of the world and were able to follow the history as it was performed first by the Creator, Kuku-mat. Kuku-mat traveled south to name areas that were to be important and to later become prominent places for learning, and today we tell the history from these places as they each have their own story to tell.

Many years later other spirited people who were instructed by the Creator Kuku-mat, including the animals, used these places for learning and also followed the route [of Kuku-mat] and renamed each [prominent] area as Kuku-mat did in the beginning. These spirited people had powers given by Kuku-mat, and others who learned by observing and had similar strength to produce power and knowledge, and they placed them [power and knowledge] in these prominent places for others to use. These spirited beings also named and designated the same areas which they used. This is one way of keeping track of the prominent areas, and this is why we are able to explain Quechan history today.

The Coyote was one who was given powers that enabled him to travel the route that his father Kuku-mat took, except at each prominent area he claimed the places as his own, and therefore renamed the places as the Forest Coyote, the Rock Coyote, the Ocean Coyote, and finally the Sand Coyote. This was after his [Coyote's] journey far to the south, as he was traveling back to the north in the vicinity of Pilot Knob Mountain, and he said, "I will call myself the Sand Coyote from this day on, and all who know me shall call me by my name." This history was told during the time the Culture Hero was cremated. After everyone left the funeral, all spiritual beings scattered in different directions. Among them were the Cougar (Namet). They moved

but a little ways from the house. They wondered where their younger brother was, the Coyote.

They wondered if Coyote had been killed because of his behavior, and they had no way of finding out where he was, so they burned deer grease. The wind blew hard in one direction, the south. Then as the Coyote went traveling north, he caught the odor (The Coyote is called Seravio, meaning "no way am I going to be sick."). He said, "My brothers are wondering where I am. I caught the smell of deer grease, and by following it I will get there."

The Coyote being hungry, as he went along the ocean he ate bugs that the waves cast ashore. Then late one afternoon he went in to the sea to bath. When he came out he rolled around until he formed another Coyote just like himself. He said, "No one should see this Coyote. If they see it, it shall jump into the ocean. He shall be known to all generations as the Sea Coyote.

Then going in the direction of north, he passed some large sand dune hills. Again, he laid and rolled until he formed another Coyote. He said, "This Sand Coyote shall never be seen by anyone else, except in their dreams, men and women will come in contact with it and yelp." Coyote then continues his journey to the north recreating himself and giving powers to those who come into contact with the spiritual side of the Coyote.

Today we see and know that shifting sand does not travel in any direction, and we also see that no matter how much you abuse the area it recreates itself to original form. The Quechan say that only man will destroy the environment and this is including the sand dunes hills. Today this area is exposed to many outsiders who take advantage of the sand dunes every holiday. Recently, people have endangered themselves, have been either injured or killed. Every holiday we expect people to die. The

casualties are non-residents and many are violent towards themselves and law enforcement.

Activities started with movie producers who first used the area to film movies. Hundreds of movies were made in the sand dunes beginning in the 1930's and continuing to the present day. This exposed the area to many outsiders who today take advantage of the Sand Dunes.

Today we wonder where the reptiles migrated to. Who knows what other animals have lost ground and migrated elsewhere or been destroyed. The animals are no match for the powerful recreational vehicles that occupy these areas during the holidays.

I have talked with other Quechan tribal members, and they feel that recreational activities should be confined to that area [present recreation area] only since the damage has already been done, but they also feel that contamination may have occurred somewhere they are not aware of. According to some, let these people yelp! as they injure themselves. Many have already come in contact with Sand Coyote.

Quechan Interview Summary

The Imperial Sand Dunes are an important part of Quechan culture and history. Those interviewed saw the Dunes as the western extent of their traditional lands, and as a more or less neutral area shared by the Kamia and Kumeyaay tribes to the west. Their creation stories include accounts of the creation and naming of the Dunes, with a special mythical being, Sand Coyote, at the core of these accounts.

The Dunes were identified as the location of a Quechan cremation and burial area, gathering area for plants and animals, and a place where trails to other tribes and resource areas crossed. This is an important place for the Quechan. The Dunes are part of the physical landscape of their past and the visual landscape in their present. Although the Sand

Hills may no longer be a place visited or used for resource exploitation, they would like to see those resources and the area itself taken care of.

The Quechan interviewed expressed the opinion that recreational use of the Imperial Sand Dunes, which includes camping and OHV use, should be restricted to the areas already set aside for these activities. The rationale behind this is that these areas have already been disturbed. At the same time, they would like to see BLM initiate measures to protect the animal and plant resources throughout the Dunes management area.

MOHAVE INTERVIEWS

The Mohave were first contacted regarding the Imperial Sand Dunes project on November 5, 2001, with letters to the tribal chairpersons and designated cultural representatives at Fort Mojave and CRIT. In subsequent telephone conversations, Fort Mojave deferred to the Quechan, but wrote: *... the Dunes are considered a traditional cultural property by the Mohaves.* Subsequently, a follow-up telephone call was made to Fort Mojave to clarify this statement. The designated cultural representative at CRIT responded with the project's response sheet, and she later participated in interviews conducted in April of 2002, which are discussed in the Chemehuevi section of this report. An informal coordinator for the Mohave elders was also contacted and arrangements were made to meet and discuss the Sand Dunes. In early 2002, additional contacts were made with Mohave elders at CRIT Reservation in Parker, Arizona. Interviews were arranged for mid-April of 2002. Results of these interviews are also included in this discussion.

Conversation with Fort Mojave Cultural Resources Manager

In response to the project's contact letter, the Aha-Ma-Kav culture society expressed the following on their response sheet; *... the dunes are considered a traditional cultural property by the Mohaves.* In a follow-up telephone call, the Fort Mojave Cultural Resource Manager (and Tribal Archaeologist) was asked to clarify this assessment of the

Imperial Sand Dunes. The Manager said that, according to a tribal elder, two points contribute to assessments of the Dunes as a unique place in Mohave history and culture. First of all, there are reptiles living in the Dunes that are unique to that place. Secondly, the Dunes are specifically identified in Mohave travelogue, history, or songs. Parts of these songs refer to the "singing sands" of the Dunes, which is apparently a well known phenomena related to sand grains rubbing together when blown by the wind. "Mohave who traveled to the desert sand hills 'to meditate' also noted these 'singing sands'." When Mohave sing these songs, the belief is that they celebrate the places mentioned and their relationship to past history and culture. The Mohave thus identify the Imperial Sand Dunes as a traditional cultural property because of the unique reptiles that live there and the celebration of the Dunes in their songs.

Mohave Elders Meeting and Site Visit, January 21, 2002

Dr. Woods met with the Mohave group at Blythe, proceeded to the Osborne Overlook just east of Glamis off Highway 78 in the Dunes to review the area, and returned to Blythe for lunch. The coordinator and two Mohave elders attended the meeting and site visit. Since the Mohave prefer to look things over and talk among themselves before responding on cultural issues, the session was not tape recorded. The Mohave elder's coordinator agreed to submit a written report after talking to some of the other elders. Some notes were recorded from recall following the meeting and site visit.

At the overlook, the Mohave elders indicated that this was not primary Mohave land, but peripheral to their lands to the northeast along the Colorado River. The Mohave term for the Sand Dunes was given as *amat-sali*. The Mohave traveled in this area to gather food and other resources, and to meet with other tribes for such things as trade. They crossed the Dunes on Indian Trails to look for salt. The elders said that the Dunes were Quechan land and pointed out that the Cocopah and Paipai were to the south, the Kamia and Kumeyaay to the west, and the Cahuilla to the north. They did not feel that the Paipai would have used the Dunes for any of their activities. There are songs and stories about

the Dunes, but the people who knew the stories and songs are gone now. There are apparently no bird singers left at CRIT. When asked, they responded that the “little people” were active in Mohave stories, and that they lived all around the place, including the Dunes. They could relate personal “little people” stories, which took place on the reservation, but could recall none that relate specifically to the Dunes.

One of the elders stated that the Creator gave us the land and the responsibility to take care of it. Instead we have polluted and destroyed the land, including the Imperial Sand Dunes⁵. It is our responsibility to take care of the land, not destroy it. This is a spiritual as well as a physical duty.

The elders talked about the surrounding mountains, noting that the mountains defined Mohave land and their spirituality. Pointing to the lands mainly north of the Sand Dunes, one elder noted that the Mohave had 78 to 80 burial grounds located throughout the region, and that these places defined their traditional range. Some of these may be in or around the Dunes. When the Mohave die they go to the “heavens,” which are bright white areas. One such area is in the Topock area in traditional Mohave territory, north on the Colorado River.

Several plants were identified in the Dunes. Included was milkweed (*hal-yuk*), which they smoked, greasewood (*iiv-thev*), and another plant growing around the Overlook called *av-ah*. The elders commented on how dry and barren the recreation area was but noticed that there were significant plant communities in the Dunes outside the OHV use areas, particularly north of Highway 78, in the protected Wilderness Area.

Regarding management, the elders said that it would be okay to continue using the area for recreation, but that BLM should take care of the plants and animals. Littering, much in evidence the day of the site visit, was another issue that should be dealt with.

⁵ Note that the air pollution on this day was so bad that we could not see Brawley or anything else a little west of the Dunes. Everything in the Valley was brackish brown.

Mohave Elders Interviews: April 23, 2002 in Parker Arizona

Six individuals attended an interview session on the CRIT Reservation in Parker, Arizona, on the morning of April 23, 2002. Six persons attended the interview session, including two CRIT archaeologists. The purpose of the project was explained and interview topics reviewed before any questions were asked. Participants expressed reservations about the project and the process early on in the discussion. They indicated concern about the relationship of the project to management plan revision for the Imperial Sand Dunes, including how information collected for this work would be incorporated into any management plan revisions. Discussion with these Mohave focused on process issues such as (1) project purpose; (2) intellectual property rights associated with any information collected; (3) the value to Mohave of participating in project such as this; and (4) the need for additional time for what the Mohave perceive as a more meaningful and in-depth input. Participants also shared some of their insights about Mohave cultural connections to the Dunes. However, the interview summary presented in the following paragraphs should be considered tentative until Mohave have the opportunity to respond in a manner they believe best represents their point of view and their interests.

The Imperial Sand Dunes were on the boundary of Mohave traditional territory. Windblown sand from the Colorado River and mountains comes to rest where it is now. One Mohave noted, *‘It is a central spot where it all lands go. Parts of all our lands all go there. There is a trail, a path there and it formed from all our lands that blew there.’* Mohave passed through the Dunes in the past for trade purposes. They are likely to have buried their dead in sand dunes according to these elders. Mohave also visited sand dunes to collect plants, especially “desert tea.” Special plants and animals also live in the Dunes, including the desert tortoise. Mohave medicine men thoroughly understood the special plants and animals of the desert. The winds blew and changed this place and made it a moving and living landscape. The Dunes were also part of the Mohave song path and were described in the old songs.

Since the Mohave are a verbal people, specific knowledge about the sand dunes may be lost as elders pass on.

Today the sand dunes are more likely a place Mohave pass through rather than visit for any specific purpose. However, there remains a sense of cultural connection to the Dunes: *'Our maker gave us this area, I feel I belong to it.'* These Mohave perceive the Dunes are a place where non-Indians go for parties and wild times. These activities are believed to have adverse impact on the animals and the plants in the area. There also appears to be a generalized concern about contamination and pollution and its effects on places such as the Dunes. For example, *'We don't eat our animals now, they are contaminated, the wild spinach and the water cress are contaminated and the animals. ... There are hardly any animals there (the Dunes) because of the contamination.'* The Dunes are also perceived to be a place where there is excessive litter and trash. This littering upsets the Mohave. This is especially the case since the Mohave believe people should be keepers of the land: *'Our job is to take care of it.'* Stewardship of the Dunes is a responsibility of BLM and these Mohave indicated that responsibility needs more priority given the trash, litter, and perceived contamination of area resources.

Mohave have not had satisfactory experiences with land management agencies. They illustrated the nature of these experiences with the example of Spirit Mountain in Nevada. They describe a process in which their input was solicited about land management issues at Spirit Mountain and they provided substantial comments expressing their concerns. They believe their input was ignored. Consequently, when other projects solicit their input, they are skeptical. The sincerity of processes in which their input is solicited then ignored is an issue for these Mohave.

Mohave Summary

For the Mohave at CRIT, the Imperial Sand Dunes are part of the landscape, which surrounds their traditional territory. It was an area peripheral to their homeland, but part of their traditional range. They know the area, traveled to and through the area, and see the Dunes as an

important part of the natural environment. Importantly, the mountains that surround the Dunes, particularly to the north, mark their spiritual and natural world. Still, this is primarily Quechan land and Quechan recommendations should be followed.

The Fort Mohave Tribe indicated that they consider the Dunes a traditional cultural property because of unique reptiles in the Dunes and mention of the Dunes and "singing sands" in their songs. The Mohave interviewed did not object to continued use of the area for recreation. They would, however, like to have the animal and plant communities protected, and the litter controlled.

CHEMEHUEVI INTERVIEWS

Contact with the CRIT indicated that the Chemehuevi have an interest in the Imperial Sand Dunes. Arrangements were made to conduct interviews with Chemehuevi elders and others at a meeting room at the casino on the CRIT Reservation in Parker, Arizona on the afternoon of April 23, 2002. Five Chemehuevi attended the session in the casino meeting room. Attendance was less than expected for this as well as the morning Mohave session because of the death of an elder. Persons who were expected to be present at the session were attending services for the deceased. As a preamble to the interview session, the purposes of the project and the interview topics were presented. The session lasted more than three hours, during which participants made contributions to all topics raised for discussion. The results of these discussions are summarized below.

History and Knowledge

The Imperial Sand Dunes are on the border of Chemehuevi traditional territory. The elders in this meeting indicated that the Dunes are within the traditional territory of Quechan as well as Kamia, Cocopah, and perhaps the "mission Indians" (i.e., the Kumeyaay). One elder noted, *'For those people, their songs travel that way. Our songs travel a*

certain route; our songs are more to the North of the Dunes. Our songs are about different places, they express our way of life and how we do things. Their songs (Quechan and others) cross the sand dunes.'

The Chemehuevi elders indicated they know of various types of plants — such as those used for making “desert tea” — and animals in the Dunes. They also indicated knowledge of reptiles such as “sidewinders” and “horned toads” as well as animals such as pack rats and coyotes. These elders indicated they have extensive knowledge of other desert environments and the plants and animals therein. However, questions about plants, animals, terrain features, and other types of knowledge specific to the Imperial Sand Dunes did not yield significant information. This is an area where Chemehuevi pass through or there may be travel for recreational or viewing purposes, but they did not indicate place-specific knowledge. However, it was also clear there was extensive traditional knowledge about desert environments that is applicable to understanding the environment of the Imperial Sand Dunes.

Traditions, Meanings and Uses

The Dunes do not appear to be visited for traditional purposes by contemporary Chemehuevi. However, Chemehuevi do travel through the Dunes on their way to other locations and they report stopping to observe the sand dunes and enjoy the landscape. They commented, *'It is a place mostly where recreationalists go. ... If you are there at night it is like being in outer space, there are all these lights pointing up into the sky from the OHV's, it is just like being on another planet.'* Chemehuevi do have an interest in the Dunes as a desert landscape that is similar to other desert landscapes within their traditional territory. For example, *'Sand is a part of our culture. We use holy sand for health and healing purposes, not necessarily that sand (referring to ISD), but other sand. And part of our culture is sand painting that has spiritual importance for our people.'* Sand and sand dunes also exist in traditional stories, *'When I was little we used to hear stories about sand dunes, we were told we shouldn't go there because there were water babies and little people in there. There were taboos associated with those places and we were not supposed to*

visit there.' One elder also noted, *'There are stories that Indian spirits in this world and the other-world live there. Those stories were about the dunes in Nevada, but they might be the same for those dunes (meaning the Imperial Sand Dunes), it depends on who is telling the story.'*

The elders noted that the Chemehuevi are a people of oral traditions in which stories and songs connect them with landscapes. For example, regarding Chemehuevi Salt Songs one elder observed: *'They are about a way of life. The songs start in one place and go through different landscapes and comment about places and things there. There are different kinds of places, some spiritual places. The songs identify landmarks and people moving from one landmark to another. The songs mention physical places, but they also are about spiritual places. The songs connect us to these places.'* Chemehuevi stories exist about the role of Ocean Woman and Coyote in the creation of the world including the desert and sand dunes. And, the elders also note that in the old stories and traditions there are references to different gods including those for wind, rain, lightening, and the sun. The forces of nature were spiritual and they could affect man and the landscape. For example, *'Someone said the sand dunes are there because the wind punished the land, it was a mean wind that created them and the desert.'* Such songs and stories express a more generalized view of the relationship of people to landscapes with some specific ideas about desert landscapes within the Chemehuevi tradition.

Although there appears to be a rich tradition regarding the desert in general that includes songs, stories, and religious practices, these appear to apply more to the landscapes within traditional Chemehuevi territory. However, because the Dunes are a landscape similar to those within their traditional territory, Chemehuevi retain an interest in the Dunes. And, based on this interest and their traditions about sand dunes in general, they identify possible cultural events as happening in or around the Dunes. For example, one elder commented that sand dunes were often a place where Chemehuevi buried their dead. It was then noted, *'You would sometimes find big beautiful sea shells in the sand dunes and*

sometimes left over ashes and other things. It is very likely the sand hills were used as burial sites. Our people generally used places that were isolated and out of the way, places where remains would not be bothered. Those were the burial sites, so it is likely that the sand hills there (ISD) were used as burial sites.'

Because of the physical appearance and other aesthetic and ecological characteristics, the Dunes are considered a "special place" by these Chemehuevi. The views in the Dunes, the drama of the lightening, the contrast with surrounding landscapes, and the actions of the wind in moving sand contribute to this evaluation as a "special place." This evaluation of the landscape as "special" is in terms other cultures would readily understand and perhaps share with these Chemehuevi. A less obvious characterization as "special" is one noted by an elder, *'I remember I was told a long time ago that any place where your footprint doesn't stay is a special place. And any place where a footprint does stay and it shouldn't, then you are a special man. The sand hills are a place where your footprint can disappear...'* This succinctly states a relationship of man and place, place and man that is a thread in Chemehuevi understandings about landscapes. And it also describes a basis in traditional belief for characterization of the Dunes as "special."

The Dunes are considered an important place for other reasons. Elders indicate they believe pottery sherds have been discovered in the Dunes. This is an indication of the potential that other important cultural resources exist there... The Dunes are also an important place because similar landscapes have associated songs, stories, and traditions that express the connections of Chemehuevi with desert places. These Chemehuevi also indicate they have general knowledge of trails that passed through the Dunes and these were used by peoples of the Colorado River region to connect them with the *Paipai* and other groups in Mexico. An elder noted, *'It (the trail) has always existed and it always needs to be there.'* These types of ideas and understandings appear to connect the Chemehuevi to the Imperial Sand Dunes by a cultural logic that invests the Dunes with the potential for importance based on traditions and

beliefs associated with similar landscapes and their appreciation for the special characteristics of the Imperial Sand Dunes.

Landscape Concepts

The Chemehuevi appear to have a rich and well-developed view about place and space in general and the relationship of people and particular landscapes. These topics could only be developed briefly in this interview session. Here it is possible only to sketch some examples of the indicators of a rich philosophy of knowledge about humans, landscapes, and place in Chemehuevi traditions.

In the context of describing mountain and desert environments and how Chemehuevi experience these places, an elder noted: *'We try to get across that we are connected to the land, but our stories are changing. There used to be stories about animals talking and I could not understand that. How do you get to that way of thinking? How to you get back to thinking that animals talk? For Indian people physical things can change into spiritual things and for us dreams are a way of visioning things, a way of experiencing the world and visioning the mountains and other places. These are connected with language and they are reminders of our connection to everything in the land. You go to places and you get these feelings and if you are not used to it, then you feel ... then you have to go to a shaman to interpret that experience. ... You go to places and they like you or they don't. Places are all sacred because they are waiting to be used. Places communicate with you through small ways, places we know about through hearing and visions and dreaming.'*

Following up on this comment, another elder observed, *'Places like you or they don't. We went to this place near Boulder Dam. We were out and I stepped on a rock and twisted my ankle. The next day we went back out and went to the river and my ankle was so swollen, but we went hiking anyway. I was dreading walking, but we went up to this hot spring and it just came to me this feeling that this was a mean place. Well, I walked into the hot spring and when I got out of it I had left the*

pain in the warm springs. Places either like you or they don't. Like when we went up into the mountains there is this place that every time I go there I know that place likes me and it feels good. But, places just like you or they don't, you can't influence it too much. There is this place called Sugar Loaf and that place likes everybody.'

Places can also communicate messages: *'There is this place in the Walapai Mountains where there is this cave and some people do not know it is there. The cave is a special place. ... These people went there they did not know about the cave. My cousin was one of them. They went there to camp and they came back and told us there were these Indians that were singing up there and they kept them awake all night. Well, that was about a message to him, he is supposed to be a Salt Singer. A message was given to him from that place and the singing in the cave. People have to be open to those things, but you have to be strong to accept them.'*

These statements indicate an epistemology about the relationship of people and places. Place can have an affinity for certain people and a place can influence the state of mind and body of those persons. The affinity of places for people, the qualities of places as "mean" or "friendly" and the experience of place through "visioning" indicate multiple types of connections between people and places in Chemehuevi world views. Furthermore, there is also indication of variability in the types of people-landscape relationships that should raise questions in analysts' minds when statements such as "everything is connected" or "everything is sacred" are heard. Such broad statements express an element of Indian views about landscapes and places. However, the Chemehuevi interviews also indicate a more complex view about sacredness, place, landscape, people, and land use. Interviews with other tribal groups also reveal similar indicators suggest that a rich sense of place and human relationships to place exists in Native American world views. This is the type of relationship indicated in Baaso's (1996) description of Apache concepts of place, space, and human-place relationships.

Management Concerns

Chemehuevi elders had observations and concerns about OHV use in the Imperial Sand Dunes. These elders expressed specific concern about the implications of OHV use for old trails that crossed the Dunes. They noted that any such trails should be preserved and that OHV groups and the BLM should work with concerned tribes to develop solutions to those types of problems. These elders also noted, that they recognize the Dunes is perceived as a "playground" by OHV users and that its present use should be compatible with preservation of cultural resources, plants, and animals within the Dunes. One elder noted, *'I see that it has to have a recreational component, I see that attraction people have for that activity in the place, but the place just has to be respected. It is inevitable people will go there (for OHV activity) because it is the king of the sand hills. ... They are riding their things (OHVs) around there and it is alright, but they need to study the place, because if people play there too much they will flatten the place out. I would like to see it preserved, but it is a good playground.'* This observation suggests a recognition of the value of the sand dunes to OHV users, but it also indicates a recognition for regulation of that use so that Chemehuevi concerns are addressed about protection of potential cultural resources and desert plants and animals.

These elders also indicated a belief that fees collected at the Dunes should be used to directly support the Dunes and should not be diverted into a general fund or some other use that is not directly related to supporting Dunes maintenance.

In closing, these elders also reiterated feelings that they should be stewards of the land, and they expressed concerns about land management issues. They also noted, *'This is everyone's responsibility, it is everyone's fight, not just ours. Work with us.'*

Chemehuevi Summary

The Imperial Sand Dunes are on the boundaries of the traditional territories of the Chemehuevi. However, the Dunes are an area of interest for Chemehuevi for multiple reasons. One reason is that Chemehuevi believe there are old trails through the Dunes that were most likely used by Chemehuevi ancestors. Another reason is the similarity of the Dunes to landscapes within Chemehuevi traditional territories that have sacred qualities and other importance for traditional culture. Current cultural connections to the Imperial Sand Dunes need to be placed within a broader set of understandings about the relationship of people to landscapes and places. These understandings are likely to be complex and multidimensional and go well beyond commonly heard expressions such as “everything is sacred” or “everything is connected.” Management concerns about the Dunes focus on the need for cooperative problem solving with OHV users and land managers regarding preservation of cultural resources and protection of plants, animals, and other resources within the Dunes.

CAHUILLA INTERVIEWS

Initial contacts with Cahuilla at the Torres Martinez and the Morongo Reservations indicated interest in the project. Dr. Russell made arrangements to conduct interviews during early December 2001. Each interview was recorded in field notes. Consultants made requests not to tape record the interviews. Each person interviewed is a tribal elder with knowledge of the history and traditions of their group, although each appeared to know more about some topics than others. It might be assumed that cultural knowledge is distributed within these tribal entities and such interviews tap some but not necessarily all relevant information. One interview took place in the home of the elder and the other interview was conducted in tribal offices. A tribal staff person was present during the later interview.

Neither interview resulted in the identification of specific historical sites or culturally significant locations within the Dunes. However, there were expressions of concern about management issues related to the Dunes as noted below. Consultants also expressed concerns about the environmental effects of Coachella Valley growth and its potential impacts on undiscovered cultural resources. Other information from these interviews is summarized below. As previously noted, the presentation format for both Cahuilla and Cocopah interviews is different from the presentation of Quechan and Mohave interviews. This reflects each ethnographer’s organization of results to maximize the findings indicated by their respective interviews. For Quechan and Mohave, the findings are more specific to the Dunes. For Cahuilla and other groups, these findings express less specific knowledge about the Dunes and more generalized understanding about landscape and its implications for cultural connections to the Dunes.

History and Knowledge

Consultants noted that the ancestors of the Cahuilla and other Native Americans were in the area before the Dunes were formed. The landscape shifts and moves from the wind. The animals and plants that were there before the Dunes are gone and anything associated with the people who were there before is gone too, unless it is under the Dunes. Consultants do not know of particular stories about the creation of the Dunes, but it was noted they were probably formed by the wind. *The wind blows from Taquitz down the valleys and into the areas to the south around the Dunes. The wind connects the elements of the landscape and the people with the landscape.*⁶

According to consultants, the Cahuilla term for the Dunes is *nachewit* (c.f., Bean, Vane-Brakke, and Young 1991:65). Consultants describe the

⁶ In the absence of a tape recording to indicate exactly the consultant’s words, italics are used to indicate information recorded in field notes that are as close an approximation as possible of the consultant’s words, but these notes should not be construed as an exact quotation.

Dunes as part of the traditional Cahuilla territory, which included areas from San Gregorio Mountain to Borrego Springs and extending to the vicinity of the Chocolate Mountains. This was within areas used by Cahuilla; however, Quechan and Kumeyaay also used it. Rules and customs guided the use of lands belonging to one group that were also used by another. These ideas suggest that territory and a sense of the land belonging to groups is part of the contemporary understanding of Native Americans about their history with the landscapes of this region.

Consultants did not express knowledge about particular plants, animals, terrain, or other ecological or geographic characteristics *specific* to the Dunes. The knowledge expressed is more generalized and relates to the larger environment of which the Dunes are a part. This may be an artifact of these particular interviews. More specific information might be elicited in interviews that take place in the Dunes environment or that use other methods to elicit ecological knowledge about the Dunes.

In general, the resources of the Dunes do not attract present-day Cahuilla nor were they likely to attract their ancestors. However, around the edges, there are plants traditionally used for medicinal and other purposes. Consultants noted palo verde, creosote, and ocotillo were gathered from areas in the vicinity of the Dunes. In response to a specific question about animals or plants in the Dunes, one consultant noted there are or were *'Rabbits, turtles, chuckwalla, rattlesnakes, a kind of worm that we used to gather and eat as a treat, they were all there.'* In the vicinity of the Dunes there were animals including rabbits, turtles, deer, big-horn, and quail. Some of these were hunted wherever they were found. Consultants noted that many of these plants and animals are no longer in the area because of population growth that has decreased habitat and increased the pressure on animals to locate elsewhere. Similarly, specific place names or terrain features were not elicited. However, consultants did note that Cahuilla of a generation or more ago knew specific names and places in the Dunes. This information is lost because it was not recorded or passed on.

Traditions, Meanings, and Uses

Consultants indicated no knowledge of current Cahuilla uses of the Dunes. They are a place that people pass through on their way to some place else, but they do not appear to be a destination for any purpose of cultural significance. They also suggest that in past times the Dunes were likely to have been crossed for trade and other travel purposes. Cahuilla traded with CRIT peoples as well as with groups inland. Quechan as well as Kumeyaay/Digueño traveled toward the coast and toward the Colorado River for trade or migration purposes. Some trade and migration trails are known, but consultants note that any undiscovered trails in the Dunes area will be difficult to locate because of development that has changed the landscape. Consultants also noted that the use of this area by multiple groups suggests the possibility of places where artifacts may exist that belong to Cahuilla or other Native Americans. Furthermore, artifacts, bones, or other items of cultural importance for Cahuilla may be buried under the Sand Hills. The changing nature of the Dunes makes the location of these artifacts an important issue since they link the Cahuilla and other Native Americans with their past.

Consultants noted that they were not aware of specific stories or songs related to the Dunes. One suggested: *'My father had a story about that area. We used to tell stories in the summertime and other times, at family gatherings too. I heard the story, I don't remember it, but it had something to do with trading and people going from one place to another. I heard him tell about that, but I don't remember it. My Grandmother maybe had story, but I don't remember that either. Maybe the Quechan or Kumeyaay have stories. I don't know of any stories about where they came from, maybe there is an old one, but stories were told in the summer, like stories about stars and every story had a song to go with it.'* There are also indications that bird songs may have referred to the Dunes since known bird songs have references to the Salton Sea, different mountains, and other geographic features in the landscape of the Coachella Valley and the surrounding mountains.

As noted above, there are indications that the vicinity of the Dunes may have been used for gathering medicinal plants (e.g., creosote and mesquite) and “desert tea.” Medicine men and women gathered plants in such areas and used them in their medicinal practices. However, these interviews do not clarify if gathering took place in the areas adjacent to the Dunes or in the Dunes proper. Nonetheless, it is clear that consultants recognize that the general area of the Dunes contained plants used for traditional purposes, and that prior generations of Cahuilla were active in gathering plants within their traditional territories.

Landscape Concepts

The interplay of the wind and the Dunes stands out in these interviews, particularly the idea that the Dunes shift from one place to another and change shape. The Dunes become one of the changing elements of the landscape that contrast with the more constant features such as Pilot Knob, Taquitz, San Gregorio, and the Chocolate Mountains. The shifting of the Dunes also contributes to perception of them as a place of mystery: *‘This is a place where the wind moves and shifts things, it is like a living area because the wind moves and changes it. It is like a spiritual thing that happens there. It is the last part of things we had for many years. There are different kinds of areas there (in the Dunes) and they shift and move with the wind; it is always changing with the wind. It is just a mystery area because of the way they move with the wind.’* This excerpt from field notes also expresses a similar sentiment: *‘The wind tells us a lot. When it blows it tells you something about what is happening in a place. My people have been involved with the land and the wind tells about that. Powerful shamans were part of our traditions and the wind was part of what they dealt with. The whole place is connected by the wind, from the mountains to the valleys and on down there (to the Dunes) is connected by the wind.’*

There were no specific sites of sacred importance noted by consultants in these interviews, only indications, such as *‘We are concerned about the whole area, the whole thing. Maybe there are archaeological sites there but we do not know for sure and we need to know about it if they are*

there.’ Another statement expresses a similar view: *‘All of the place is sacred to me, you never know what happened many years ago, ceremonial songs or what have you, we do not know what happened there.’* Consultants noted a belief that land in general is sacred for Cahuilla: *‘To us everything is sacred because it was given to us by the creator. And the creator does not want us to destroy things. Everything has *ava* and the great (Taquitz) controls all the places and all the things that have *ava*.’* This concept of *ava* as used during the interviews suggests that it is the investment of spirit into things living and inanimate. Bean (1972:161-162) describes the concept of *ava* or *?iva?a* as the “basic generative force through which all things are created ... A principal assumption was that all things were composed of *?iva?a*” (1972:161). As described by Bean (and discussed in the Cahuilla ethnographic overview in this report) *ava* is a sacred and a creative force that is central to Cahuilla worldview.

Consultants interviewed for this project indicate that any aspect of life, including the Sand Dunes, can have *ava*. This notion of land as sacred and invested with spiritual power is similar to that expressed by Cahuilla interviewed by Dozier: *‘And this land, to us, the Indian people, just doesn’t mean a piece of land, this is a sacred area. This was given to us by our creator, to care of it, to live here in harmony with it, and that’s why we were put here — to protect it. But it is not happening because it doesn’t belong to us anymore. Destruction is going on against the mother earth. Everything is being destroyed’* (Dozier 1998:55). The Cahuilla relationship with land is tied to their history and the obligations to maintain traditions about the land. This idea is further expressed in the following quotation from Dozier: *‘The old people said, “Before you, there was people that had this land and they took good care of it.” That means it was passing on to you and you are going to have to treat it the same way’* (Dozier 1998:56).

Another interview theme is the notion of fixed and variable landscape elements. Water and wind change parts of the landscape that can be categorized as moveable landscape elements. The sand hills and Lake Cahuilla are examples of moveable features of the environment.

Mountains, valleys, and some water features are more fixed landscape elements. For example, the Chocolate Mountains and Taquitz are examples of these fixed environmental features. In a landscape with moveable features, the implication is that cultural resources may be concealed within the moveable landscape and available for future discovery as the landscape changes.

Management Concerns

Cahuilla reside in an area experiencing substantial and ongoing growth. Consultants expressed concern about the effects of growth on demands for water, residential land, and recreational areas. One consultant noted: *'After awhile the whole area will be full of houses and where will we get our food then? There is so much development that things like the barrel cactus, mesquite, and other plants (consultant suggested one that grew along the ground and looked something like spinach) will be gone in 5-10 years. What will we do then?'* Particular concern was expressed about the effects of growth on the demands for off-road recreation: *'That place (Dunes) is now a vacation spot for people from the cities. They will tear it up faster than anything, there are people all over the place. We saw that in the Mecca Hills near here, there were four-wheelers going into the area, they also dumped their garbage in there it was a mess and we were concerned about it.'* There is also specific concern about the effects of OHV activity on the Dunes: *'Dune Buggy activity is tearing up the Dunes. It will destroy anything, any burials, or trails, or anything that was there and the Dunes shifted over them.'* Consultants stated specifically their opposition to activities in the Dunes or surrounding areas that threaten the opportunity to discover cultural resources that are meaningful to Cahuilla or other concerned Native Americans.

Consultants expressed some general concerns about the management of the Dunes. For example: *'They (the Dunes) are one of the last places like that in this area. BLM should take care of it and not let it be destroyed. They should take care of it properly.'* There is also specific concern about taking into consideration Native American management issues regarding the Dunes and other landscapes: *'They need to know*

that it is important for us to know what is going on. Those buggies all over the place are destroying plants that may never come back, the desert tea plant, the creosote, and others that we used for traditional purposes. They will never come back once they are gone from there. They need to study that area thoroughly and have Indian monitors there. We are still here and they need to know that, that is what I keep trying to tell them, that we are still here!' Consultants also expressed the idea that BLM and other land management agencies are not necessarily concerned about Native American issues: *'BLM is not concerned about us. They do not care about what was there before.'* There appears to be little support for the current status of land management in the Dunes: *'They are not doing much right there.'* Consultants are also not hopeful about the direction of future management plans: *'In the future all I see is more OHV activity there and they could not care less for the land. It is sad to see, it is sad for me and not good for our people to have that kind of activity in that place.'* Regarding the desired future for management of the Dunes, one consultant noted: *'What we would like to see is that place is left alone that it is left just the way it is now, but we would want it undisturbed.'*

Cahuilla Summary

The Dunes were within the traditional areas of the Cahuilla. There is a perception that Cahuilla ancestors lived in the area before formation of the Dunes. After the Dunes were formed, Quechan, Kumeyaay, and perhaps other tribal groups also used the area. There may be trails or trade routes that were once used but not observable now because of the changing nature of the Dunes. The environs of the Dunes were used for gathering medicinal plants and perhaps for hunting game. Any artifacts of these and other past uses are probably covered over by winds and shifting sands of the Dunes. Although there is a Cahuilla term for the Sand Dunes (*nachewit*), there is no current knowledge expressed by these consultants about place names or plants or animals that might be specific to the Dunes. Stories were told about the Dunes by members of past generations, but consultants did not know of specific songs or stories related to the Dunes.

The land in general is a sacred responsibility of the Cahuilla and lands within their territory are also considered sacred in this sense. Consultants did not express knowledge of any specific sacred sites in the environs of the Dunes, but there was some indication that if information existed in bird songs or other cultural knowledge, it might not be shared with anyone but other Cahuilla. The Dunes are perceived as a mysterious place that moves and shifts through the force of wind. Wind connects the elements of the landscape in Cahuilla territory, blowing from the mountains into the valleys and towards the Dunes. The Dunes are invested with the same spirit (*ava*) that resides in other natural elements of the world. Cahuilla beliefs about land and the responsibility of the present generation to care for the land as did their ancestors are important values.

Current recreational vehicle activity in the Dunes is perceived as a possible threat to cultural resources that may be as yet undiscovered. Activities that are not consistent with the identification and preservation of potential cultural resources in the Dunes should be prohibited. Cahuilla consultants also note that their concerns about land management in the Dunes and other areas are not usually taken into consideration. Consultants express a desire for closer consultation and inclusion of Native Americans in monitoring efforts in areas where cultural resources may be discovered.

COCOPAH INTERVIEWS

An ethnographic sketch of the Cocopah was presented in an earlier chapter that provides some background for discussing information from Cocopah contacts and an interview with a male tribal member. As previously noted, the Cocopah are a Yuman-speaking people who lived along the southern Colorado River and south to the Gulf of Mexico. They migrated to areas north of Yuma and south into Baja California as well as into other areas of southern California. The Cucapá of northern Baja California, Mexico, are relatives of the modern-day Arizona Cocopah. In recent history, the Cocopah lived along the Colorado River and

experienced its flooding and changes of direction. Their ancestors experienced the disappearance of Lake Cahuilla (Williams 1974). The Cocopah and other Yuman peoples adapted to ecological circumstances wherein change in the landscape became part of their world view. This topic is developed in more detail in ethnographic works about the Cocopah (c.f., Gifford 1933; Kelly 1977; Williams 1974) and is briefly summarized in the ethnographic sketch presented in this report.

The Cocopah were not included in the initial mailing of contact letters to potentially interested tribal groups. However, follow-up telephone calls with Quechan, Mohave, CRIT, Anita Alvarez de Williams, and Michael Wilken suggested that Cocopah might have an interest in the project. A telephone call was made to the Cocopah Museum and subsequently a contact letter was faxed to the Tribal Chairperson. A few days later, a follow-up telephone call was made to determine Cocopah interest in the project. A return call indicated Cocopah interest and Dr. Russell arranged an interview with a tribal member for December 12, 2001.

This interview took place in a conference room at the tribal offices on the Cocopah Reservation. The reservation occupies about 6,000 acres in the vicinity of Somerton, Arizona, about 13 miles south of Yuma. A Cocopah tribal government person and a non-Cocopah tribal employee were present for the 2-hour interview. Notes were taken and the interview was also tape recorded. After the interview, it was suggested that Cocopah Museum personnel could assist in identifying other elders who might participate in the project. A meeting with Museum personnel suggested further arrangements and consideration by the elders and the Museum would be required. It was requested that additional information about the project be provided in a meeting with Museum personnel on December 14, 2001.

At the December 14 meeting, project goals and objectives as well as the consultation process were discussed. An outcome of this meeting was a suggestion that further arrangements for interviews with elders should be discussed after the Christmas and New Year's holidays. A January

15, 2002, telephone call to Museum personnel indicated it would not be possible to consider participation by the Cocopah elders until early February. Discussions with Museum personnel regarding participation by Cocopah elders yielded some useful information about the consultation process that is included in this report.

History and Knowledge

Cocopah⁷ do not believe that characterizations of their history written by non-Natives should be accepted as correct since there are cultural factors that influence how Cocopah construct their history. Similarly, existing literature about descriptions of beliefs, customs, and traditions should not be accepted as accurate without close consultations with tribal representatives. Elements of Cocopah history and aspects of beliefs, practices, and knowledge are part of an oral tradition. For example, stories or songs have traditionally been passed on from one person to another, but sometimes the songs are adapted or modified by those who receive them. This is especially the case for songs, stories, or tales associated with a deceased person. For example,

'Our culture says that we destroy everything of our history when a person who tells it goes on... I think by our culture, we are pretty much free to change (our history). Pretty much every story we have ever heard, we have to make sure the connection to the deceased is terminated, so that we are not passing verbatim what this storyteller told, because we know that when they demise that should not be continued on. When you hear the story you can add your reflections, you have the liberty to change this part, to add my reflections ... you are at liberty to change it. So you have

*the liberty to add an addendum, but that is the way of our culture, everything associated with a deceased is burned....'*⁸

And,

'Other people standardize history, they engrave it so that it is not changeable. We were created by our Creator, how do we match up landmarks and thoughts with where we actually came from is ... maybe it was Russia or over there someplace. Trying to match up landmarks to the current United States, maybe at that time the whole land mass was together and broke apart later on, who knows? Each Indian tribe has their story of how it was created and it does not go back to Adam and Eve. In the real history of Cocopah, it is enough to say we were created... Part of the problem, with asking about cultural sites is that when a person dies all references are deleted, so there are no references or they would be very, very vague. And if they existed, they would be restricted to family members. We just do not document that kind of history, the story of our lives is just not built the same way...'

History is not fixed for Cocopah in the same way that it is in non-Indian culture. The history of tribal associations with a particular place is thus also variable. History or knowledge about a place such as the Dunes is also likely to be distributed among Cocopah. No single person is likely to have all relevant knowledge about such an area: *'There are people who have knowledge, and there are people who may have a connection, but you do not know if that was just one person....'*

Cocopah knowledge about and connections to the Dunes may be influenced by their origin, past migration patterns, and their relationships with other tribes. There are suggestions that Cocopah originated in the

⁷ This and subsequent references to Cocopah are expressions of how this consultant expressed his tribe's positions and views. More intensive work would be required to determine how widely such views are shared.

⁸ These are quotations as transcribed from the tape recording of this interview.

vicinity of the Gulf of Mexico and then traveled into areas along the Colorado River:

'The only reason we went up north was to fight the Quechan and Mohave and we used to get beat a lot, so we didn't make that trip a lot... But a lot of the writers are Anglo and we only have their version of what happened. For us, it is more toward the south... From what I have read, there used to be a big lake around Indio and all the Quechans and Mohaves went up there and left this part of the River unprotected ... and so, it was natural for us to move up here from the Gulf. That is what I hear, now I don't know if that can be backed up with stories from our own elders. We have been so inundated with written history taken from the 49ers or Conquistadors or whoever those soldiers were from Mexico....'

Particular historical associations of Cocopah with the Dunes may be difficult to establish because of how they construct their history. It is based in an oral tradition that is modified by generations of storytellers. These stories and other cultural elements are also subject to change and modification because of beliefs about destroying anything connected with a deceased person.

Traditions, Meanings, and Uses

The Dunes appear to have been on the periphery of the Cocopah territory, although they are likely to have crossed the Dunes⁹ on westward migrations to mountain and coastal areas of southern California and northern Baja California, Mexico. It appears that the Dunes did not attract Cocopah for gathering, hunting, residence, or other purposes. In the consultant's words, *'It is foreboding country, at least during the summertime, you just did not want to go there.'* Not only are the Dunes "foreboding" they are also perceived as a place to avoid: *'This was not a place that attracted us, maybe it was a place to avoid, maybe it was just*

scary....' The Dunes are "foreboding" and "scary" and they are not a place that attract contemporary Cocopah. In this consultant's assessment, the Dunes were not likely to have attracted his ancestors: *'As far as my ancestors, they may not have ventured that way because the Sand Dunes are hot and they are big...'*

It appears that the Dunes are not prominent in the present-day songs and stories known to this consultant:

'I have heard references to sand dunes, not anything definitive, some stories that involve formations around Mexicali, but I do not know how much sand figures into those stories, there could be, I don't know. There could be some references in the Native Language to the Sand Dunes, but all I have ever heard is the English version of the stories and I don't have any recollection (of much content that refers to the Dunes)'

And,

'Most of our stories are toward the Gulf of Mexico or east from there or west from there. I am sure there are some references to the Dunes, but I don't personally know what those are.'

The east-west migration of Cocopah from their traditional areas around the Colorado River took them across the Dunes. There is a possibility that Cocopah may have connections to the Dunes related to those travels: *'We do not know where all of our people were buried, they could be in the Dunes.'* People may have died during their travels and migrations and the remains might be along a trail that traversed the Dunes. It is unclear if there are known Cocopah trails across the Dunes, but the consultant noted that other elders may have knowledge of such trails.

There appear to be impediments to expression of cultural knowledge that might establish a connection of Cocopah to the Dunes. In addition to the prohibitions of discussing things or knowledge that belonged to a person, there is also a sense of privacy about cultural traditions and

⁹ These are quotations as transcribed from the tape recording of this interview.

knowledge that derives from Cocopah experiences with non-Indians. For example, in response to questions about songs or stories that might be associated with the Dunes, the consultant noted that his father was a singer who was criticized by other Cocopah for singing at non-Indian events. This criticism was about sharing something with those who could not or would not understand Cocopah traditions:

'... It was a feeling that there are things important to us ... but we don't want to tell anyone else, it does not matter to them, they don't understand it... I know my Dad would sing at parades and he did not mind the lime light, he enjoyed it, but there are lots of people who would say, "You are prostituting our culture, our songs or stories our religion." Those songs, those actions are reserved for the funerals. People would say to him, "Why are you singing out there in front of people who don't even care... and are probably laughing at the way you act." While we may consider it crucial and important to our community, within our community, ...there is that feeling that we are not going to share it, number one, because it is ah ... what is the word ... it is like an embarrassment¹⁰ ...and number 2 they will probably laugh at how primitive we are or whatever, you know, and yet, its importance cannot be diminished within (our culture).'

Throughout this interview there were references to the limitations about expression of certain kinds of cultural knowledge. This was interpreted as an indication that the information provided might not be placed in the correct context of Cocopah beliefs and traditions. There was also an indication that some types of religious information should not be shared with nontribal members. For example, the following is an excerpt from the consultant's response to questions about sacred sites or religious practices associated with the Dunes:

¹⁰ Discussions with Anita Alvarez de Williams in December of 2001 suggested that the most likely association of Arizona Cocopah with the Dunes is their travel through them for trade and migration.

'We deal with taboos in discussing these types of things, it could be fear, families do not divulge things because there are medicine people, there is reluctance to share these kinds of things....'

Regardless of the cultural prohibitions, this consultant did not perceive the Dunes as a place for present-day religious practices:

'To me it is remote, our ties are to the east or west, that is my impression, I am lazy and I don't think I would walk that far to church!! It would, to me, it is an accidental experience, when these experiences do come, for whatever reason, I do not think you would go that far to worship, the Creator is right where you are.'

Traveling to the Dunes for religious purposes does not seem to be a likely possibility for this Cocopah, although he does not discount that such experiences could occur anywhere Cocopah traveled, past or present. It can also be inferred that the possibility of such occurrences are not completely dismissed, but cultural practices and beliefs inhibit discussion with non-Cocopah about particular sacred places, burial sites, or uses for religious purposes.

Landscape Concepts

As with the Cahuilla consultants, this Cocopah expressed ideas about landscapes as composed of fixed and changing elements. The experience of living along the Colorado River, which flooded and changed directions, appears to influence the perception of space and place:

'... Lots of our meanderings occurred up from the Gulf. Our people were astute enough to observe that the River did not have a permanent channel, over time it fluctuated back and forth before they built the dam to control the flow. One landmark from one season to another, may well depend on the water that came down and obliterated it. You know you could say. "By the bank of the river there is a certain curve." But,

now a place like Pilot Knob has changed very little but, anything along the River has gone its way.'

Mountains and other apparently "fixed places" exist in the context of movable elements of the landscape such as rivers and sand dunes. Landmarks and place names are less likely to be associated with those shifting elements that could vanish because of winds that blow sand or water that overflows river banks. However, because landscape elements change and Cocopah moved and traveled the region, there is the possibility that cultural resources may exist anywhere in the moveable landscape:

'That is part of our problem, we just don't know where our people are buried because before there were grave yards it was like wherever a family was living they had a ceremony, cremated and buried the remains and moved on to build somewhere else. Now, when we go in here to improve the reservation we have got to ask the elders if there is anything important that we should not be building on...'

These characteristics of the landscape also have implications for Cocopah assessments of what can exist in the moveable elements of landscape:

'If you take ten elders each one of them will have a different view of the same spot of land... One will say, "I think we buried somebody there from so-and-so's family" and another will say, "No I don't think so, I think it was another way." The landmarks shifted in this particular flood plain, but as far as the big landmarks like Pilot Knob, we had a name for that ... the mountain ranges and some peaks around, the big hump bolder in Mexicali, that big rock there. But coming this way, maybe there are place names, but I have not paid attention... We have to rely on our elders now, they relied on visual aids...'

However, some "visual aids" are not permanent landscape features that can be relied on to fix a location. Furthermore, elders may not have a

consistent view of burial sites or other culturally significant elements that could be located by landmarks in the moveable landscape. For example:

'Landmarks and all of that, there were some they (elders) referred to like Pilot Knob and the opening in the Rocks up there near Fort Yuma that would be basic to our geography, the mesa, but going south, there were no U.S. boundaries. ... It is a challenge to get the elders to agree on a place, there is no way to make a connection ... because things changed. Like, someone might have hid gold and he might have said, "I hid it behind the mesquite tree that has three forks and that is where the gold is." That could well have washed away and the gold is still there.'

Elder knowledge, an important element of Native culture, can be contradictory or uncertain because of the moveable elements of the landscape. If elder knowledge is uncertain or contradictory, then cultural resources may exist within moveable landscape elements such as the Dunes. This interpretation is softened somewhat by an assessment of the Dunes and perhaps not as changeable as those attributed to flooding: *'Sand Dunes do not move that much, over a period of time they do, there is a lot of change occurring, but it is within itself.'* That is, there is change within the Dunes, but they are a "semi-permanent" feature of the overall landscape of southern California and Northern Baja California, Mexico.

Management Concerns and Consultations Processes

The consultation process is of concern to Cocopah. As the Sovereign Nation of the Cocopah, there is a need for "government-to-government" consultation about issues that may be important to the Tribe. Consultants, contractors, or other nondirect government-to-government contacts about land management issues are not desirable from the perspective of some Cocopah. However, there is an expressed concern about direct dealings with federal and state government agencies. For

example, in response to a question about how Cocopah might express their concerns about Dunes management issues, the consultant noted:

'The federal agency in charge of this area, BLM, I am not sure. They would not be the first choice, but they are just not sensitive to Native American issues. Our problem is that we avoid all those agencies because they are like the BIA, they are unresponsive to the real needs of the community. The right way would be to ally ourselves with other brother and sister tribes and try to develop some dialog and perceptions common to the tribes themselves before going to a non-Native agency.'

However, this consultant also noted that they had good working relationships with the Yuma BLM cultural resources office and that is perceived as a valued relationship.

Cocopah are also reluctant to share information in what they perceive to be a process that cannot fully develop the context of Cocopah beliefs and values about place and space. In the December 14, 2002, meeting with Museum and other tribal personnel, reservations were expressed about the time period and consultation process for this project. They noted that this process does not allow the Cocopah to fully participate in a way that would result in an accurate portrayal of their point of view.

While Cocopah did not express specific concern about management issues other than ORV activity in the Dunes, there was a more generalized assessment that land management agencies should consider possible future uses and the needs of future generations:

'I look at it as, this land is of no possible use for anybody, like reservation lands set aside for Indians. It is hard for this generation to speak for two or three generations ahead. ... We want to use the land to its maximum without ruining the land itself, the environment. You look at that land (the Dunes) it is very desolate, but in the next 100 years there could be a

metropolis there, or at least a world class airport (laughter). What is happening out there now, we just don't like it.'

Although the Dunes are a desolate and inhospitable place, beliefs about attachment to and responsibility for the environment imply that even a desolate spot may have value for future generations. His joking tone in suggesting the Dunes might be the site for a future airport or "metropolis" indicates concern that current management should not allow the destruction of a place that may have future value. It is this broader sense of place and attachment to land that appears to inform this consultant's interpretation of management issues about the Dunes. In short, "do no harm."

The possibility also exists that cultural resources exist in the Dunes that might be of value to present as well as future generations:

'We need to know where our migration trails were, so when we speak to people now and in the future, there we just don't want to give out information unless it is from the Cocopah point of view, you achieve that through time and consensus.'

"Time and consensus" will be required to develop what, if any, connections there are of Cocopah to the Dunes. However, the possibility of a connection with the Dunes is a starting point for dialog between Cocopah and land management agencies:

'What I tell you will be a public document, available to Joe, Bob and Mary, and they do with it as they wish, but they will interpret what I say...you are going to write down and put quotation marks, but how do you know what I am talking about. ... I don't mind sharing this information, the more we understand about what we don't know and what we do know, then we have a point for discussion. There is no one person who knows it all.'

If Cocopah connections to the Dunes exist, then they are not conclusively revealed nor are they eliminated by this interview. Travel

to the Dunes, hunting, gathering, vision quests, or sites of cultural significance not discussed by this consultant do not eliminate the Dunes as an area of concern to the Cocopah. Indeed, this interview reveals ambiguity about the types or degrees of connection between the Cocopah and the Dunes.

Cocopah Summary

The history of Cocopah connections with the Dunes is uncertain. However, ancestors of present-day Cocopah most likely passed through the area as they traded with other tribes or migrated from the Colorado River to inland areas. History is dynamic and changeable for the Cocopah. This view of history suggests that information might develop in the future that would indicate Cocopah connections with the Imperial Sand Dunes. There are Cocopah cultural prohibitions about sharing knowledge that also limit what information might be shared about sacred sites, burial locations, or other information considered culturally private. Cocopah concepts of landscape include fixed and moveable elements. Fixed elements are features such as Pilot Knob and moveable elements are areas prone to flooding from the Colorado River or areas such as the Dunes that change because of wind. Moveable elements in the Cocopah landscape can conceal undiscovered cultural resources. Areas such as the Dunes should be managed in a way that undiscovered resources are not destroyed. Specific concerns exist about the effects of ORV activity. Consultation with the Cocopah needs to take into consideration their desires for developing information that reflects their views about their culture and respects their processes as the Sovereign Nation of the Cocopah.

BAJA CALIFORNIA CUCAPÁ INTERVIEWS

Historically, Native Americans have migrated throughout the region that is currently southern California and northern Baja California, including areas around the Imperial Sand Dunes that extend into Mexico. In an effort to identify tribal groups who may have had or currently have associations with the dunes in Mexico or the United States, ethnographers

and others knowledgeable about northern Baja California Native Americans were consulted as previously described in this section. This effort suggested that Cucapá in the Hardy River region and those near the mouth of the Gulf of Mexico were groups that are geographically close to the Dunes and they may have some current or past connections with the Dunes in either Mexico or the United States. To develop this topic, Mike Wilken of Instituto de Culturas Nativas de Baja California (CUNA) in Baja California was contacted to conduct interviews with the Baja Cucapá. Although these Cucapá have a similar cultural history to their Cocopah relatives across the border, they are discussed as a separate group in this report.

Interview Background

The Cocopah of Arizona and the Cucapá of Baja California and Sonora constitute one tribe with very ancient roots in the Lower Colorado River delta. The divergent spellings represent English and Spanish phonetic renderings of the name for the same tribal entity; however, they also serve to distinguish between those tribal members living in the U.S. and those living in Mexico. Cucapá today live primarily in El Mayor Cucapá, Cucapá Mestizo, and some nearby towns of Baja California as well as in Pozas de Arvizu near the extreme northwestern border of Sonora.

The Cucapá originally enjoyed a diversified economic base; they supplemented their hunting and gathering activities with horticulture, taking advantage of the rich soils of the Colorado River delta and its annual flood cycles. Today the Cucapá are organized as an *ejido* and their economy depends on tourist services, handcrafts, fishing, and wage labor in nearby towns and ranches.

Mexican cultural resource laws are carried out under the auspices of the INAH (Instituto Nacional de Antropología e Historia), a federal agency, and at the state level by the Instituto de Cultura de Baja California. Unlike the United States, in Mexico the private sector and indigenous communities are rarely involved in cultural resource management. In Mexico's Yuman communities, cultural resource committees or

departments are nonexistent; when issues arise they are generally dealt with by the communities' recognized traditional authorities or cultural authorities.

Interviews were carried out on June 22 and 23, 2002 with the traditional authority of El Mayor Cucapá, a cultural authority of Cucapá Mestizo and her daughter, a school teacher, as well as with the cultural authority in Pozas de Arvizu who is currently developing a community museum. The interviews were taped under outdoor ramadas in Spanish and Cucapá, relevant parts translated to English, transcribed, and occasionally condensed or paraphrased.

History and Knowledge

The Cucapá refer to dunes in general as *mat sh'aa*. Those living along the Rio Hardy at Cucapá el Mayor and Cucapá Mestizo were more familiar with the dunes located in the southern part of present Cucapá territory near the area of Sierra Las Pintas. They were also aware of the Imperial Sand Dunes and their original southern extension into Mexico, much of which has been lost due to changes in land use. In discussing the Dunes, the Cucapá here refer to the entire extension of sand dunes, from the Imperial Sand Dunes to the mouth of the Colorado River, unless otherwise specified. The dunes in the area that is now Mexico are considered part of original Cucapá territory. Quechan territory was considered to begin north of the international border. The Cucapá consultant in the settlement known as Pozas de Arvizu, which is nearest to the Imperial Sand Dunes, was able to provide the most specific information about the United States extension of the dunes.

Unlike some of the other groups north of the border, the Cucapá talked about the Dunes as a place where people lived during certain seasons. Considering their ancient connection to the Colorado River delta (Laylander 1987, p. 204) and their horticultural adaptation to the river's seasonal fluctuations, it is not surprising that the Cucapá still remember living on and around the higher ground of the Dunes.

Since very remote times, people lived in this whole area, all along the river. There were dunes all the way from Yuma south to the mouth of the Colorado River, and over to Algodones. I'm not too familiar with the ones on the other side [of the border] but my ancestors told me that south from around where the border is, there were people living there, in the dunes. And further north there was another group, who at that time were known as the Halchedum, who were probably closely related to the Quechan. They lived in that whole area of the dunes north of Algodones. My grandmother told me, "See those big dunes, there are people living over there, they're from the same family as the Quechan." They used to live there but they're all gone now, only the Quechan are left. I imagine that there must still be something left from them in those dunes [on the U.S. side]. Maybe on this side too, if there are still dunes left that haven't been destroyed. I'm not sure, I haven't been there lately.

Back then, when the river flooded all the lower valley areas would be covered with water. People had to move up to the edges of the sand dunes and into the dunes as the water got higher. That's why people lived in the dunes. Then around this time of year [June] once the waters had gone down, people started to plant their crops. They would be ready by October, that corn they call Cucapá Maize, a small variety, and these white beans, tepary beans.

The consultants discussed the dunes in the context of the delta region ecosystems. The drastic environmental impacts on Cucapá territory over the last century resulting from changes in land use and river management directly affected the Cucapá subsistence base, consequently impacting how the dunes were used as well as their conservation. The history of the changes in the ecosystems of the delta and the corresponding changes in the adaptive strategies of the Cucapá are vividly described by the elders:

During my grandfather's time the delta area was a paradise...there was a lot more native vegetation like

cottonwoods, willows and others. But then a man named Quico Peralta came and established cattle ranching in the area, hiring on many of the local Cucapá, and the cattle ate up most of the plants. Later when the Chinese and other Asian groups came to the area, they made channels for the water and taught people how to farm cotton, barley, wheat...and how you could earn a few pesos picking cotton with your hands. We began to earn money, we could buy bread, I was 12 years old when I bought my first pair of sandals.

Recently the campesinos (farm workers) have planted in all those white dunes up by Algodones, here on the Mexican side. They used to extend all the way down here. Today there's hardly anything left of them, just a little mesquite tree here and there, but in the past this whole area was dunes, shrubs and desert, it was really beautiful.

Traditions, Meanings and Uses

The traditional authority of the Cucapá community didn't remember any particular tradition that was carried out in the dunes but indicated that he was in favor of preserving them for ceremonies or gatherings, where everyone could "provide their grain of sand" [participate in their own way].

The other consultants also suggested that the dunes would be a good place for gathering or ceremonies, especially in early spring when the plants are flowering and it is still fairly cool. Because of the dunes' importance in the history of the Cucapá, the other Cucapá cultural authorities also emphasized that it was important to

"...preserve them as a historic site, as a place where the people lived in the past, as one of the first settlements of the Cucapá. In some of the places where there are still dunes, for example in the ejido called Ruiz Encinas Johnson, they are selling off the sand, I think they might sell off all the sand until there's nothing left. I

have told some of the people who came from the states to see the place where there ancestors lived that they'd better come soon before it's all gone, before they take it all and sell it."

Within the traditional Cucapá territory, several sacred sites where traditional healers would go for spiritual power and historical sites were mentioned along with the concern that they should be preserved. The dunes were mentioned as historical sites, they were also an important place for traditional recreational activities, such as running, shinny, and the playing of a kick-ball game known as *kahala yo*. In the course of playing this game, which was mentioned as being similar to a Tarahumara kick-ball game, "the players would run around and through the dunes, since it's nice and smooth they would play up there, they would run very far. Some times they would run all the way up to meet the Quechan and play the game with them, they would run many kilometers and sometime the Cucapá would win."

None of the cultural authorities interviewed were flora or fauna specialists or traditional singers. Although oral tradition regarding the dunes was scarce, one of the consultants remembered part of a creation myth in which the mole (*mtulh*) burrows under the dunes to seek the root of a mesquite tree in order to make the frame for a cradleboard for his two children. Other community members might be able to provide more information about plants, animals, and songs of the dunes that have had significance in traditional life; however, the cultural consultants did not want to "talk about things that we don't really know about, like some people do."

Landscape Concepts and the Dunes

As a landscape, the Cucapá see the dunes as a place of both nostalgia, because of the times when their ancestors lived there, and mystery, because of the ongoing interaction of wind and sand. However, due to the many changes in the dune areas, they are no longer "free" and unencumbered.

The dunes as they look when they're whole, with their horizons, their slopes, their sides, their backs, would be like those [pointing toward the southern part of Cucapá territory, in the area known as the Sierra de las Pintas] because they're free, there's nothing to keep the wind from blowing them around however it likes, this way and that way. They're always in movement, but nobody realizes it. The washboard pattern is changing all the time. I have seen this, I've watched it, there's a lot more to it, but I've never talked to anyone about it.

Management Concerns and Consultation Processes

The Cucapá have witnessed the destruction of most of the Mexican extension of the Imperial Sand Dunes. They are concerned about the conservation of the few dune areas left, but seem to have little hope that the process can be stopped.

There are also dunes up by Algodones, but all along the edges of the dunes, the campesinos work that land. Up there at Cuervos, the place that used to be the station, all through that area there used to be dunes, but they have been destroying and destroying them all to clear it and make what they call the "white land." That's why they say the soil up there is very docile, but it's because they have taken down the dunes.

Over there by Algodones they plant crops like wheat and other things all around the dunes, so the dunes don't get a chance to "work" [recover naturally] since they're watering them all the time, they're changing them.

Concerns also exist regarding possible archaeological sites in the dunes, especially considering the Cucapá belief that their ancestors lived there during certain seasons. This is seen as another important reason to conserve the dunes. "I imagine that there must still be something left from them in those dunes [on the United States side]. Maybe on this side too, if there are still dunes left that haven't been destroyed."

CUCAPÁ SUMMARY

The Cucapá of Baja California and Sonora see the southern extension of the Imperial Sand Dunes in Mexico as part of a set of ecosystems of the Colorado River delta that formed the heartland of their traditional territory. In ancient times, when the annual flooding of the delta created special conditions conducive to horticultural and foraging adaptive strategies, the dunes played an important role as "higher ground" where people lived during the seasons when the lower lands were flooded. Oral tradition describing three different groups who lived in and around the dunes still exists, implying that there could still be undetected archaeological sites on both the U.S. and Mexican sides of the dune formation. Recreational use of the dunes by these groups included running and playing of traditional kick-ball games and shinny.

Over the last century the Cucapá have witnessed drastic changes in the environment of the delta area due to changes in land use and river management. During this time they have also changed from a subsistence economy to a cash economy. One of the results of this process has been the appropriation of much of their traditional territory, including the dune areas, as they have been forced to move from the more productive areas of the delta to less desirable areas on the fringes. Lands with agricultural potential, including the Dunes, have been altered by a series of migrant groups and national and international business interests.

Today the Cucapá traditional and cultural authorities are concerned about the conservation of the few remaining dune areas. They would like to see some of them designated as historic sites and feel that during certain seasons the sand dunes would make excellent sites for carrying out gatherings, ceremonies, and reviving traditional games.

KUMEYAAY/KAMIA INTERVIEWS

Kumeyaay (Campo Band) and Kamia Tribes were contacted for interviews that took place in April of 2002. One person from each group participated in an interview conducted at locations in the Imperial Sand Dunes near the Highway 78 overlook and in areas off-road in the Dunes near Glamis. Approximately three and a half days were spent viewing the area and discussing the social and cultural associations of Native Americans with the Dunes. Both individuals contributed responses to questions asked as well as volunteering information that was not in response to any specific question. The information herein expresses responses from both individuals. An unpublished report about desert trail travel was subsequently provided as exemplifying American Indian uses of the lands in the vicinity of the Imperial Sand Dunes.

History and Knowledge¹¹

The Kumeyaay and Kamia peoples believe they were created in the deserts, valleys, and mountains of southern California. These ancient ancestors lived off the land and adapted to different environments. At times the land and the climate presented challenges, but the people adapted and survived. The ancestors cared for the land for all of the thousands of years they lived on it. They did not harm the land as Indian people see it being harmed today. As one consultant observed:

'This area was part of our ancestral home. We lived here for 1000's of years without destroying it, but now look at the place. It seems hell-bent on destruction. Now it is important for us to get to know our ancestral lands again.'

In more recent times, the Dunes marked an eastern boundary of Kumeyaay territory. Seasonal migration characterized Kumeyaay and

Kamia lifestyles before their confinement to reservations. During hot summers they resided in the mountains and in the cooler winter months they moved to warmer areas such as the desert near the Dunes. They adapted to various climates and ecological conditions and possessed a wide range of knowledge about desert, mountain, coastal, and river environments. Confinement to reservations changed traditional migration and residence patterns. It also resulted in focusing traditional knowledge on their reservation environment. Consequently, current knowledge is limited about the plants, animals, terrain, and ecological processes in desert environments such as the Dunes. This is perceived as a loss of important cultural knowledge that was once essential to group survival: *'That is what happens when people have been confined to a reservation for a hundred and six years, people forget things that are important to their culture... We don't live in it anymore so we don't know it the way our ancestors did. These days the Quechan live in it and know it. We have lost our connections and how people survive in these environments.'*

Kumeyaay and Kamia traveled through the Sand Dunes from the coast, through the mountains, and to the Colorado River. Trade, seasonal migration, and exploring motivated travel. Although the Dunes may have been understood as a different, if not dangerous, environment, travel through them on known trails was not unusual. Today, foot travel through the Dunes is an unusual occurrence for these people, but it does occur. However, these are unusual events and reactions to their occurrence exemplify the perceived loss of cultural knowledge. For example, these consultants related a story of a man from a Kumeyaay Band who disappeared for a period of time. His family and friends were concerned, but he eventually showed up at home. A consultant observed, *'It turned out he walked the old tract through the desert, through here (Dunes) probably. People forget that this used to be just how things were done, to walk from the mountains to the river through the desert. We are connecting with the old ways, but it is slow it is a frame of mind.'*

¹¹ The information in this and subsequent sections is not presented as historical fact as determined by western non-Indian historians, but as the consultant's beliefs and values about the past and their culture.

Traditions, Meanings, and Uses

There are present-day Kumeyaay singers who sing songs about Quechan and Kumeyaay interactions that contain references to the Sand Dunes. However, the cultural connections of present-day Kumeyaay/Kamia are focused on the meaning of the past connections for current cultural identity. Within the memory of one consultant, there were childhood visits to the desert and Dunes area that express this theme:

'When I was young, my father used to take me to the desert and tell me stories about the desert and the sands and the things that live here. These sands connect me to who we are and where we come from. Population growth and the pressures of people for recreation in places like this may destroy what is here and that concerns me. God is just not making any more of this kind of place. Just look at it, it is beyond human understanding; places like this are just beyond what we can know.'

A similar theme is expressed in two other statements about the meaning of the past for modern Indian peoples:

'We pay homage to this place because it is part of our past. The place is part of our past and who we were and how we survived. It is important for that reason alone.'

And,

'None of us wants to live in the past. We have a deep respect for the past and how it connects us to our future, but we are not living the past. This place is about our past and our future. It is all about trying to live a better life for the present as well as the future. It is about a sense of history or knowing who we have been. It is like language and culture, this place here is part of our culture. We came here in the wintertime because we moved and it was part of our experience. Our people may have forgotten the specifics about the plants, the animals, the place names, but it is part of our history and our culture, even today.'

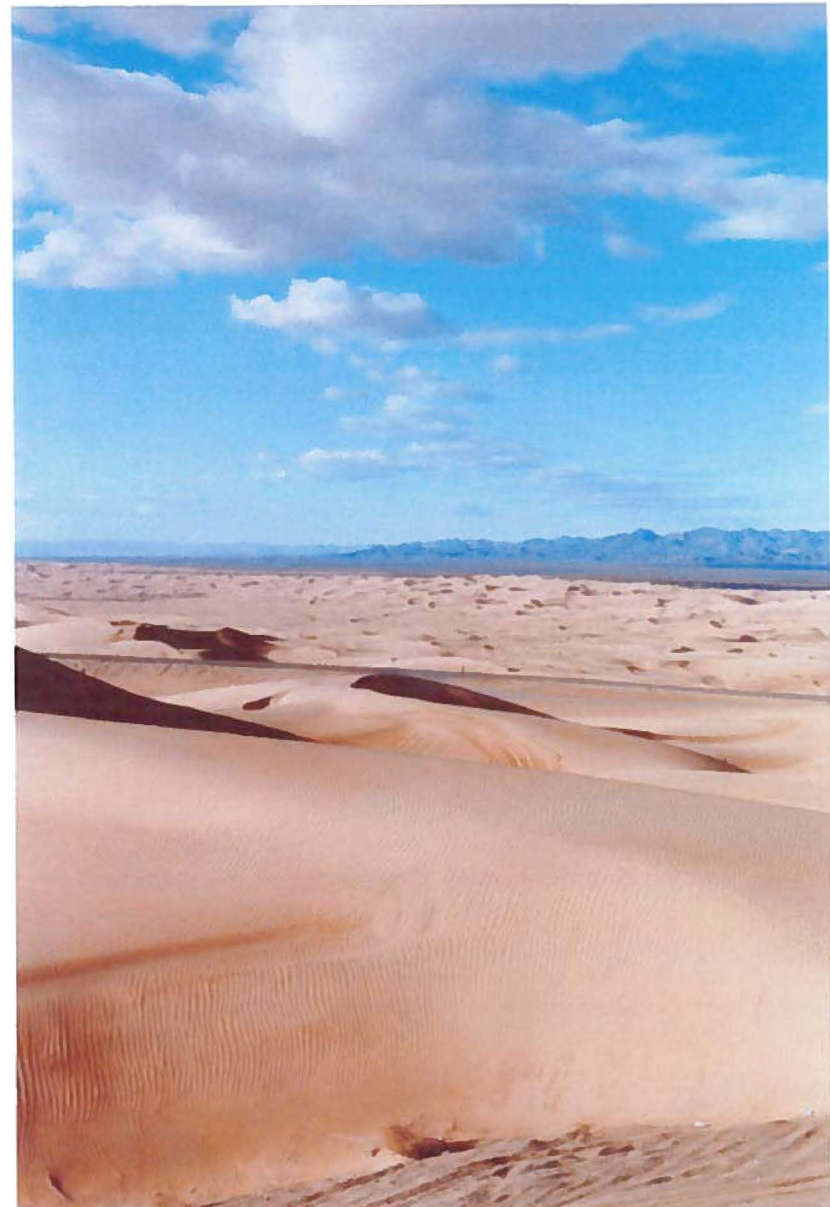


Plate 9. Physical qualities of the Sand Dunes contribute to their identification as a special place for Native Americans.

In part, there is present-day interest in the Dunes and other aspects of history and culture because economic conditions for the Tribes have improved. This allows more time and resources to be applied to understanding the importance of tribal history and cultural connections with different landscapes once used or occupied by Kumeyaay and Kamia peoples. As one consultant noted, *'We are reaching a point in our economic status where we can go forward and invest the effort and the time it takes to look at who we are and our history and get beyond the limitations of how the Reservation has limited our world from what it used to be.'* Constructing a modern cultural identity entails examination of past traditions and practices. These connections with the past also result in investing cultural resources with particular meaning. For example, *'One of the things we want is to have "you" (the government) notify us when something is found, when there are sites or artifacts found. That is part of our history, part of who we are.'* This echoes sentiments expressed by consultants from other tribes: cultural resources that are found in the Dunes have a special importance because they connect past and present cultural identities.

Landscape Concepts

Three themes about landscape emerged from the information provided by consultants: (1) the Dunes have special qualities as a place that evoke feelings of mystery and spirituality; (2) the fate of the Dunes is determined by Nature's plan; and (3) humans should be stewards of the place and not defile a special place such as the Dunes.

The special qualities of the Dunes include:

- Isolation from other sounds can be experienced there or the predominance of natural sounds such as wind.
- There is a contrast of the landscape with surrounding areas and especially the mountains.
- Light at different times of the day creates a different landscape view.
- Wind moves the dune sands around creating a moving landscape.
- The high sand dunes engulf people and create a sense of physical isolation.



Plate 10. Looking at the Chocolate Mountains to the northeast of the Imperial Sand Dunes from the Highway 78 Overlook.

These qualities combine to create a sense of mystery as expressed in this statement by one consultant:

'It is a mystical place, you look at the light and the way it changes in the morning and the evening, it looks like a completely different place. Maybe that is why the old people found the place so interesting, it was changing and different and just has a quality about it that makes it mysterious.'

There was no direct mention of any spiritual beings or specific spiritual places within the Dunes. However, the Dunes have an overall spiritual quality because of their special attributes and the feelings they evoke about connections of the past with the present. This is expressed in a statement by one consultant:

'We can vision this landscape now; we can stand here and imagine what it used to be, when our people were here before, when this place was what it used to be. This place is naked, not in a vulgar sense, but like fine art. It is honest and pure and just naked. Our people have always been here, I felt that the first time I ever came here, I felt that I belonged to this place.'

Another statement illustrates the connection of the attributes of the place with the spiritual feelings these evoke:

'The place, it changes, but it does not. Like those mountains over there (points to the mountains northeast of the Dunes), they change too, just slower. It is such a contrast, this place and those mountains. It is that contrast that evokes a spiritual feeling in me. It has powers we just don't understand. The area just changes itself, the wind, the light, the moonlight; it is such a wonderful mystique. It is just spiritual to me. I think medicine folk used to come here just for the quiet of the place.'

These statements express the attribution of a cultural connection evoked by the physical qualities of the Dunes. The Dunes do not appear to be

used for traditional purposes by the Kumeyaay/Kamia, but they have traditional meanings. They are a physical presence that expresses a connection between the past and present and evoke a sense of belonging not just to place but to history as well.

A second theme is that Nature has a plan for the earth and its creatures and the "fate" of the Dunes is determined by this plan. The following statement expresses this theme:

'It is like mother nature, you just cannot keep nature from its fate, the environment has a life of its own, it will dictate what will happen to it, in spite of us. But where there are things to do with our history in here that can be destroyed, then we have a moral obligation to preserve it for ourselves, our children.'

This statement expresses a long-term view of natural processes and what man can and cannot control. It also expresses a 'moral obligation' to preserve historical and cultural artifacts in the landscape that have cultural meanings for present-day Kumeyaay/Kamia and other native peoples.

The third landscape theme is that humans should be stewards of the land and not take actions that defile or destroy it. Two different statements express this theme:

'You look right over there at that gold mine and you see how the land has been raped. With this place, the Creator is not going to make another place like this one, you have to remember it and not destroy it.'

In this instance, the gold mine near the Dunes is perceived as an example of how humans can defile a landscape. It is the physical manifestation of that defilement that is a basis in experience for fears and concerns that special places such as the Dunes are at risk. It is also a reminder of the need for exercise of stewardship responsibilities. A second statement illustrates the point with a metaphor:

'Our people would not take all the acorns from the oak trees because then there would be no Oak trees anymore. If you destroy it all today, then what will there be tomorrow? The next person will not have anything. There needs to be a respect for the next generation, for future generations to appreciate the land and places like this.'

This statement expresses not only the need for stewardship of the land, but also the continuity of place, landscape, and culture. That is, this statement can be interpreted as expressing that history and landscape are

connected. Thus, stewardship of the land is an expression of the continuity of cultural between generations. This connection of history and landscape is also expressed in the following statement:

'You look at this place, the mountains over there, the sand dunes in front of them. This place is the last frontier. This is the last place where we see what the Creator did. This is our roots. This is our place. Many Americans want to go to Europe because that is their place, their roots. But, this is our place, our roots, this desert and the mountains, the river. When I look out I see a mysterious place, a holy place, this is what the Creator made for us.'

History, place, culture, and spirituality are connected in this view. This is a strong basis for attachment to the land and feelings of stewardship that are, in part, motivated by the connection of landscape and culture.

Management Concerns

Three types of management concerns were expressed in the information provided by consultants:

- Identification and protection of cultural resources
- Effects of OHV activity
- Littering and cleanup

Cultural resources have particular importance because they connect present-day cultural identity with tangible artifacts from the past. This was a recurring theme in discussions with these consultants.



Plate 11. Looking eastward across the Dunes towards Indian Pass and the Picacho Peaks, places of cultural importance for Native Americans.

There was also a concern that undiscovered resources may exist in the Dunes. For example,

'The archaeologists have not dug deep enough here. You look here and you see the vastness of the place, there may be places where people have not gotten into. There should be a thorough survey to identify any cultural remains. Any pristine sites found should be off-limits immediately.'

Consultants expressed concern about the potential threat from increased public usage of the Dunes to graves or sites with spiritual importance. The more people that explore the Dunes, the more likely it is that nonarchaeologists will uncover or otherwise find places of spiritual importance.

A related concern is the nature of Indian involvement in the identification and preservation of cultural resources. Native peoples should be partners in the process and not just called in after resources are discovered. For example,

'We need to be included in any surveys too, not just in a patronizing way. We want to see the physical evidence of our people. I have seen that before and it proves our people were here. It helps us to understand our own unique make-up. It is the conduit that gives us grounding, this place, the things in it, gives us grounding in who we are.'

These consultants recognized that OHV use is a long-standing activity in the Dunes. There is also recognition that this type of activity is meaningful to those who practice it and there is room for accommodation of their needs with the concerns of Indian peoples. However, there is also expression that this activity can be destructive:

The OHV activity here now has been going on for years and it probably means a lot to the people who come here. No one had any foresight when it first started about what it would do, so now

it is just the way it is. This (the Dunes) is already destroyed, but if the activity here is discontinued then its mystical quality can return.

OHV users also need to be educated about conservation and about respect for cultural resources. With that education, there is room this type of use of the Dunes, although the use should not expand to any new areas.

The last theme about management issues is related to OHV use and its consequences, specifically littering. While driving out into the Dunes and then walking some distance to view plants and enjoy the landscape, litter was apparent. Each consultant remarked on the lack of respect showed by littering. There were also questions raised about the need for special fees to clean up the litter. It was assumed that most of the litter was associated with OHV use since there were tire tracks, oil cans, beer cans, and the occasional lone tennis shoe strewn about. This type of littering was interpreted as indicating disrespect for other users and for the landscape itself. Enforcement or increased fees were each discussed as solutions.

Kumeyaay/Kamia Summary

The Dunes are a special place because of the historical association of Indian peoples with the place, the physical characteristics of the Dunes, and the spiritual feelings they evoke. Although no spiritual places or sacred sites were identified, the Dunes are assessed as a spiritual place because experiencing them evokes spiritual feelings. Landscape, history, and present-day cultural identity are connected for the Kumeyaay/Kamia. The past historical association of people with the Dunes has present-day meaning because it illustrates the range of knowledge and talents required to adapt to harsh and potentially dangerous environments. The younger generations need to be aware of the skills possessed by their ancestors who adapted to desert environments. Cultural resources may exist within the Dunes that further illustrate the history of Indian peoples in this region. These resources should be discovered and protected and Native peoples should

be involved in this process. OHV activity needs to be contained and there should be education of OHV users about respect for the land and cultural resources. Litter needs to be cleaned up, perhaps by charging special fees that are used only for cleanup.

INVENTORY OF ETHNOGRAPHIC AND ETHNOHISTORIC RESOURCES

This inventory includes ethnographic and ethnohistoric sites (places) identified from interviews and site visits with Native Americans, and a review of published and unpublished literature sources. The inventory is derived from a review of ethnographic and historic sources, including cultural resources studies conducted in the general area, and from past and present interview materials. A significant portion of the database is taken from research conducted for the APS/SDG&E Interconnection Project (Woods 1982), now known as the Southwest Powerlink. Dr. Woods interviewed elders from most of the project area tribes, including the Quechan, Kamia, Cocopah, and Kumeyaay for the Interconnect study (WFN 1978-1982). Dr. Woods was aided in the literature review and archival research for the Interconnection Project by scholars intimately associated with each group: Ruth Almstedt for the Kumeyaay, Florence Shippek for the Kamia, Anita Alvarez de Williams for the Cocopah, and Robert Bee for the Quechan.

Data gathered in the context of the present research focusing specifically on the Imperial Sand Dunes have been added to the earlier database. In the inventory, which follows, data derived from interviews are identified as Native American. Archival sources are identified by author and date. Woods field notes 1978-1982 have been shortened to WFN 1978-1982. Woods field notes 1979-1982 are identified as WFN 1979-1980. The BLM Desert Planning Staff field notes (1979) are cited as DPS Notes 1979. Interview data gathered for the present Imperial Sand Dunes study are cited as ISD Notes.

Site locations are mapped on USGS 7.5' Quadrangles where sufficient data are available. Site numbers followed by (a) are places associated with religion, ritual, and mythology; sites followed by (b) are habitation sites; sites followed by (c) are resource exploitation areas; sites followed by (d) are trails; those followed by (e) are trails and boundaries; and those followed by (f) are historical events. In the inventory, locations that can

be mapped are identified as (m) and more general locations are identified as (nm) and are not mapped. The sites that are mapped have only a very general location.

THE IMPERIAL SAND DUNES

Much of the information regarding ethnographic and ethnohistoric use of the Imperial Sand Dunes has been lost to time. The prehistoric record is similarly scant due in some part to the eternally shifting sands. Native Americans interviewed over the last 20 years, however, have identified the Dunes as a tribal boundary, a hunting and gathering area, a cremation and burial ground, and a place important in mythology. The Dunes were also seen as a significant barrier to travel east and west between the Colorado River and the mountains to the west. A *Kwamai* consultant interviewed in 1978 noted that tribal members from the Laguna Mountains followed the cane breaks south and then continued south to Signal Mountain in Mexico to avoid the Dunes, because the sand was "quite a terrible thing to fight (WFN 1979-1980)." The major routes across the Dunes generally followed the more pronounced cross-canyons.

One of these canyons crossed the southern end of the Dunes along what is now known as Buttercup Pass, another passed around the southern tip of the Sand Hills, and yet another was situated to the north through the area now traversed by Highway 78. More northerly routes were evidently avoided for the most part. While these east-west routes are now highways, they were at one time major Native American trails, which branched off of the north-south trending pan-Yuman Xam Kwatchan Trail. As such, there were important prehistoric and ethnohistoric sites along these routes, and they connected important Native American habitation and resource areas.

Several Quechan place names were given for the Sand Hills (or the Dunes), most often, *Xuksily*, meaning sandy place. Another, *naka-savu*, means "birth of something," and one consultant referred to the Dunes as *amat-ala-ai*, which means mesa land, desert land, palms and also

translates as paradise. Mesa land was also referred to as *shalar-ai*. These native terms are phonetic and not linguistically accurate. Another consultant used the term *shed-ai*, which means sand. Mohave consultants used the term *Amat-sali* for the Dunes. Cahuilla consultants referred to the Dunes as *nachewit*.

The individual sites identified below are components of Native American use of the greater Sand Dunes area. The inventory project area includes the Dunes and a buffer zone around the Dunes consisting of 1 mile beyond the project area.

Table 1. Inventory of Ethnographic and Ethnohistoric Sites

Site #	Site Name, Description, and Location	Source of Info
1a	Sand Dunes. Sacred Place. The Sand Hills and Sand Dunes are considered sacred to the Quechan because the creator placed them where they are and called the sand "Quechan sand." Petrified impressions of people, giants, and animals in that area prove the existence of these life forms in earlier times. The Imperial Sand Dunes are located at the eastern edge of the Imperial Valley extending from Mexico northwest about 70 miles between the Southern Pacific Railroad tracks on the east and the Coachella Canal on the west. Multiple Quads (nm)	Native Americans WFN 1978-1982 Woods 1982:A2-8 DPS Notes ISD Notes
2a	Cremation and Burial area. Quechan consultants identified a cremation and burial ground in the southern part of the Dunes on the Mexican side of the border. It is on the levee of the All American or Coachella Canal on the Yuma side of the Dunes. There may have been a village associated with this place. Several consultants noted that there was a spring or well nearby. Quad not identified (nm).	Native Americans Woods 1982:A2-9 ISD Notes
3a	Cactus Lake [<i>e-ce-mon</i>]. Burial Ground. A lake (now dry) in the Sand Dunes was identified by Quechan consultants as a place where some people were buried. "...when people died they cremated them all the way to the Sand Hills...around the Sand Hills was a lake called <i>e-ce-mon</i> and people were buried around there...you can hear spirits voices at night if you sleep there." The lake was probably Cactus Lake, which was due west of Cactus (railroad stop) on Pilot Knob Mesa at about T15S, R19E, R20E, Sections 13, 24, 18, or 19 (NM).	Native Americans DPS Notes USGLO Plat WFN 1978-1982
4a	Sand Dunes. Burial area. According to Chemehuevi consultants residing at CRIT, traditionally, native people used the Sand Hills to bury the deceased. Quechan consultants also identified the Sand Hills as a cremation and burial ground. One stated, however, that people who died there were brought home to be cremated, particularly if it was a chief. Multiple Quads in the Imperial Sand Dunes (nm).	Native Americans ISD Field Notes
5a	Sand Dunes. Mythology Locale. According to Chemehuevi consultants residing at CRIT, there is a strong belief in Numic culture that, starting around the Salton Sea in the Twenty-nine Palms area, powerful "little medicine people" make the Sand Dunes their habitat. Similarly powerful "water babies" also reside there. Mohave consultants confirmed the existence of the "little people." According to the BLM Desert Planning Staff, the <i>Xakwinimis</i> area of the Sand Dunes has recorded mythic associations for other groups including the Kamia, Kumeyaay, Quechan, and Kamia (see site 8c). Multiple Quads in the Imperial Sand Dunes (nm).	Native Americans ISD Notes DPS Notes
6a	Sand Dunes. Mythology Locale. A Quechan consultant related a story about the Creation, Coyote's travels down the Colorado and back through the Sand Hills, and the creation of Sand Coyote. Details are provided in the Quechan interview materials, which follow (nm).	Native Americans ISD Field Notes
7a	Sand Dunes. Power Places. According to Chemehuevi consultants residing at CRIT, there are "extraordinary visual resources" associated with power for those who view them in the Sand Dunes. Multiple Quads in the Imperial Sand Dunes (nm).	Native Americans ISD Notes
8b	Quechan Rancheria (<i>Xuksil</i> , "sandstone or sandy place"). This was the largest and southernmost Quechan rancheria. It was located just south of Pilot Knob, on the west bank of the Colorado River, north of the confluence of the Alamo River, and south of the present-day Mexican town of Andrade. At the time of Forde's work, <i>Xuksil</i> was "a few miles south of Algodones [the Mexican village] across the present International Boundary." People living in this area were known as <i>Kavely cadom</i> (south dwellers). It had a population of more than 800 in 1774. <i>Xuksil</i> was the village of the important Quechan chief Pablo and his son, also an important chief, called variously Ygnacio, Pablo, or Pedro. As with all Lower Colorado villages, this one moved from time to time within the same general vicinity and there are indications that numerous	Bee 1984:41,87; Diaz 1774 in Bolton 1930b: 268-9, 1930c; Font 1775 in Bolton 1930d:69; Forde 1931:101; Bolton:48; Castetter and Bell 1951:49; Garcés 1775 in Coues 1910:163

Site #	Site Name, Description, and Location	Source of Info	Site #	Site Name, Description, and Location	Source of Info
	satellite settlements were associated with <i>Xuksil</i> . The Imperial Sand Dunes extend within a few hundred meters of the floodplain in this vicinity, so this would have placed <i>Xuksil</i> very close to the southern end of the Dunes (nm).		13e	Trail. San Diego Trail. Several configurations of a major trail between the Pacific coast and mountains to the Colorado River crossed the southern end of the Imperial Sand Dunes. The aboriginal trail went southwest into Mexico around Signal Mountain near present-day Mexicali, and around the southernmost tip of the Dunes to avoid the sand altogether. Another version of the trail proceeded east along the general route of present-day Interstate 8, crossing the Dunes through Buttercup Pass. Both of these trails have been referred to in the literature as the San Diego Trail. On their return from the Colorado River to the coast in 1774, the de Anza party apparently followed the more southerly route well into Mexico.	Native Americans Woods 1982:A2-32 WFN 1978-1982 Pignuolo et. al 1997:68-69 Bolton 1930. Volume 1:135
9c	Sand Dunes. Seasonal planting area. An Anglo-American party saw " <i>Maricopa</i> " Indians planting maize in the Yuma Sand Hills in 1849. One archival source suggests that these were actually " <i>Halchidhoma</i> " or "people of the north" who were living along the Colorado River in the 1840s. Native American consultants also identified this as a seasonal planting area. This siting was probably on the southeast side of the Dunes on Pilot Knob Mesa. Grays Well, NE. and Ogilby Quads (nm).	Native Americans Woods 1982:A2-13 Chamberlain 1945:244 Forbes 1965:291	14e	Coyote's Trail [<i>Isil-pai-ichi-veh</i>]. A Desert Cahuilla elder identified this trail used by the Desert Cahuilla and others as passing between the Santa Rosa Mountains and the Colorado River. From Rabbit Peak in the Santa Rosa Mountains it headed south to the Coyote Mountains and then east crossing the Sand Dunes along the present international border. This trail follows a similar route across the Dunes as either of the San Diego to Yuma trails.	Native Americans Woods 1982: A2-31 WFN 1978-1982
10c	Sand Dunes. Gathering area. The Sand Hills were identified by Native Americans and in the literature as a gathering area for plants not available along the Colorado River. Most often mentioned is a foot-high, carrotlike (or turnip-like), black plant with pink flowers called <i>Yidut</i> by the Quechan and gathered also by the Kamia. The stems were peeled, boiled, and used for food and medicinal purposes, notably for snakebites. It tasted like a sweet potato. Other medicinal and food plants gathered in the Dunes included mormon tea, creosote (used for many ailments including colds), desert lily, sandroot, berries, cactus, mesquite, devil's claw (used for basket-making), carrizo, desert willow, honey dew, milkweed (smoked by the Mohave), cattails, and various grasses. One consultant stated that clay was gathered in the Sand Hills to make "plates and cups (nm)."	Native Americans Woods 1982:A2-15 Gifford 1931:24 Castetter & Bell 1951:208-9 ISD Notes	15e	Indian Pass-San Sebastian Trail. This trail proceeded from present-day Brawley across the Dunes following the general cross-canyon route of the present Highway 78, and then proceeds east to Indian Pass. There were important trail connections from the west, and to the east this trail bisected the pan-Yuman <i>Nam Kwatchan</i> Trail, which runs north and south.	Pignuolo et. al 1997:68-69
11c	Salt Source. Salt was obtained at a place 2 to 3 miles southwest of Algodones. At this place, salty earth was obtained, washed several times, and the water boiled away, leaving the salt crystals (nm).	Gifford 1931:24	16e	Sand Dunes. Boundary Marker. The Dunes constituted a tribal boundary between the Kamia (Desert Kumeyaay) on the west and the Quechan on the east. The boundary was not precisely defined or seen as a barrier between the two tribes who were closely allied and did not wage war on one another. A Quechan consultant noted that although the Quechan have rock art sites over towards the Laguna Mountains, the Sand Hills marked the western extent of their tribal homeland, and was a neutral area between the Quechan and the tribes further west. Multiple Quads (nm).	Native Americans WFN 1978-1982 ISD Field Notes
12c	Sand Dunes. Hunting and Gathering area [<i>Xakwinimis</i>]. This refers to an extensive desert and mountain resource area used by the Kamia and surrounding tribes. It includes the northern part of the Sand Dunes (from several miles south of Highway 78) in the south, spreads several miles east and west of the Sand Dunes, and extends to the Chocolate Mountains in the north. According to statements made to the BLM Desert Planning Staff in the mid 1980s, members of San Diego and Imperial County reservations wished to regain access to this area (NM).				

Site #	Site Name, Description, and Location	Source of Info
17f	Historical Event. Mission Bicuñer. Francisco Garces and Juan Diaz founded a Franciscan mission and little Spanish settlement named Bicuñer in the vicinity of <i>Xuksil</i> in 1776. This mission may have been located somewhere between <i>Xuksil</i> and the southern end of the Sand Dunes. On July 17, 1781, the pueblo and mission were destroyed in the Quechan Revolt against the Spanish (nm).	Coues 1900:212; Forbes 1965:191-2, 201-205.

the site of multiple uses, and there were important trails that connected major settlement areas to the west and east.

SUMMARY

On the basis of an extensive search of the published and unpublished literature, interview material from earlier projects in the area, and interviews with contemporary Native Americans, seventeen (17) sites or places used by Native Americans were identified in and within about 1 mile of the Imperial Sand Dunes. Seven (7) of these are sites associated with religion, ritual, and mythology; one (1) is a habitation site; four (4) are resource gathering or planting areas; four (4) are trails; and one (1) is a historical event. Many of these places have only a very general location.

One might expect more use sites in an area of this size, particularly since it was surrounded by a number of Native American groups during the Prehistoric, Ethnohistoric, and Historic periods. The constantly shifting sands, however, did not encourage permanent settlements or predictable resource use areas. As noted, the Dunes were seen as a barrier to travel between the coastal mountains and the Colorado River by Native Americans and early explorers alike. The relatively low frequency of permanent activities in the Dunes, however, does not diminish the importance of the Sand Dunes to Native Americans. The Dunes are an important part of the geographic landscape to a number of tribes and figure importantly in their creation stories and mythology. Framed by mountains and sprawling deserts, the Dunes are an essential ingredient of a timeless and spiritual visual landscape. In terms of resource use, the edges of the Dunes as they spilled onto the mesas around the Dunes were

TRADITIONAL CULTURAL PROPERTY EVALUATION

One of the more important aspects of this work is assessing the Imperial Sand Dunes for eligibility to the National Register of Historic Places as a Traditional Cultural Property (TCP). The assessment will be based on the criteria and guidelines put forward in *National Register Bulletin 38*, "Guidelines for Evaluating and Documenting Traditional Cultural Properties" (King and Parker 1990).

According to *Bulletin 38*, traditional cultural significance refers to

those beliefs, customs, and practices of a living community of people that have passed down through the generations, usually orally or through practice. The traditional cultural significance of a historic property then is significance derived from the role the property plays in a community's historically rooted beliefs, customs, and practices. Examples of properties possessing such significance include ... a location associated with the traditional beliefs of a Native American group about its origins, its cultural history, or the nature of the world ... (King and Parker 1990: 1).

The Dunes do have important cultural significance and associations for contemporary Native Americans. They are part of the origin stories and song cycles of many Lower Colorado River Indian tribes. These groups have maintained a strong connection with the landscape of their traditional territories and generally view the landscape as imbued with cultural significance. Within the larger cultural landscape of Native American habitation and use, the Dunes were a prominent and unique part of their physical and spiritual landscape. The Dunes were also generally perceived as a dividing line between the territory of the Quechan and that of the Kamia (Desert Kumeyaay). As a foreboding place to cross, the Dunes were generally avoided. Although prehistoric and historic trails did cross the Dunes, major routes skirted them. Physical traces of the

trails in the Dunes themselves would have been very ephemeral, but ceramics scatters and other archaeological remains can help to reconstruct their locations. All groups interviewed have expressed concern about damage to the Dunes landscape that is occurring due to recreational vehicle use of the Dunes, reinforcing their view that the Dunes are important to them culturally. Similarly, as noted above, these groups also express concern about potential damage to undiscovered cultural resources that may be located within the Dunes.

Parker and King generally define a TCP as a property "that is eligible for inclusion in the National Register because of its association with cultural practices or beliefs of a living community that (a) are rooted in that community's history, and (b) are important in maintaining the continuing cultural identity of the community (1990:1)." To determine whether such a property is actually eligible for the National Register, it must first be evaluated with reference to the National Register Criteria for Evaluation (36 CFR, Part 60). The determination of eligibility process applied here follows the sequential steps suggested by Parker and King (1990: 16) in *Bulletin 38*.

Step One: *Ensure that the entity under consideration is a property*

A number of cultural sites, or places, with associated beliefs and practices, have been identified in the Imperial Sand Dunes. Although specific locations are not available for many of these places, they are considered as part and parcel of the Dunes. As described above, these sites comprise the essential elements of the Dunes cultural landscape, which also fits within the definition of a traditional cultural district. Parker and King note that a culturally significant natural landscape may be classified as a site, as may the location where significant traditional events, activities, or cultural observations have taken place. They go on to define a TCP District as "A concentration, linkage, or continuity of such sites or objects, or of structures comprising a culturally significant entity...(1990:9)."

The Imperial Sand Dunes have already been defined as a cultural landscape, and the distribution of cultural sites (including prehistoric, ethnohistoric, and historic) throughout the Dunes fits the definition of a cultural district. As such, the entity under consideration is not only a property, but a defined Cultural Landscape and a potential TCP District.

Step Two: *Consider the property's integrity of relationship and integrity of condition*

The questions to consider here are whether the property has an integral relationship to traditional cultural practices and beliefs, and if the condition of the property is such that these relationships retain their integrity.

In terms of *integrity of relationship*, the Dunes have been shown to have an important link to the cultural beliefs and practices of several of the Lower Colorado River tribes. Paramount are the mythic associations demonstrated for several of the groups, and the Quechan creation story with the central Sand Coyote figure. The beliefs in “water babies” and “little medicine people” also apply, as do tribal songs that include reference to the Dunes. On the other hand, whether these beliefs result in any contemporary cultural practices associated with the Dunes has not been established, and there is little information regarding how widespread these cultural beliefs and practices are held within the tribal groups.

Integrity of condition is seriously challenged by OHV activity in the southern part of the Dunes; two major highways crossing the Dunes; canals and associated roads built along both sides of the Dunes; military gunnery and bombing ranges just east and west of the Dunes; and the effects of development and population increase in the surrounding areas, particularly to the west in the Imperial Valley. A significant result of disturbance in the Dunes is the destruction of the native flora and fauna, particularly in the OHV designated areas. Air and ground contamination are also issues brought up by tribal representatives. On the other hand, the Dunes themselves are largely inaccessible except by ORVs, limiting human disturbance, and north of Highway 78, much of the Dunes has

been set aside as wilderness areas. Native Americans interviewed wanted the natural habitat of the Dunes protected and insisted that the OHV activity area not be expanded. None insisted that the current uses be halted, but some noted that better control should be exercised over the public populations that use the area.

Step Three: *Evaluate the property with reference to the National Register Criteria*

To qualify for the National Register, any property, including cultural landscapes, must meet certain criteria. First, the property must possess integrity, and second it must meet at least one of the criteria of significance. The property should be:

- (a) associated with events that have made a significant contribution to the broad patterns of our history; or
- (b) associated with the lives of persons significant in our past; or
- (c) embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- (d) that have yielded, or may be likely to yield, information important in prehistory or history.

As discussed in *Bulletin 38*, Criteria a and b are most applicable to assessing traditional cultural significance. Criterion c is most applicable to the constructed environment but would also apply to rock art, which may also have traditional cultural significance. No features of the Dunes appear to meet Criterion c. Criterion d may apply to the archaeological remains found within the Dunes but does not have clear applicability to the Dunes as a cultural landscape.

With regard to Criterion a (association with important events), *Bulletin 38* indicates that both historical and mythological events can play a role in the assessment of traditional cultural significance. To date none of the historical events directly associated with the Dunes landscape appear to be of sufficient significance to meet the National Register criteria. However, the mythological events, including the Sand Coyote narrative of the Quechan and the as yet not fully identified role of the Dunes in Quechan, Cocopah, and possibly other origin and migration song cycles, may be of sufficient cultural importance to meet Criterion a under the *Bulletin 38* guidelines. Further information regarding the cultural context of these narratives, however, is not forthcoming within the context of the current study.

Bulletin 38 also states that mythological beings, as well as historical persons, should be considered when assessing traditional cultural significance under Criterion b. Mythological beings associated with the Dunes include Sand Coyote of the Quechan and water babies or other water spirits of the Mohave and Chemehuevi. The association of the Dunes with water babies does not at this time appear to be integral, as defined by *Bulletin 38*, inasmuch as these spirits can inhabit many locales. The association of the Dunes with Sand Coyote, on the other hand, does appear to be integral and inseparable. Thus this association may meet National Register Criterion b. Further information would be necessary to clarify the cultural significance of Sand Coyote in order to complete the National Register evaluation.

Step Four: *Determine whether any of the National Register Criteria considerations (36 CFR, 60.4) make the property ineligible*

Considerations that make a property *ineligible* for the National Register include (a) ownership by a religious institution or use for religious purposes; (b) properties which have been relocated; (c) birthplaces and graves; (d) cemeteries; (e) reconstructed properties; (f) commemoration properties; and (g) properties whose significance has been achieved within the past 50 years. While the Dunes may include religious uses (a), birthplaces and graves (b), and cemeteries (c), these features

contribute to, rather than define, the overall significance of the property (Parker and King 1990:14). As such, none of the National Register Criteria considerations make the Dunes ineligible for inclusion in the National Register.

Discussion

The Imperial Sand Dunes is a physical property and a significant cultural landscape. *Integrity of relationship* has been established for the individuals and groups interviewed, although it is not clear if the beliefs and practices associated with the Dunes are widespread within particular groups. Further, there is no evidence that any of these beliefs and practices are exercised in the Dunes at the present time. There have been numerous impacts to *Integrity of condition* within and around the Dunes, although the majority of those interviewed did not feel that these activities diminished the value of the Dunes as a cultural landscape. One explanation for this might be that the generally foreboding nature of the Dunes, restricted access and use, and the protected wilderness areas inhibit permanent changes to the landscape. And, the constantly shifting sands tend to erase permanent signs of disturbance over time.

Based upon the information available at this time, the Imperial Sand Dunes do not satisfy the requirements of criteria (a), (b), (c), or (d) for inclusion in the National Register of Historic Places. It is possible that further research might be able to document significant events that took place in the Sand Dunes over time to reevaluate eligibility under criterion (a). Additional research may also turn up information on the importance of migration song cycles, Sand Coyote, and other mythological events and figures that would allow reconsideration of eligibility under criterion (b). These data were not evident, however, in the context of the present investigation.

As noted above, the basic definition of a TCP according to Parker and King (1990:1) is a property that is eligible for the National Register "...because of its association with cultural practices or beliefs of a living community that (a) are rooted in that community's history, and (b) are

important in maintaining the continuing cultural identity of the community.” Clearly, the Dunes are an important part of the overall cultural and physical landscape of a number of Lower Colorado River Indian groups. Tribal members identify the Dunes as a place, and know that it was important to their ancestors for a variety of reasons, including travel, hunting and gathering, burials, ritual, and mythology. Specifics about these activities and practices, however, seem to be forgotten for the large part. Consultants uniformly commented that the people who knew these things are long gone. As such, only a few beliefs and practices associated with the Sand Dunes could be documented from the literature and interviews.

As part of the regional physical and cultural landscape for these tribes, the Dunes are one important factor in maintaining the cultural identity of each group. None of those interviewed, however, indicated that the Dunes were more important than the numerous other physical and cultural features of their landscape. The Quechan, for example, are more knowledgeable about the role of the Colorado River, the Picacho area, and Pilot Knob in their history. Similarly, the Mohave, Chemehuevi, Kamia, Kumeyaay, and Cocopah have more knowledge and concern for places closer to their present locations.

Had this study been conducted 50 to 100 years ago, the TCP evaluation might be markedly different. The elder Quechan, Kamia, Kumeyaay, and Cocopah individuals interviewed by Woods some 20+ years ago (Woods 1982; WFN 1978-1982) provided more detailed information about the Dunes than those interviewed for the present study. While a more intensive investigation may reveal additional information, it is doubtful that enough could be added to change the state of the study conclusions. There is simply not enough evidence in the literature or in the remaining oral tradition to support the Imperial Sand Dunes as a TCP eligible for the National Register of Historic Places.

SUMMARY AND IMPLICATIONS

The Dunes are a unique landscape in the geography of southern California and northeastern Baja California Norte, Mexico. They are a multiuse area that receives heavy use by ORV enthusiasts who have access to areas south of Highway 78. To the north is a wilderness area. Nearby residents as well as visitors from other counties and states travel to the Dunes for OHV and other recreational purposes. Additionally, Native Americans reside on reservations to the north, south, east, and west of the Dunes. The ethnographic literature indicates the Dunes are within, or near, the traditional boundaries of the territories of various tribal groups, including the Cahuilla, Chemehuevi, Cocopah, Kamia, Kumeyaay, Mohave (CRIT), and Quechan. There is some notation in the literature that there are migration and trade trails that pass through or around the Dunes. However, the ethnographic literature reviewed to date has sparse references to uses of the Dunes but include some mention of hunting, gathering, planting, religious and other spiritual uses, and trade and travel use. This literature and ethnographic interview data indicate seventeen (17) sites or places used by Native Americans that were identified in and within about 1 mile of the Imperial Sand Dunes. Seven (7) of these sites are associated with religion, ritual, and mythology, one (1) is a habitation site, four (4) are resource gathering or planting areas, four (4) are trails, and one (1) is a historical event. Many of these places have only a very general location.

Ethnographic interviews suggest the environs of the Dunes are perceived to have been occupied by Native American groups prior to and after formation of the Dunes. These earlier inhabitants may have used the Dunes for traditional activities. Quechan creation stories include accounts of the creation and naming of the Dunes, with a special mythical being, Sand Coyote, at the core of these accounts. Similarly, there are also indications that *Lizard* and other beings in Quechan stories also have some association with the Dunes (cf., Imperial Valley Press, May 2002). The Dunes are identified as the location of a Quechan cremation and burial area, a gathering area for plants, a place to hunt animals, and a

place where trails to other tribes and resource areas crossed. This is an important place for the Quechan as part of the physical landscape of their past and the visual landscape in their present. As part of their traditional territory, the Quechan feel a sense of stewardship for the Dunes, as expressed by Preston Arrow-Weed who commented at a public hearing about the Imperial Sand Dunes: "*We are more sensitive to the Imperial Sand Dunes because at one time it was ours. We were the stewards of the land. Now it is in the hands of the BLM*" (Imperial Valley Press, May 2002). Their feelings of stewardship in combination with creation stories, and other past uses of the Dunes results in multiple types of cultural attachments of Quechan with the Imperial Sand Dunes.

There are indications that the Chemehuevi and Mohave, now represented at CRIT, had beliefs about *little medicine people* and *water babies* occupying the Dunes. The Dunes are also mentioned in the songs of Kumeyaay, Quechan, and Mohave. For Mohave, these songs are believed to celebrate the place and its relationship to their history and culture. Among the Cocopah, the Dunes were not necessarily an area that had resources that attracted Cocopah ancestors. Rather this was an area they passed through and areas on the periphery of the Dunes were used for hunting, gathering, or other traditional activities. Ethnographic interviews with Cahuilla indicate that the Dunes were an area that may have been used by the ancestors of contemporary desert Cahuilla for gathering and perhaps hunting. Information about religious or spiritual uses of the Dunes was not accessible because of cultural prohibitions about discussing such information with nontribal members. Similarly, there are other barriers that inhibit some Native American consultants from discussing information that might indicate cultural associations with the Dunes. Kumeyaay/Kamia consultants indicate the Dunes are a special place because of inherent qualities of the Imperial Sand Dunes and because of how the history of Native American presence in the Dunes connects contemporary culture with historical Native American culture.

Current beliefs about attachment to the land suggest that all lands are sacred and that the Dunes, as part of the traditional territories of some

groups, should be considered as sacred lands. Other landscape beliefs also suggest that contemporary Native Americans and their ancestors are attached to the Dunes through an overall view of landscape and a world view in which all things are connected. However, there also appear to be elaborated belief systems about places, landscapes, and human-land relationships. These belief systems go beyond assessments of all things as connected and all things as sacred. For example, there are assessments of landscape as being composed of fixed and moveable elements with the Dunes belonging to the later classification. Other beliefs suggest that although elements of the landscape may move and change, ultimately the wind connects all places and things into a coherent whole that is the product of the Creator. And still other beliefs suggest particular places may have an affinity or not for people and may otherwise influence human life. Such beliefs are the “deep structure” and the more general expressions of “everything is sacred” and “everything is connected.” Developing this “deep structure” of landscape may offer land managers and Native Americans a broader vocabulary for assessing landscapes in general and particular landscapes such as the Imperial Sand Dunes.

Native American consultants express specific concerns about management issues related to the Dunes:

- The Dunes are part of the traditional territories as well as the sacred world of Native Americans that reside in the region. They should be managed in a way that respects the status accorded the Dunes in Native American history and world views.
- OHV activity is damaging the Dunes and threatening its plants and wildlife. Some tribes suggest that recreational areas should remain confined to lands already used for that purpose and that no new recreational areas be opened.
- BLM should adjust its management priorities such that protection of animal life takes precedence over recreational activities such as OHV use. Animal life threatened by OHV activity needs protection.

- The ecology of the area needs more focused attention, especially to the symbiosis of animal and plant life in the Dunes.
- It is important to have a location for OHV activity, but it is equally important to manage its effects on the ecological integrity of the Dunes.
- The Dunes are a resilient environment and only man can destroy them; therefore, efforts should be made to ensure that the natural environment of the Dunes is managed so this does not happen.
- Because this is a shifting landscape, there may be undiscovered cultural resources buried in the Dunes.
- Since the Dunes are within the traditional territory of various Native American tribes, there should be an effort to identify and preserve cultural resources before these resources are lost to increased use of the Dunes, including OHV activity.
- BLM should make additional outreach efforts to include Native Americans in consultations about management of the Imperial Sand Dunes.

IMPLICATIONS

- The Imperial Sand Dunes do have important cultural significance and associations for Contemporary Native Americans. However, based on currently available information, the Dunes do not satisfy the requirements for inclusion in the National Register of Historic Places.
- The history of Native American use and travel through the Dunes implies the potential for cultural resources within the area managed by BLM. Investigation of the potential for cultural resources is a

direct implication of project findings based on the ethnographic literature and interviews with contemporary Native Americans.

- Native Americans are more than an “interest” group. That is, they may have status different than OHV clubs, the Sierra Club, or other similar “interest” groups. Their historical and cultural relationship with the Dunes should be considered in further consultations with Native American groups. Native American monitors or consultants may provide an important liaison between concerned tribes and BLM.
- Native Americans who participated in this project appear to have an extensive belief system about landscape concepts. These concepts define relationships between humans and ecological conditions and landscape features. They also indicate relationships between the spiritual and physical landscapes and human beings. These belief systems could only be briefly addressed by the interviews completed for this work. Further consideration of landscape beliefs and values may offer a broader understanding of the relationship of contemporary Native Americans to particular landscapes such as the Imperial Sand Dunes.
- Existing work does not provide data to classify the Imperial Sand Dunes as a traditional cultural property for Native Americans. Additional data are required to fully assess the meanings and cultural associations of Native Americans, particularly the Quechan, with the Imperial Sand Dunes.

REFERENCES CITED

- Allen, Carol Hales
1983 *Glamis Sand Hills: Schoolhouse to Dune Buggies*. Sun Graphics, Yuma.
- Almstedt, Ruth Farrell
1982 The Kumeyaay and Iipai. In *APS/SDG&E Interconnection Project, Native American Cultural Resources*, pp. 6-21. Document on file with San Diego Gas & Electric Company, San Diego, California.
- Anonymous
n.d.a Document in the El Centro Field Office, Plank Road Vertical File, folder entitled "Historic Sites/Historic Roads, Plank Road, —3 (6232) Special Situation, Folder I."
n.d.b Western Snapshots Yesterday, copied article from the magazine, *American West*, El Centro Field Office, Plank Road Vertical File.
1926 Paving America's Sahara, copied article from *The Literary Digest*, vol. 91, in the El Centro Field Office, Plank Road Vertical File.
- Antevs, Ernst
1983 Geological Dating. In *The Cochise Cultural Sequence in Southeastern Arizona*, edited by E. B. Sayles. *Anthropological Papers of the University of Arizona* 42:26-43.
- Apple, Rebecca, Christy Dolan, Jackson Underwood, and James H. Cleland
2001 *Cultural Resources Evaluation for the North Baja Pipeline*, Volume I. San Diego: EDAW, Inc. Copy on file.
- Aschmann, Homer
1966 The Head of the Colorado Delta. In *Geography as Human Ecology*, edited by S. R. Eyre and G. R. J. Jones, pp. 232-264. St. Martin's Press, New York.
- ASM Affiliates, Inc.
2001 *The All-American Canal: An Historic Properties Inventory and Evaluation*. Prepared for Imperial Irrigation District. Unpublished report on file at the Southeast Information Center, Ocotillo, CA 92259.
- Baksh, Michael
1997 Native American Consultation for the Chemgold Imperial Project. Document on file with Bureau of Land Management, El Centro, and Tierra Environmental Services, San Diego.
- Barker, James P.
1976 Ethnographic Sketch of the Yuha Desert Region. In *Background to the Prehistory of the Yuha Desert Region*, edited by Philip J. Wilke, pp. 21-42. Ballena Press, Ramona, California.
- Basgall, Mark E. and M. C. Hall
1991 Perspectives on the Early Holocene Archaeological Record of the Mojave Desert. In *Kelso Conference Papers 1987-1992* edited by G. Dicken Everson and Joan S. Schneider, pp 63-81. *Occasional Papers in Anthropology* No. 4, Museum of Anthropology, California State University, Bakersfield.
1992 Archeology of the Awl Site, CA-SBR-4562, Fort Irwin, San Bernardino County, California. Report on file with the U.S. Army Corps of Engineers, Los Angeles, California.
- Basso, Keith
1996 *Wisdom Sits in Places: Landscape and Language Among the Western Apache*. University of New Mexico Press, Albuquerque.

Bean, Lowell J.

1970 *Cahuilla Indian Cultural Ecology*. Doctoral dissertation, Department of Anthropology, University of California, Los Angeles.

1972 *Mukat's People: The Cahuilla Indians of Southern California*. University of California Press, Berkeley.

1978 Cahuilla. In *California*, edited by Robert F. Heizer, pp. 575-587. Handbook of North American Indians, vol. 8, W.C. Sturtevant, general editor. Smithsonian Institution, Washington D.C.

Bean, Lowell J., and William M. Mason

1962 *The Romero Expeditions 1823-1826*. Palm Springs Desert Museum. Library of Congress Catalogue Number 63-14763, United States of America.

Bean, Lowell J., and Charles R. Smith

1978 Serrano. In *California*, edited by Robert F. Heizer, pp. 570-574. Handbook of North American Indians, vol. 8, W. C. Sturtevant, general editor. Smithsonian Institution, Washington D.C.

Bean, Lowell John and Harry W. Lawton

1965 *The Cahuilla Indians of Southern California*. Malki Museum Press, Banning, California.

1973 Some Explanations for the rise of Cultural Complexity in Native California with Comments on Proto-Agriculture and Agriculture. In *Native Californians: A Theoretical Perspective*, edited by Lowell J. Bean and Thomas C. Blackburn, pp. 19-48. Ballena Press, Socorro, New Mexico.

Bean, Lowell John and Kathrine Siva Saubel

1972 *Temalpakh: Cahuilla Indian Knowledge and Usage of Plants*. Malki Museum Press, Banning, California.

Bean, Lowell J., and Sylvia B. Vane

1977 *California Indians: Primary Sources. A Guide to Manuscripts, Artifacts, Documents, Serials, Music, and Illustrations*. Ballena Press, Ramona, California.

Bean, Lowell John, Silvia Vane, and Jackson Young

1991 *The Cahuilla Landscape: Santa Rosa and San Jacinto Mountains*. Ballena Press, Menlo Park, California.

Bedwell, S. F.

1973 *Fort Rock Basin: Prehistory and Environment*. Eugene: University of Oregon Books.

Bee, Robert

1981 *Crosscurrents Along the Colorado: The Impact of Government Policy on the Quechan Indians*. University of Arizona Press, Tucson.

1982 The Quechan. In *APS/SDG&E Interconnection Project, Native American Cultural Resources*, pp. 34-55. Document on file with San Diego Gas and Electric Company, San Diego, California.

1982 The Quechan. In Clyde M. Woods (ed.), *The APS/SDG&E Interconnection Project, Miguel to the Colorado River and Miguel to Mission Tap: Identification and Evaluation of Native American Cultural Resources*. Document on file with San Diego Gas & Electric Company, pp. 34-55.

1983 Quechan. In *Southwest*, edited by Robert F. Heizer, pp. 570-574. Handbook of North American Indians, vol. 10, W.C. Sturtevant, general editor. Smithsonian Institution, Washington D.C.

1983 The Quechan. In Alfonso Ortiz (ed.), *Handbook of North American Indians*, Vol. 10, Southwest. Smithsonian Institution, Washington, D.C., pp. 86-98.

Begole, Robert S.

1973 An Archaeological Survey in the Anza-Borrego Desert State Park: 1972 Preliminary Report. *Pacific Coast Archaeological Society Quarterly* 9(2):27-55.

1981 1978-1980 Investigations in the Anza-Borrego Desert State Park. *Pacific Coast Archaeological Society Quarterly* 17(4):1-38.

Benedict, Ruth

1924 A Brief Sketch of Serrano Culture. *American Anthropologist* 26:368-369.

Bischoff, Matt C.

2000 The Desert Training Center/California-Arizona Maneuver Area, 1942-1944: Historical and Archaeological Contexts, Technical Series 75. Statistical Research, Inc., Tucson.

Blake, William P.

1857 Geological Report, by William P. Blake, Geologist and Mineralogist of the Expedition. In Routes in California, to Connect with the Route's near the Thirty-Fifth and Thirty-Second Parallels, Explored by Lieutenant R.S. Williamson, Corps Topographical Engineers, in 1853. In Reports of Explorations and Surveys, to Ascertain the Most Practicable and Economical Route for a Railroad from the Mississippi River to the Pacific Ocean, vol. 5 of 12, part 2. Prepared under the Direction of Jefferson Davis, Secretary of War, for the United States War Department. A.O.P. Nicholson, Printer, Washington.

Blodget, Lorin

1855 Distribution of Temperature and Explanation of the Isothermal Charts: Mean Distribution of Temperature for the Three Months of Spring. In Army Meteorological Register, for Twelve Years, from 1843 to 1854, Inclusive. Compiled from Observations Made by the Officers of the Medical Department of the Army, at the Military Posts of the United States. Prepared under the Direction of Thomas

Lawson, Surgeon General United States Army, for the United States Surgeon General's Office. A.O.P. Nicholson, Public Printer, Washington.

Bolton, Herbert E.

1908 *Spanish Exploration in the Southwest 1542-1706*. Barnes and Noble, New York.

1930a An Outpost of Empire. *Anza's California Expeditions*, Volume I. Alfred A. Knopf, New York.

1930b Opening a Land Route to California, Diaries of Anza, Díaz, Garcés, and Palóu. *Anza's California Expeditions*, Volume II. Alfred A. Knopf, New York.

1930c The San Francisco Colony, Diaries of Anza, Font, and Eixarch, and Narratives by Palóu and Moraga. *Anza's California Expeditions*, Volume III. Alfred A. Knopf, New York.

1930d Font's Complete Diary of the Second Anza Expedition. *Anza's California Expeditions*, Volume IV. Alfred A. Knopf, New York.

1930e Correspondence. *Anza's California Expeditions*, Volume V. Alfred A. Knopf, New York.

1931 The San Francisco Colony: Diaries of Anza, Font, and Eixarch, and Narratives by Palóu and Moraga. *Anza's California Expeditions*, Volume V. University of California Press.

Bouscaren, Stephen J.

1998 *A Bibliography for San Diego County and Adjacent Regions of Southern California and Northern Baja California*. Coyote Press Occasional Papers, Salinas, California.

Bowers, Janice E.

- 1993 *Shrubs and Trees of the Southwest Deserts*. Southwest Parks and Monuments Association, Tucson, Arizona.

Bureau of Land Management (BLM)

- 1979 Desert Planning Staff Ethnographic Notes May 10, 1979. R. Landlaw and J. Strand, Riverside, California District Office. [DPS Notes 1979].

- 1985 Plank Road Area of Critical Environmental Concern Management Plan. El Centro: California Desert District, Bureau of Land Management, U.S. Department of the Interior.

Cachora, Lorey

- 1997 Letter to Terry Reed, Bureau of Land Management, El Centro, California.

Campbell E. W. C., W. H. Campbell, E. Antevs, C. E. Amsden, J. A. Barbieri, and F. D. Bode

- 1937 *The Archaeology of Pleistocene Lake Mohave*. Southwest Museum Papers 11, Los Angeles.

Castetter, Edward F., and Willis H. Bell

- 1951 *Yuman Indian Agriculture: Primitive Subsistence on the Lower Colorado and Gila Rivers*. University of New Mexico Press.

Childers, W. Morlin

- 1974 Preliminary Report on the Yuha Burial, California. *Anthropological Journal of Canada* 1(1):2-9.

- 1977 Ridge-Back Tools of the Colorado Desert. *American Antiquity* 42(2):242-248.

- 1980 Evidence of Early Man Exposed at Yuha Pinto Wash. *American Antiquity* 45(2):297-307.

Clifford, Josephine

- 1870 Crossing the Arizona Deserts. *Overland Monthly and Out West Magazine* 4(6). San Francisco.

Cline, Lora L.

- 1984 *Just Before Sunset*. J and L Enterprises, Jacumba, California.

Coues, Elliott (editor)

- 1900 *On the Trail of a Spanish Explorer: the Diary and Itinerary of Francisco Garcés (Missionary Priest) in his Travels Through Sonora, Arizona, and California 1775-1776*. Francis P. Harper, New York.

Cuero, Delfina

- 1970 *The Autobiography of Delfina Cuero: A Diegueño Woman*. As told to Florence C. Shipek. Malki Museum Press, Morongo Indian Reservation.

D'Andrade, Roy

- 1991 Schemas and Motivation. In *Human Motives and Cultural Models*, edited by Roy D. Andrade and Claudia Strauss pp. 23-44. Cambridge University Press, New York.

Davis, Emma Lou

- 1969 The Western Lithic Co-Tradition. In Emma Lou Davis, C. W. Brott, and David L. Weide (eds.) *The Western Lithic Co-Tradition*. San Diego Museum Papers 6, pp. 11-78.

- 1978 The Ancient Californians: Rancholabrean Hunters of the Mojave Lakes Country. *Natural History Museum of Los Angeles County, Science Series* 29.

Davis, Emma Lou, Cathryn H. Brown, and Jacqueline Nichols

- 1980 Evaluation of Early Human Activities and Remains in the Colorado Desert. Document on file with the Great Basin Foundation, San Diego, and BLM, Riverside.

Davis, James T.

- 1961 *Trade Routes and Economic Exchange Among the Indians of California*. University of California Archaeological Survey Report No. 54, Berkeley.

de Anza, Juan Bautista

- 1774 The San Francisco Colony: Diaries of Anza, Font, and Eixarch, and Narratives by Palóu and Moraga. *Anza's California Expeditions*, Volume V. University of California Press.

de Williams, Anita Alvarez

- 1974 *The Cocopah People*. Indian Tribal Services, Phoenix.

- 1982 The Cocopah. In *APS/SDG&E Interconnection Project, Native American Cultural Resources*, pp. 55-63. Document on file with San Diego Gas & Electric Company, San Diego, California.

- 1983 Cocopa. In *Southwest*, edited by Alfonso Ortiz, pp. 570-574. Handbook of North American Indians, vol. 10, W.C. Sturtevant, general editor. Smithsonian Institution, Washington D.C.

Desert Planning Staff

- 1979 Unpublished notes. On file with the Bureau of Land Management, Riverside, California.

Donnan, Christopher B.

- 1964 A Suggested Culture Sequence for the Providence Mountains (Eastern Mojave Desert). *University of California, Los Angeles, Archaeological Survey Annual Report, 1963-1964*: 1-26.

Dozier, Deborah

- 1998 *The Heart is Fire: The Work of the Cahuilla Indians of Southern California*. Heyday Books, Berkeley, California.

Drucker, Philip

- 1937 *Culture Elements Distributions*, vol. 5. Southern California. Anthropological Records 1:1-52. University of California, Berkeley.

- 1941 *Culture Elements Distributions*, vol. 17: Yuman Piman. Anthropological Records 6:3. University of California, Berkeley.

Elliott, Wallace W.

- 1883 *History of San Bernardino and San Diego Counties*. 1965 Reproduction by Riverside Museum Press, Riverside, California.

Ellis, George M. (editor)

- 1995 Gold Rush Desert Trails to San Diego and Los Angeles in 1849, *Brand Book Number 9*. San Diego Corral of the Westerners, San Diego.

Emory, William H. Emory

- 1859 *Report on the United States and Mexican Boundary Survey, Part I*. Made under the Direction of the Secretary of the Interior, by William H. Emory, Major First Cavalry and United States Commissioner. Cornelius Wendell, Printer, Washington.

Euler, Robert C.

- 1966 Southern Paiute Ethnohistory. *University of Utah Anthropological Papers*, 78. Salt Lake City, Utah.

Feld, Steven, and Keith Basso (editors)

- 1996 *Senses of Place*. School of American Research, Santa Fe.

Figgins, Jesse D..

- 1927 The Antiquity of Man in America. *Natural History* 276:229-239.

- Finley, Eric J.
1997 *The Old U.S. 80 Highway Traveler's Guide: Phoenix to San Diego*. Narrow Road Communications, Phoenix.
- Font, Pedro
1775 The Colorado Yumans in 1775. In *Font's Complete Diary*, 1931. Reprinted in *The California Indians: A Source Book*, editors Robert F. Heizer and M. A. Whipple, pp. 247-254. Second Edition, University of California Press, Berkeley.
- Forbes, Jack D.
1965 *Warriors of the Colorado: The Yumas of the Quechan Nation and their Neighbors*. University of Oklahoma Press, Norman.
- Forde, Daryll C.
1931 Ethnography of the Yuma Indians. *American Archaeology and Ethnology* 28(4):83-278. University of California Publications, Berkeley.
- Fredrickson, David A.
1973 *Early Cultures of the North Coast Ranges, California*. Ph.D. dissertation, Department of Anthropology, University of California, Davis.
- Frémont, Jessie Benton
c.1890 *Far-West Sketches*. D. Lothrop Company, Boston.
- Garcés, Francisco
1900 [1775-1776] *On the Trail of a Spanish Pioneer, The Diary and Itinerary of Francisco Garcés*, Vol. I and II. Translated by Elliott Coues. Francis P. Harper, New York.
- Gifford, E. W.
1918 Clans and Moieties of Southern California. *University of California Publications in American Archaeology and Ethnology*.
1931 *The Kamia of Imperial Valley*. Bureau of American Ethnology, Bulletin 97. Smithsonian Institution, Washington.
1933 The Cocopa. *University of California Publications in American Archaeology and Ethnology*, 31(5):257-334. University of California Press, Berkeley.
- Gifford, Edward W. and Robert Lowie
1928 Notes on the Akwa?ala Indians of Lower California. *University of California Publications in American Archaeology and Ethnology* 23(66):339-352.
- Halpern, Abraham M.
1997 *The Kuruk: Native Accounts of the Quechan Mourning Ceremony*. University of California Press, Berkeley.
- Hardy, R. W. H.
1829 *Travels into the Interior of Mexico*. No Publisher, London.
- Haury, Emil V.
1975 *The Stratigraphy and Archaeology of Ventana Cave*. University of Arizona Press, Tucson.
1983 Concluding Remarks. In *The Cochise Cultural Sequence in Southeastern Arizona* by E. B. Sayles, pp. S158-166 University of Arizona Anthropological Papers no. 42.
- Hayden, Julian D.
1976 Pre-Altithermal Archaeology in the Sierra Pinacate, Sonora, Mexico. *American Antiquity* 41:274-289.
- Heilbron, Carl H.
1936 *History of San Diego County*. San Diego Press Club, San Diego.

Hester, J. J.

1972 *Blackwater Locality No. 1: A Stratified Early Man Site in Eastern New Mexico*. Rancho de Taos: Fort Burgwin Research Center.

Hester, Thomas R.

1973 Chronological Ordering of Great Basin Prehistory. *Contributions of the University of California, Berkeley, Archaeological Research Facility* 17.

Hohenthal, William D.

2001 *Tipai Ethnographic Notes: A Baja California Indian Community at Mid-Century*. Ballena Press, Navajo, California.

Hooper, Lucille

1920 The Cahuilla Indians. *American Archaeology and Ethnology*. University of California Press, Berkeley.

Jackson, John B.

1994 *A Sense of Place, A Sense of Time*. Yale University Press, New Haven.

Jackson, Mike, Sr.

1997 Letter to Terry Reed, Bureau of Land Management, El Centro, California.

Jaeger, Edmond C.

1980 [1933] *The California Deserts*. Stanford University Press, Stanford, California.

James, Harry C.

1960 *The Cahuilla Indians*. Malki Museum Press, Banning, California.

Jennings, Charles W.

1967 Salton Sea Sheet, Geologic Map of California, Olaf P. Jenkins Edition, Fifth Printing.

Jennings, Jesse D.

1978 Origins. In *Ancient Native Americans*, edited by J. D. Jennings, pp. 1-41. Freeman, San Francisco.

Johnson, Boma

2001 *Cultural Resources Overview of the North Baja Pipeline Project*. Archaeology Plus. Ivins, Utah.

Kelley, William H.

1942 Cocopa Gentes. *American Anthropologist* 44(4): 675-691.

1977 *Cocopa Ethnography*. University of Arizona Press, Tucson.

Kelly, Isabel T. and Catherine S. Fowler

1986 Southern Paiute. In *Great Basin*, edited by Warren L. D'Azevedo, pp.368-397. Handbook of North American Indians, Vol. 11, W.C. Sturtevant, general editor, Smithsonian Institution, Washington D.C.6

Kendall, Martha B.

1983 Yuman Languages. In *Southwest*, edited by Alfonso Ortiz, pp.4-12. Handbook of North American Indians, Vol. 10, W.C. Sturtevant, general editor, Smithsonian Institution, Washington D.C.

Kniffen, Fred B.

1931 Lower California Studies, III: The Primitive Cultural Landscape of the Colorado Delta. *Geography*, 5(2):43-66. University of California Publications, Berkeley.

- Kroeber, A. L.
 1908 Ethnography of the Cahuilla Indians. *American Archaeology and Ethnology*. The University Press, Berkeley.
- 1920 Yuman Tribes of the Lower Colorado. *American Archaeology and Ethnology* 16(8):475-485. University of California Publications, Berkeley.
- 1925 *Handbook of the Indians of California*. Dover Publications, New York.
- 1948 *Seven Mohave Myths*. Anthropological Records 11:1. University of California Press, Berkeley and Los Angeles.
- 1951 *A Mohave Historical Epic*. University of California Press. Berkeley and Los Angeles.
- 1959 Ethnographic Interpretations 7-11. *American Archaeology and Ethnology* 47:3.
- Laird, Carobeth
 1976 *The Chemehuevis*. Malki Museum Press. Rubidoux Printing Company, Riverside, California.
- Langdon, Margaret
 1970 A Grammar of Diegueño: The Mesa Grande Dialect. *University of California Publications in Linguistics* 66, Berkeley.
- 1975 Kamia and Kumeyaay: A Linguistic Perspective. *Journal of California Anthropology* 2(1):64-70.
- Lawton, Harry W.
 1978 History and Ethnohistory of the Yuha Desert (1769-1865). In Philip J. Wilke (ed.) Background to Prehistory of the Yuha Desert. *Ballena Press Anthropological Papers* 5:43-72
- Lawton, Harry W. and Lowell J. Bean
 1968 A Preliminary Reconstruction of Aboriginal Agricultural Technology Among the Cahuilla. *The Indian Historian* 1(5):18-24, 29.
- Laylander, Donald Paul
 1987 Sources and Strategies for the Prehistory of Baja California. Masters thesis, University of California at San Diego.
- Lee, Richard B.
 1979 *The Dobe !Kung*. Holt, Rinehart, and Winston, New York.
- Linenberger, Toni Rae
 1997 *The Parker-Davis Project, Draft 3*. Sponsored by the Bureau of Reclamation History Program in Denver, Colorado. Unpublished document on file at the Western Area Power Administration (WAPA).
- Lowie, Robert H.
 1924 Notes on Shoshonean Ethnography. *Anthropological Papers of the American Museum of Natural History* 20(3):185-134.
- Luomala, Katharine
 1978 Tipai-Ipai. In *California*, edited by Robert F. Heizer, pp. 592-609. Handbook of North American Indians, vol. 8, W.C. Sturtevant, general editor. Smithsonian Institution, Washington D.C.
- MacMahon, James A.
 1985 Deserts. *National Audubon Society Nature Guides*. Alfred A Knopf, New York Management Associates, Brea, California, KEA Environmental, Inc. San Diego, California, and BLM El Centro, California.

McGuire, Randall H.

1982 Environmental Background. In *Hohokam and Patayan: Prehistory of Southwestern Arizona*, edited by Randall H. McGuire and Michael B. Schiffer, pp. 13-56. Academic Press, New York.

McGuire, Randall H. and Michael B. Schiffer (editors)

1982 Hohokam and Patayan: Prehistory of Southwestern Arizona. Academic Press, New York.

Moratto, Michael J. (editor)

1984 California Archaeology. Academic Press, New York

Moriarty, James R. III

1987 A Separate Origins Theory for Two Early Man Cultures in California. In *San Dieguito-La Jolla: Chronology and Controversy*, edited by Dennis Gallegos, San Diego County Archaeological Society Research Papers, No. 1: 51-62.

Morton, Paul K.

1977 *Geology and Mineral Resources of Imperial County, California*. County Report 7, California Division of Mines and Geology, Sacramento.

O'Connell, James F.

1971 Recent Prehistoric environments in Interior Southern California. *University of California, Los Angeles, Archaeological Survey Annual Report* 13:173-184.

Parker, Patricia L., and Thomas F. King

1990 *Guidelines for Evaluating and Documenting Traditional Cultural Properties*. *National Register Bulletin* 38. United States Department of the Interior, National Park Services, Interagency Resources Division. Washington, D.C.

Patton Society Web Page

1997 <<http://www.yorktown.com/patton/chiriaco/index.html>>

Pendleton, Lorann

1986 *The Archaeology of Picacho Basin, Southeast California*. Prepared by Lorann Pendleton, Wirth Environmental Services, Division of Dames & Moore, San Diego, California. Prepared for: San Diego Gas & Electric, San Diego, California. February.

Pendleton, Lorann, Lisa Cvapper, Richard Cerutti, Joyce Clevenger, Ted Colley, Douglas Kupel, Jerry Schaefer, Robert Thompson, Janet Townsend, and Michael Waters

1986 Archaeological Investigations in the Picacho Basin: Southwest Powerlink Project - Sand Hills to the Colorado River Segment. Document on file with San Diego Gas and Electric Company.

Pignuolo, Andrew R., Jackson Underwood, and James H. Cleland

1997 *Where Trails Cross: Cultural Resources Inventory and Evaluation for the Imperial Project, Imperial County, California*. Document on file with EDAW, Inc.

Pourade, Richard F.

1964 *The History of San Diego: The Glory Years*. Union-Tribune Publishing Company, San Diego.

Quechan Indian Tribe

1989 *Quechan Tribal Resolution and Statement of Position Concerning All-American Canal in Relation to Pilot Knob*. Yuma Indian Reservation, Yuma.

Rector, Carol, J. D. Swenson and P. J. Wilke

1979 *Archaeological Studies at Oro Grande, Mojave Desert, California*. Document on file with the Victor Valley Wastewater Reclamation Authority.

Riddell, Francis A. and W. H. Olsen

1969 An Early Man Site in the San Joaquin Valley. *American Antiquity* 34(2):121-130.

Rigg, A. R.

1939 Bridging the Yuma Desert, copied article from an unknown publication in the El Centro Field Office, Plank Road Vertical File.

Rogers, Malcolm J.

n.d. Fieldnotes, Colorado Desert Region. On file at the San Diego Museum of Man.

1939 *Early Lithic Industries of the Lower Basin of the Colorado River and Adjacent Desert Areas*. San Diego Museum of Man Papers No. 3.

1945 Outline of Yuman Prehistory. *Southwestern Journal of Anthropology* 1:167-198.

1966 San Dieguito I in the Central Aspect. In *Ancient Hunters of the Far West*, edited by M. J. Rogers, H. M. Wormington, E. L. Davis, and C. W. Brott, pp. 37-58. Copley Press, San Diego.

Roth, George E.

1976 *Incorporation and Changes in Ethnic Structure: The Chemehuevi Indians*. Ph.D. dissertation, Department of Anthropology, Northwestern University, Evanston, IL.

Rusling, James Fowler

1877 *The Great West and Pacific Coast; or, Fifteen Thousand Miles by Stage-coach, Ambulance, Horseback, Railroad, and Steamer—Across the Continent and Along the Pacific Slope Among Indians, Mormons, Miners and Mexicans*. By Order of the United States Government. Sheldon & Company, New York.

Sample, L. L.

1950 *Trade and Trails in Aboriginal California*. University of California Archaeological Survey Reports 8:1-30, Berkeley.

Sayles, Edwin B. and Ernst Antevis

1941 The Cochise Culture. *Gila Pueblo Medallion Paper* 29. Globe, Arizona.

Schaefer, Jerry

1986 Present Environment. In Lorann Pendleton (ed.), *Archaeological Investigations in the Picacho Basin*. Document on file with San Diego Gas & Electric Company.

1994 The Challenge of Archaeological Research in the Colorado Desert: Recent Approaches and Discoveries. *Journal of California and Great Basin Anthropology* 16(1):60-80.

Schroeder, A. H.

1961 *The Archaeological Excavations at Willow Beach, Arizona*. University of Utah Anthropological Papers 50.

1975 *The Hohokam, Sinagua, and the Hakataya*. Occasional Paper 3. An Imperial Valley College Museum Society Publication, El Centro, California.

1979 Prehistory: Hakataya. In *Southwest*, edited by Alfonso Ortiz pp. 100-107. Handbook of North American Indians, vol. 9, William G. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

Shipek, Florence C.

1982 *The Kamia (Desert of Eastern Kumeyaay)*. In APS/SDG&E Interconnection Project, Native American Cultural Resources, pp. 21-34. Document on file with San Diego Gas & Electric Company, San Diego, California.

1988 *Pushed into the Rocks*. University of Nebraska Press, Lincoln.

- Shipley, William F.
1978 Native Languages of California. In *California*, edited by Robert F. Heizer, pp. 80-90. Handbook of North American Indians, Vol. 8, W.C. Sturtevant, general editor, Smithsonian Institution, Washington D.C.
- Smith, Brian F.
1987 A Reinterpretation of the Transitional Phase. In *San Dieguito-La Jolla: Chronology and Controversy*, edited by Dennis Gallegos. *San Diego County Archaeological Society Research Paper* 1:61-71.
- Smith, Gerald A.
1977 *The Mohaves*. San Bernardino County Museum Association.
- Spier, Leslie
1923 *Southern Diegueño Customs*. University of California Publications in American Archaeology and Ethnology, 20:297-358.

1933 *Yuman Tribes of the Gila River*. University of Chicago Press.
- Steward, Julian H.
1938 *Basin-Plateau Aboriginal Sociopolitical Groups*. Smithsonian Institution Bureau of American Ethnology Bulletin 120, Washington, D.C.
- Stewart, Kenneth M.
1969 The Aboriginal Territory of the Mojave Indians. *Ethnohistory* 16(3): 257-276.

1983a Yumans: Introduction. In *Southwest*, edited by Alfonso Ortiz, pp. 1-3. Handbook of North American Indians, vol. 10, W.C. Sturtevant, general editor. Smithsonian Institution, Washington D.C.

1983b Mohave. In *Southwest*, edited by Alfonso Ortiz, pp. 55-70. Handbook of North American Indians, vol. 10, W.C. Sturtevant, general editor. Smithsonian Institution, Washington D.C.
- Stewart, Omer C.
1942 Culture Element Distributions, XVIII: Ute - Southern Paiute. University of California, Berkeley, Anthropological Records 6(4): 231-356.
- Stone, Connie L.
1981 Economy and Warfare Along the Lower Colorado River. In *The Protohistoric Period in the North American Southwest, A.D. 1450-1700*, editors David R. Wilcox and Bruce Masse. Anthropological Research Papers No. 24, Arizona State University, Tempe, pp. 183-197.
- Strand, Rudolph G.
1962 San Diego-El Centro Sheet, Geologic Map of California, Olaf P. Jenkins Edition, Fourth Printing, 1993. Department of Conservation, Division of Mines and Geology, State of California.
- Strong, William D.
1929 Aboriginal Society in Southern California. *University of California Publications in American Archaeology and Ethnology* 26.
- Sykes, Godfrey
1937 The Colorado Delta. *American Geographical Society Special Publications* No. 19. New York.

1970 *The Colorado Delta*. Originally published 1937 as American Geographical Society Special Publication 19. Kennikat Press, Port Washington, N.Y.

Tarback, Edward J., and Frederick K. Lutgens

1992 *The Earth: An Introduction to Physical Geology*. Macmillan, New York.

Taylor, Bayard

1850 *Eldorado, or, Adventures in the Path of Empire: Comprising a Voyage to California, via Panama; Life in San Francisco and Monterey; Pictures of the Gold Region, and Experiences of Mexican Travel*. New York: G. P. Putnam.

Taylor, Walter W.

1964 Tethered Nomadism and Water Territoriality: An Hypothesis. *Congreso Internacional de Americanistas, Actas Memorias*, 2:197-203, Mexico, D. F.

Thompson, Raymond H.

1983 Introduction. In *The Cochise Cultural Sequence in Southeastern Arizona. The Archaeology of the Picacho Basin, Southeast California*, editor E.B. Sayles, pp.167-172. Report on file with San Diego Gas and Electric.

Trippel, Eugene H.

1889 The Yuma Indians. *Overland Monthly* 13(78):561-584 and 14(79):3-11.

Underwood, Jackson

2002 A Posited Patayan Travel Route Between Pilot Knob and Buttercup Pass. *Proceedings of the Millennium Conference*. California State University San Bernardino

von Werlhof, Jay, Sherilee von Werlhof, Morlin Childers, Howard Pritchett, Lorraine Prichett, Ray Avels, and George Collins

1977 *Archaeological Survey of the Yuha Basin*. Document on file with Imperial Valley College, Barker Museum, El Centro, California.

Warren, Claude N.

1966 The San Dieguito type Site: M. J. Rogers' 1938 Excavation on the San Dieguito River. *San Diego Museum of Man Papers* 5:1-39.

1967 The San Dieguito Complex: A Review and Hypothesis. *American Antiquity* 32(2):168-185.

1984 The Desert Region. In *California Archaeology*, editor Michael J. Moratto, pp. 339-430. Academic Press.

Warren, Claude N. and A. J. Ranere

1968 Outside Danger Cave: A View of Early Man in the Great Basin. *Eastern New Mexico University Contributions in Anthropology* 1(4): 6-18.

Warren, Claude N., Gretchen Siegler and Frank Dittmer

1998 Paleoindian and Early Archaic Periods. In *Historic Properties Background Study*. Prepared by Brian F. Mooney Associates. Document on file with the City of San Diego Clean Water Program.

Warren, Claude N., and Robert H. Crabtree

1986 Prehistory of the Southwestern Area. In *Great Basin*, edited by Warren L. D'Azevedo, pp.183-193. Handbook of North American Indians, vol. 11, W.C. Sturtevant, general editor. Smithsonian Institution, Washington D.C.

Wasley, William W., and E. B. Sayles

1983 Radiocarbon Dating. In *The Cochise Cultural Sequence in Southeastern Arizona*, edited by E. B. Sayles. *Anthropological Papers of the University of Arizona* 42:44-57.

Waterman, T. T.

- 1910 The Religious Practices of the Diegueno Indians. In *American Archaeology and Ethnology* 8, (6): 271-358. University of California Publications.

Waters, Michael R.

- 1980 *Lake Cahuilla: Late Quaternary Lacustrine History of the Salton Trough, California*. Master's thesis, Department of Geosciences, University of Arizona.

- 1983 Late Holocene Lacustrine Chronology and Archaeology of Ancient Lake Cahuilla. *Quaternary Research* 19:373-387.

Weide, Margaret L.

- 1976 A Cultural Sequence for the Yuha Desert. In *Background to Prehistory of the Yuha Desert Region*, edited by Philip J. Wilke, pp. 81-94. Ballena Press, Ramona, California.

Weight, Harold O.

- 1959 Over the Sand Hills to a New Playground. *Westways*, October.

Western Area Power Administration (WAPA), Rocky Mountain Region, Lakewood, Colorado

- n.d. Gila-Knob Transmission Line Location Maps.

Westerners – Los Angeles Corral (Westerners)

- 1950 *The Westerners Brand Book*. The Westerners, Los Angeles.

White, Christopher

- 1974 Lower Colorado River Area: Aboriginal Warfare and Alliance Dynamics. In *'Antap: California Indian Political and Economic Organization*, edited by Lowell J. Bean and Thomas F. King. Ballena Press Anthropological Paper 2. Ramona, California.

Williams, Anita Alvarez de

- 1983 Cocopa. In *Southwest*, edited by Alfonso Ortiz, pp.99-112. Handbook of North American Indians, Vol. 10, W.C. Sturtevant, general editor, Smithsonian Institution, Washington D.C.

Willson, Roscoe G.

- 1960 Sand Storms in the Dunes Were an Early-Day Hazard. *Arizona Days and Ways Magazine*, June. In Plank Road Vertical Files, El Centro Field Office, Bureau of Land Management.

Wilke, P. J.

- 1974 Settlement and Subsistence at Perris Reservoir: A Summary of Archaeological Investigations. In *Perris Reservoir Archaeology: Late Prehistoric Demographic Change in Southeastern California*, edited by James F. O'Connell, Philip J. Wilke, Thomas F. King, and Caro L.Mix, pp.20-30. Department of Parks and Recreation, Sacramento.

- 1978 *Late Prehistoric Human Ecology at Lake Cahuilla, Coachella Valley, California*. Contributions of the University of California Archaeological Research Facility 38, Berkeley.

Winter, Werner

- 1967 The Identity of the Paipai (Akwa'ala). In *Studies in Southwestern Ethnolinguistics* edited by Dell Hyumes and William Bittle, pp. 372-378. Mouton, The Hague.

Woods, Clyde M.

- 1978-1980 Original unpublished field notes on file with Woods Cultural Research, LLC, Evergreen, Colorado.

- 1978-1982 *Ethnographic Field Notes for the APS/SDG&E Interconnection Project*. Document on file, Woods Cultural Research, LLC., Evergreen, California. [WFN 1978-1982].

1979-1980 Ethnographic Field Notes for the BLM Overview of San Diego County. Document on file, Woods Cultural Research, LLC., Evergreen Colorado. [WFN 1979-1980].

1980 Native American Cultural Resources. *Phase II Corridor Studies*, APS/SDG&E Interconnection Project. Document on file with San Diego Gas and Electric Company, San Diego, California.

1982 *Miguel to the Colorado River and Miguel to Mission Tap: Identification and Evaluation of Native American Cultural Resources*. APS/SDG&E Interconnection Project. Document on file with San Diego Gas & Electric Company.

Woods, Clyde M., Shelly Raven, and Christopher Raven

1986 *The Archaeology of Creation: Native American Ethnology of Cultural Resources at Pilot Knob*. Document on file.