

# ARCHAEOLOGICAL INVESTIGATIONS OF TWO LAKE CAHUILLA ASSOCIATED ROCKSHELTERS IN THE TORO CANYON AREA, RIVERSIDE COUNTY, CALIFORNIA

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## ABSTRACT

Excavations at two rockshelters located at the base of the Martinez Mountain Rock slide and 600 meters west of the Lake Cahuilla relict shoreline, provided substantial information on Late Prehistoric activities from the period of the last major lacustral interval. Both sites were interpreted to be temporary camps that were used primarily during times of fishing along the lake shore and plant and animal procurement in the surrounding desert. This was indicated by several lines of evidence including fish and mammal bone, lithic and ceramic types, cached flakes from the Wonderstone quarry source, and bedrock milling features. A reconstructed regional settlement model was based on the morphology, ceramic types, local topography, and Cahuilla ethnohistory.

## INTRODUCTION

### Project Description

This paper presents the results of a data recovery program conducted at RIV-1331 and RIV-1349, located adjacent to Toro Canyon at the base of the Martinez Mountain Rock Slide, in central Riverside County, California (Figure 1). The two sites are situated in southern Coachella Valley, approximately nine miles south of the city of Indio, and immediately west of the Torres-Martinez Indian Reservation (Figure 2). The study was conducted at the request of the BLM as part of an evaluation and Section 106 compliance program involving a proposed land exchange between the BLM and George Berkey and Associates. Fieldwork for the study was conducted October 5-27, 1992, the results of which are documented in *Archaeological Investigations of Two Lake Cahuilla Campsites Near Toro Canyon, Riverside County California* (Schaefer et al 1993). A summary of the study is provided in this paper.

### Environmental Setting

The study area is located along the western margin of the Coachella Valley, in southwestern Riverside County, California. The valley is the northwestern portion of the Salton Trough, bounded on the northeast by the Little San Bernardino Mountains, on the southwest by the San Jacinto and Santa Rosa Mountains, and on the east by the Mecca Hills and Chocolate Mountains. Coachella Valley is part of the hot and arid Colorado Desert, a subregion of the Sonoran Desert. RIV-1331 and RIV-1349 are located at the base of a massive rock formation known as the Martinez Mountain Rock Slide, at an elevation of 55 m (180 feet) above mean sea level (amsl).

The study area lies within a 45 km long and 30 km wide ecological zone at the interface of the steeply rising Santa Rosa Mountains and the desert valley floor. This zone encompasses an area between -69 to 2657 m (-230 to 8712 feet) amsl from the floor of the Coachella Valley to Toro Peak in the Santa Rosa Mountains and the inter-

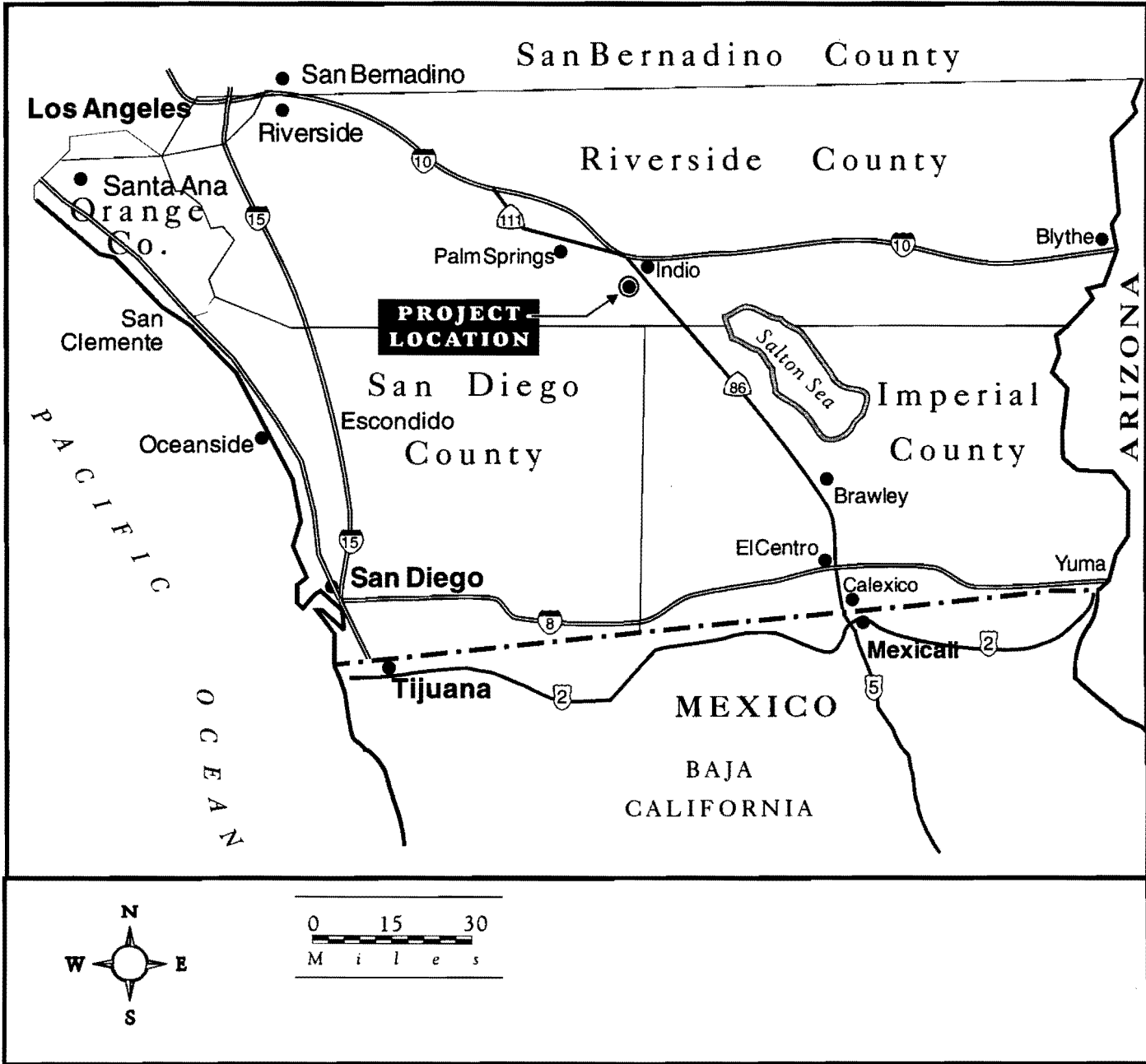


Figure 1. Regional location map for Toro Canyon sites

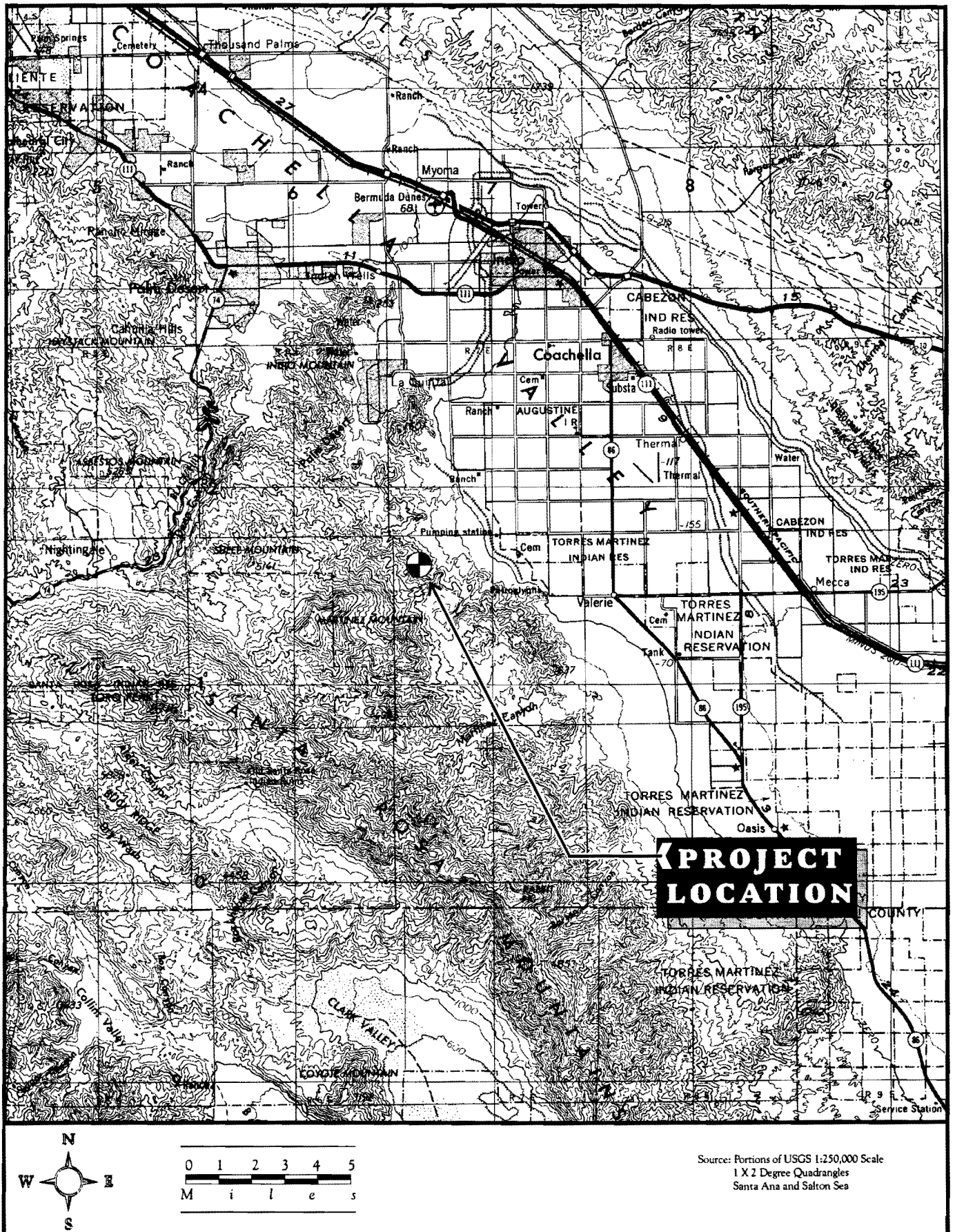


Figure 2. Project location map

vening Sheep and Martinez Mountains. The sites lie roughly 600 m west of the shoreline of Lake Cahuilla, parallel to the valley margin and lying on alluvial piedmont, colluvial slopes, and rock outcrops of the Santa Rosa, Sheep, and Martinez Mountains.

The biota found in the study area has been characterized by Sward (1990) and a full plant list is provided in the test phase report (Ferraro and Schaefer 1990). Species characteristic of the creosote bush scrub plant community dominate the area. The vegetation is well adapted to the hot, dry, low desert and includes creosote bush, (*Larrea tridentata*), brittlebush (*Encelia farinosa*), ocotillo (*Fouquieria splendens*), white bursage (*Ambrosia dumosa*) and other shrubs. Cacti include barrel cactus (*Ferocactus acanthosus*), fish-hook cactus (*Mammillaria dioica*), and various kinds of cholla (*Opuntia* spp.). Desert wash plant community species include cat's claw (*Acacia greggii*), smoke tree (*Dalea spinosus*), blue palo verde (*Cercidium floridum*), desert lavender (*Hyptis emoryi*), and jojoba (*Simmondsia chinensis*).

Twenty-three bird species were observed by Sward (1990) in the study area including quail, dove, cactus wren, oriole, sparrow, and several varieties of hawk. Mammals occurring in the area include jackrabbit, cottontail, kangaroo rat, badger, coyote, mule deer, and bighorn sheep.

#### Prehistoric Environment

The single most important topographical feature that dominated Coachella Valley during prehistoric times was a huge fresh water lake. Lake Cahuilla extended from the delta of the Colorado River northwest to the present town of La Quinta, a distance of 185 km. It had a maximum width of 55 km and was up to 97 m deep. The lake formed and dried up on numerous occasions in the last 50,000 years (Waters 1980; Weide 1976; Wilke 1978), but only the Late Holocene stand at around 12 m amsl is associated with human occupation.

Lake Cahuilla appears to have had at least

three lacustral intervals in the last 2,100 years (Wilke 1978). Waters (1983) offers evidence of four intervals, while others have suggested a fifth event (Dominici 1987; Laylander 1991, 1994; Schaefer 1986, 1994). Waters (1983) suggests that the most recent Lake Cahuilla lacustral event may have been comparatively short in duration between A.D. 1300-1500. A fifth partial infilling to sea level is firmly dated between A.D. 1600 and 1710 (Laylander 1991, 1994; Schaefer 1986, 1994).

Lake Cahuilla provided prehistoric populations with an abundance of resources including fish, shellfish, and waterfowl. The major fish species included striped mullet (*Mugil cephalis*), a Colorado River squawfish (*Cyprinodon macularius*), Colorado River pupfish (*Ptychocheilus lucius*), razorback (humpback) sucker (*Xyrauchen texanus*), and Colorado bonytail (*Gila elegans*) (Gobalet 1992). These are all warm water species that tolerate muddy conditions. Mussels (*Anodonta dejecta*) were abundant in shallow water, and natural deposits of their shells occur in the area.

Then, as now, the Salton Basin waters provided a major stopping off place for millions of waterfowl and other migratory birds. Many species of ducks, geese, and shorebirds were seasonal, if not permanent, residents. Freshwater marsh plant communities existed in the small embayments and shallows found along the shoreline, particularly in the northwest part of the lake. A small embayment or lagoon is located 600 m east of RIV-1331 and -1349. Archaeological studies (Wilke 1978; Sutton and Wilke 1988) have established that bulrushes (*Scirpus* spp.) and cattail (*Typha*) were important plants in this community. Sutton and Wilke (1988:4) describe the northeast corner as containing "the most productive segments of the entire 450-km shoreline of Lake Cahuilla, supporting large growths of aquatic plants, fish, mussels, and various aquatic birds". The degree of lake level fluctuations and marsh environmental stability remains a question of considerable importance for understanding prehistoric settlement along the Lake Cahuilla shore-

line (Weide 1976).

The small embayment, east of RIV-1331 and 1349, would have provided a marsh-like environment (Figure 3). This small lagoon may have been periodically filled with stands of cattail, tule, and various kinds of reeds along with shellfish, fish, and aquatic birds. With the raised water table, mesquite bosques may have existed adjacent to the shoreline.

## RIV-1331 RESULTS

### Site Description

The site consists of a series of small rock overhangs and rockshelters with an associated surface artifact scatter, several rock cairns, walls, and milling features (Figure 4). Situated 600 m west of the ancient shoreline of Lake Cahuilla, the site's elevation is 60 m amsl and 48 m above the relict shoreline. Large boulders, some over 10 m in diameter, occur throughout the area and provided prehistoric peoples with shelter, work areas, and cache locations. Test excavations suggested that the site was a Late Prehistoric short-term habitation area contemporary with the occupation of the Lake Cahuilla shoreline (Ferraro and Schaefer 1990).

During the test phase the site was divided into a series of "features" (A-M), most of which are located in Locus 1 (Figure 4). Charcoal from a hearth in Feature A yielded a date of  $320 \pm 90$  years B.P. Feature H is a rockshelter located 90 m south of Locus 1, while I and J are milling features. Feature J is a bedrock milling area located on a small terrace adjacent to several drainages near a stand of jojoba bushes. Four shallow mortars with surrounding slicks were formed on a single shallow boulders. Features K, L, and M are a series of trails that traverse the site.

### Artifact and Ecofact Assemblage

Data recovery at RIV-1331 yielded 275 prehistoric artifacts (Figure 5). The assemblage includes 185 ceramic sherds, 81 pieces of debitage, six projectile point preforms, and one shell

bead. The recovered ecofacts include 319 (28.1 g) bone fragments (including large and small mammal, fish, reptile, and bird) and 246 (33.8 g) pieces of shellfish. Four modern ammunition casings and a few pieces of recent bottle glass and plastic were also found subsurface. The majority (86.5%) of the artifacts were recovered from the upper 20 cm. Of the seven features, Feature A produced the majority (50.8%) of the cultural material, from 16 units. Features F and H accounted for 13% and 16% of the recovered material, respectively, with the remaining small amount being found in the four other features.

The spatial density of the recovered material indicates that the focus of activity for RIV-1331 was centered around the shelter at Feature A, with smaller and more limited activity areas located at the other overhang areas.

## RIV-1349 RESULTS

### Site Description

A rockshelter with associated bedrock milling features (Figure 6) is located at the interface between the Martinez Mountain Rock Slide and the alluvial fan deposits just below the elevated terrace on which RIV-1331 is found. Two stream channels that intersect below the site have cut into the face of the slide, forming a narrow ridge. At the foot of the slope, eight large granitic boulders are situated among numerous smaller talus rocks. The rockshelter is enclosed by four of these large boulders. RIV-1331 is approximately 100 m to the south. Remnants of a prehistoric trail run between the two sites. Cultural materials recovered from the rockshelter include ceramics, projectile point fragments, debitage, ground stone implements, and fish and mammal bone. Six bedrock milling elements occur on boulders surrounding the shelter area.

The rockshelter is located under four large boulders that enclose a somewhat L-shaped 23 m<sup>2</sup> area. Three of these boulders (measuring 5 by 10 m, 5 by 8 m, and 6 by 8 m) form a rough triangle enclosing the L. The area between these three

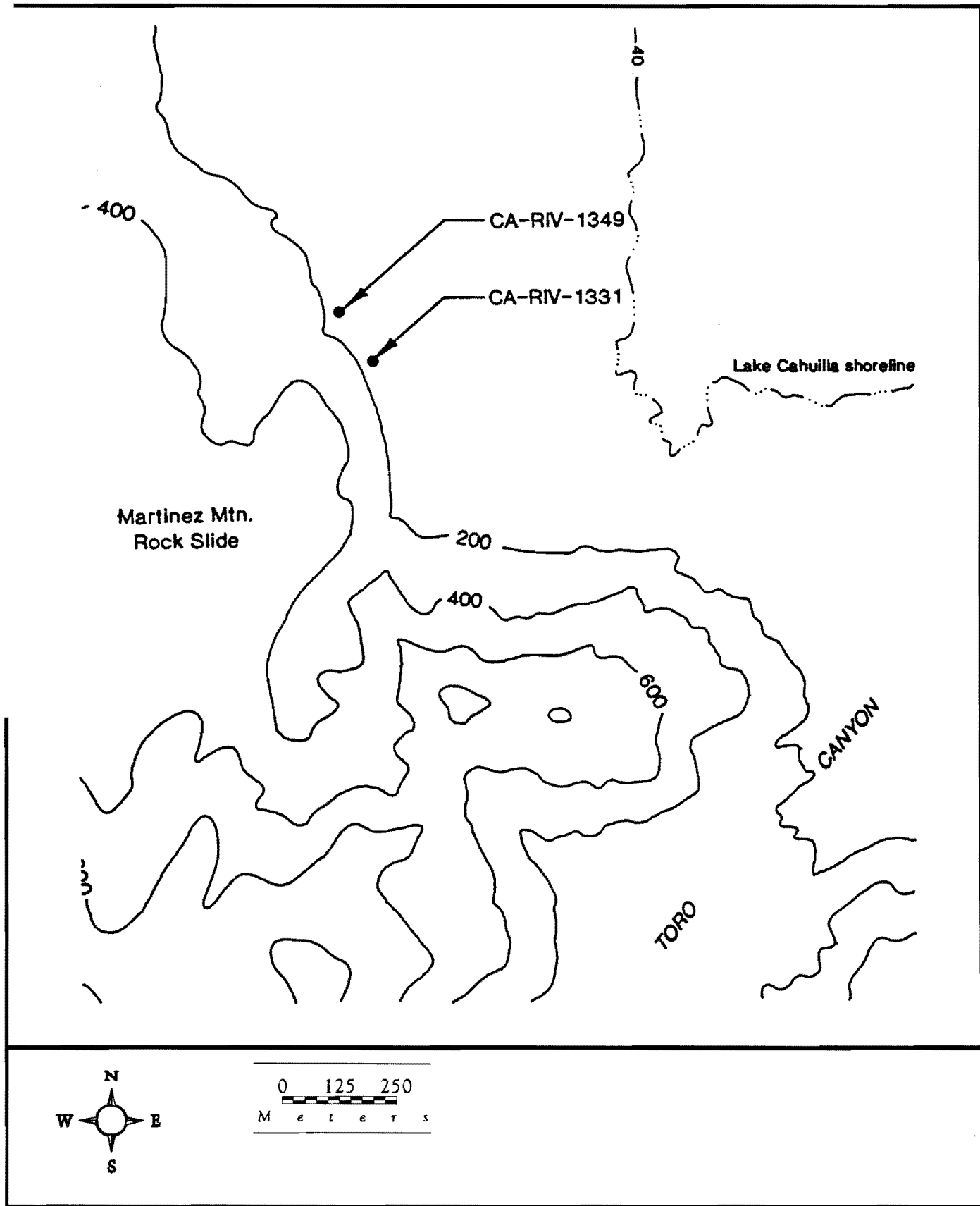


Figure 3. Locations of CA-RIV-1331 and CA-RIV-1349

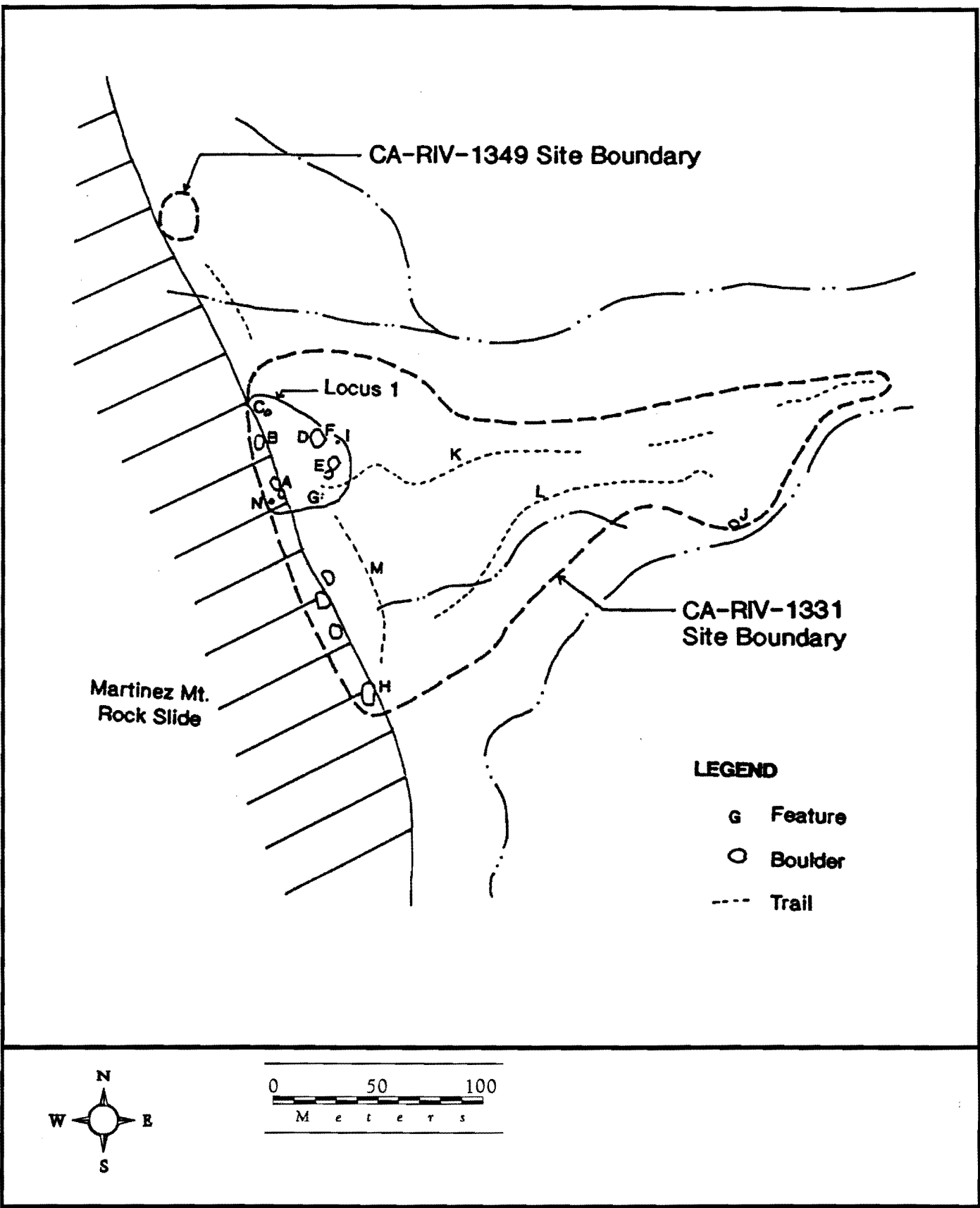
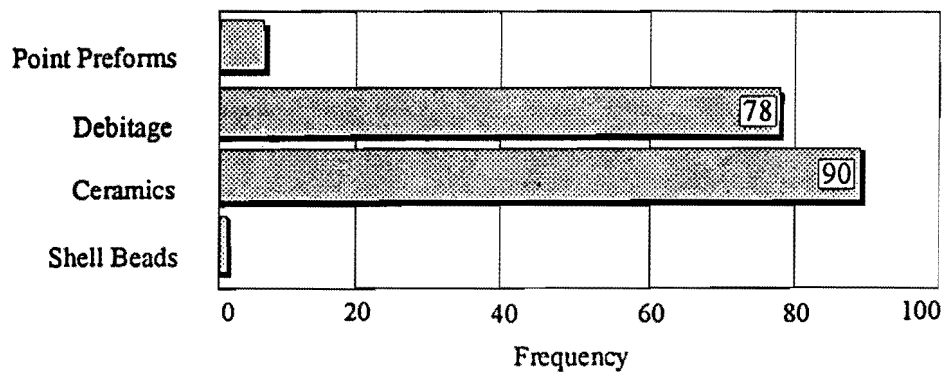
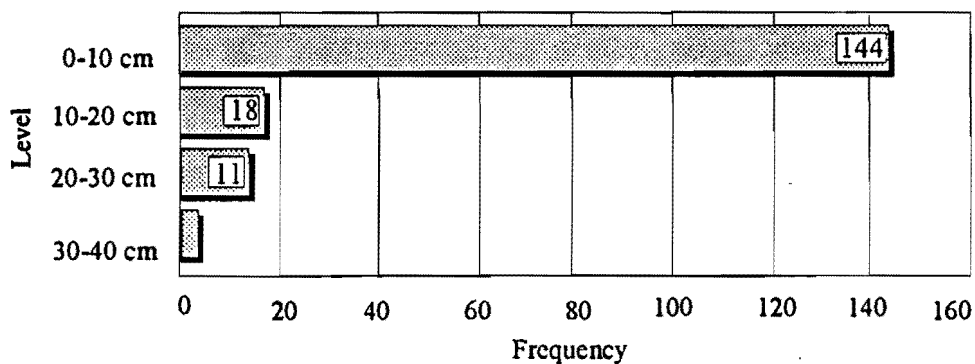


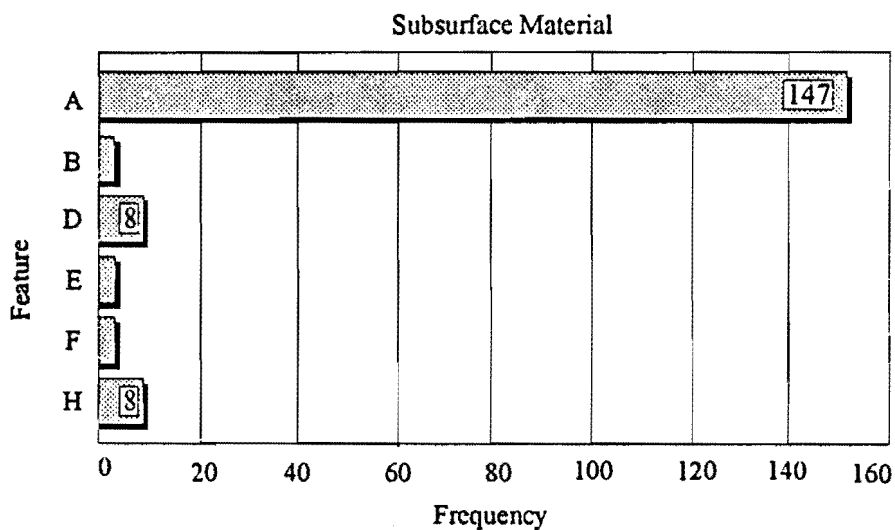
Figure 4. Feature locations at CA-RIV-1331



**A. Subsurface Artifact Class Distribution for CA-RIV-1331**



**B. Vertical Distribution of CA-RIV-1331 Artifacts**



**C. Frequency of Artifacts by Feature at CA-RIV-1331**

Figure 5. Artifact frequencies at CA-RIV-1331



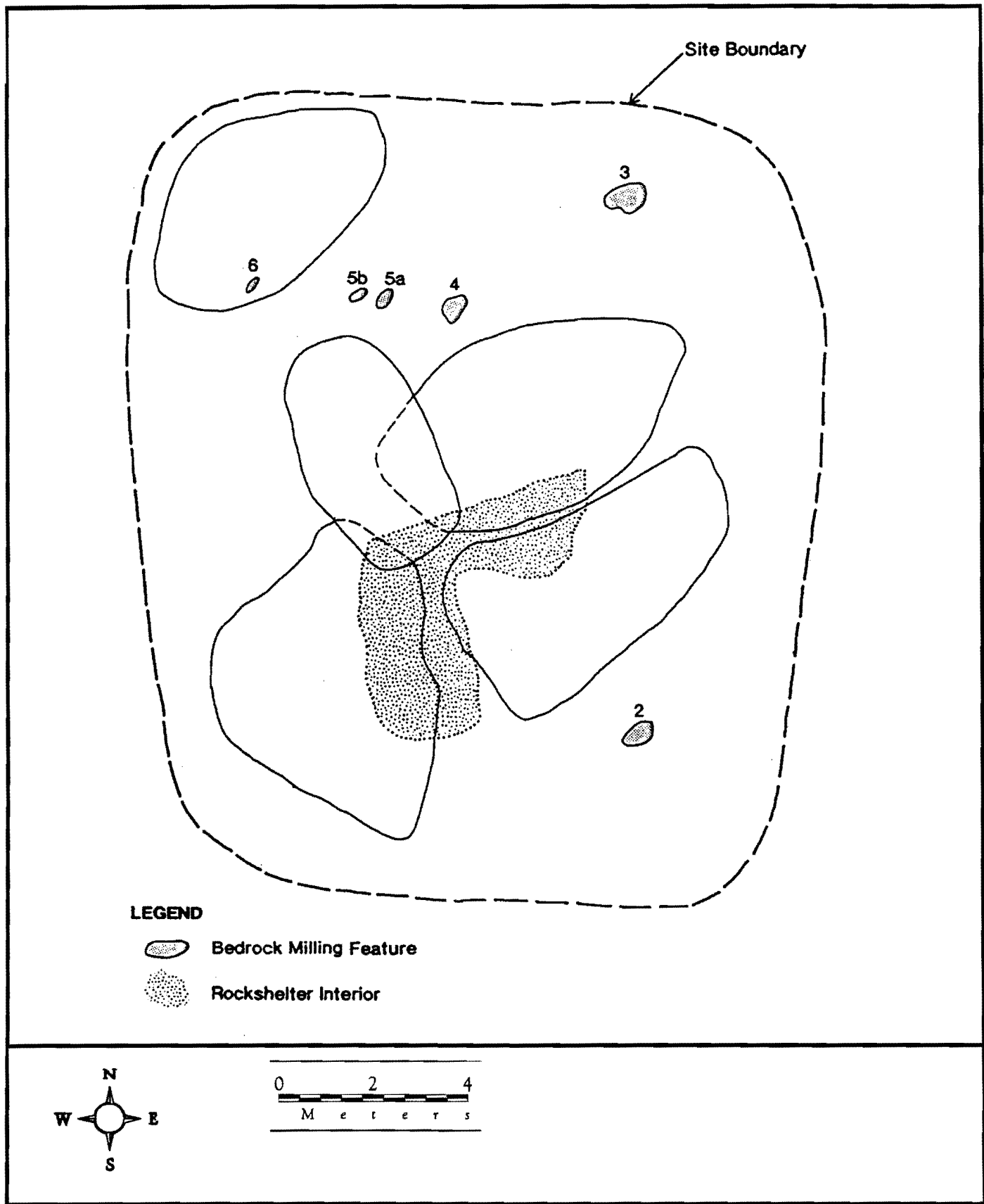


Figure 6. Site map of CA-RIV-1349

boulders is partially roofed by a smaller 3 by 6 m boulder. No surface material was observed in the more open north-south leg of the L (west chamber), but flakes and pottery were found on the surface of the more sheltered east-west segment (east chamber). There was some indication of disturbance from pot-hunting activities but it appears to be limited to a small portion of the eastern chamber.

Full data recovery was undertaken by excavating the entire interior of the shelter within a 1 m by 1 m grid system. This included 12 complete 1 by 1 m units (besides Unit 1) and portions of 11 additional units. After excavating several units to a depth of 50 cm where rocks and cobbles were encountered, it became evident that artifacts were largely confined to the first 20 cm. Thereafter, only the upper 30 cm of the shelter deposit was excavated.

The only subsurface cultural feature was encountered in the eastern chamber, and consisted of a lens of charcoal which may be the remains of a hearth. The charcoal lens extended from the surface to a depth of 20 cm. Ceramics, mammal bone (both burned and unburned), fish bone, and lithic debitage were associated with the lens, but no fire-affected rocks were observed. Two radiocarbon dates were obtained from charcoal in this area. One sample yielded a date of  $110 \pm 80$  BP while the other dated to  $80 \pm 70$  BP. These late dates may indicate either contamination or late period reoccupation of the rockshelter. Both rodent activity and some pothunting were clearly evident during excavation. Flotation samples were collected from this possible feature for further information on its content.

A possible cache of three wonderstone secondary decortication flakes was found in Unit 20 among some cobbles on the south side of the east chamber. Recovered from a depth of 20 cm, this material may have been cached for further reduction. A fragment of a modified tabular stone was recovered just west of the flakes.

Six milling slicks, each on a separate boulder,

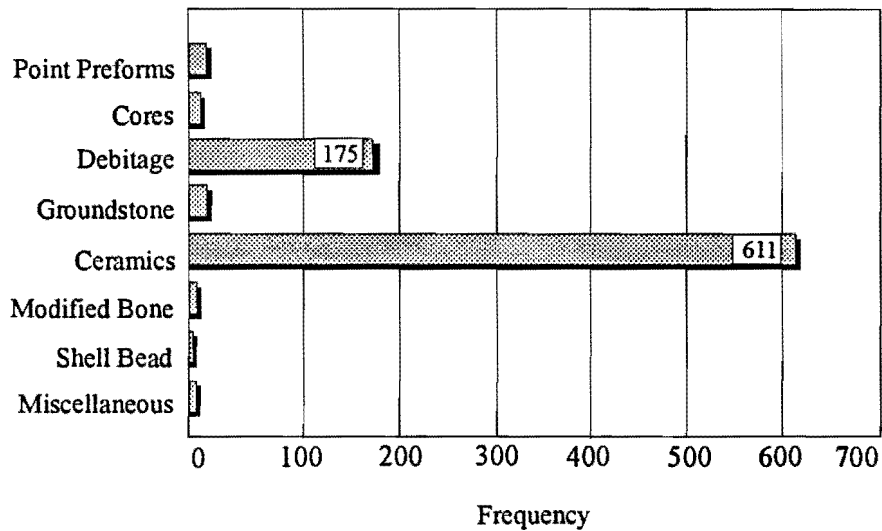
are situated around the rockshelter. Five exhibit moderate use that has worn through the exterior varnish of the granitic boulders. The largest slick (Feature 4) measures 25 cm by 40 cm and displays a slight depth due to more extensive use. The southernmost feature is located in the drainage south of the rockshelter.

#### Artifact and Ecofact Assemblage

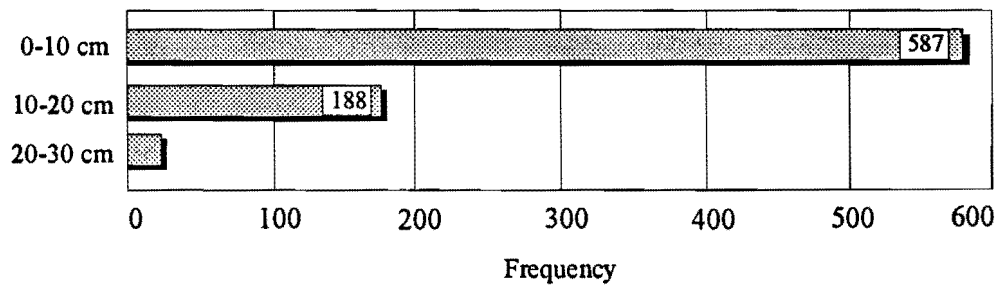
A total of 804 prehistoric and five historic items were recovered from 18 units during data recovery of the rockshelter interior (Figure 7). Recovered ecofacts include 1872 (242 grams) bone fragments (including large and small mammal, fish, reptile and bird) and 26 (0.5 grams) shellfish fragments. The artifact assemblage includes 611 ceramic sherds, 175 pieces of debitage, three cores, five projectile point preform fragments, five milling stone fragments, a shell bead, two pieces of modified bone, a utilized pebble, and a modified tabular stone. As with RIV-1331, vertical distribution of artifacts at this site was primarily limited to the first 30 cm with 90% coming from the upper 20 cm. Horizontal distribution of artifacts indicates that artifacts were found throughout the shelter with the largest concentration (84%) being in the eastern chamber. More activity probably took place in this chamber of the shelter since it is more enclosed and protected from the elements.

#### Ceramic Assemblage at RIV-1331 and RIV-1349

Alternative models to explain the very distinct ceramic assemblages at the Toro Canyon sites provide insights and potential avenues for future research into Cahuilla mobility and resource use strategies. A total of 739 sherds were analyzed from sites RIV-1331 and RIV-1349. This sample included 720 body sherds and 19 rim sherds. Six of the body sherds were reworked into disks or show signs of wear. The sherds could be classified into four types that conform to Waters' (1982) topology, based on Malcolm Rogers's (1936) type collection at the San Diego Museum of Man. These types indicate an occupation spanning the Patayan II phase (A.D. 950-1500) with some possible minor occupation extending into the Patayan III phase (A.D. 1500-post 1900).



**A. Subsurface Artifact Class Distribution for CA-RIV-1349**



**B. Vertical Distribution of CA-RIV-1349 Artifacts**

Figure 7. Artifact frequencies at CA-RIV-1349

The assemblage also typifies a population living close to the Peninsular Range with only limited access to sedimentary clay sources on the desert floor or Colorado River. Over 94% of the ceramics were Tizon Brown Ware, divided into coarse and fine subtypes, that characterize residual clay sources in upland areas or clays eroding down from the Peninsular Range. Only 6% of the pottery was attributed to Lower Colorado Buff Ware, derived from sedimentary clays. As such, the ceramic assemblages from the Toro Canyon area, as well as adjacent Lake Cahuilla-associated localities in La Quinta and Indian Wells, are quite distinct from contemporary ceramic type frequencies to the north and south (Figure 8).

A complete description of ceramic types is provided in the study report (Schaefer et al. 1993); however, of note is a new ceramic type described by Schaefer as Toro Buff. This very distinctive and enigmatic type was found at both sites, with the largest quantity obtained from RIV-1349. The ceramic is a thin, well-smoothed type with a sharp fracture. The paste ranges in color from gray to buff. The temper is composed of abundant angular milky quartz with small amounts of angular feldspar that make up more than 50% of the fabric. Small amounts of muscovite mica (and a few specs of biotite) appear in section but the wet-smoothed surface finish brings the particles to the surface and gives it a lustrous appearance. Except for the mica, the temper resembles the crushed quartz that characterizes Parker Buff. Unlike Parker Buff, some of the temper shows through the surface. The mineral inclusions also lack the mafic minerals and biotite that often occur in Tizon Brown Ware. Subsequent comparisons may show this type to be described in another region, but until that time, these ceramics are discriminated by using a new name.

Many of the pieces have a gray color that is typical of a reduction fire. A piece of one sherd was refired in the lab to 800° C in an oxidation atmosphere to determine if Toro Buff is an unusual, reduction-fired brown ware or buff ware type. A buff-colored (7.5 YR 6/4) sherd resulted from the refire, although the large amount of mica

flakes on the surface are atypical of Lower Colorado Buff Ware types. Similar micaceous buff ware was reproduced, however, from Lake Cahuilla clays exposed by San Felipe Creek at San Sebastian Marsh (Schaefer et al. 1987). The addition of crushed quartz to such a clay might well simulate what is described here as Toro Buff.

The dominance of Tizon Brown Ware in every excavation unit indicates that it was the locally made type. This high frequency, however, is more typical of the sites in the mountainous uplands than in desert lowlands. Percentages of Tizon Brown Ware at other west Lake Cahuilla shoreline sites range from 10% at IMP-4495 near the Yuha Desert in the south (Gallegos 1984:6-6) to 36% at RIV-1179 near La Quinta in the north (Sutton and Wilke 1988:67).

Sites in the La Quinta area show the greatest variability of brown/buff ware ratios, from 100% brown ware at RIV-4168 and RIV-150 to 31% brown ware at RIV-1179 and only 4% brown ware at RIV-3682. All these sites appear to have solid Lake Cahuilla associations, so chronological concerns do not appear to provide an explanation for the variability. More likely, the La Quinta area was occupied by people whose territorial range included major areas of lowland desert habitat to the north and east, as well as the Peninsular Range to the west. The Toro Canyon sites indicate a consistent high frequency of brown ware. Both the rockshelters and the nearby Lake Cahuilla shoreline site at RIV-3880 (at 15 km) have virtually identical brown/buff ware ratios, further supporting arguments that the rockshelters are contemporary with and part of the same settlement complex as the shoreline sites. To the south, no other published Lake Cahuilla shoreline sites are known to the authors until reaching West Mesa in the vicinity of Dry Lake and Superstition Mountain and continuing south to the U.S./Mexican border. All these sites show a consistently low proportion of brown ware to buff ware, indicating extensive local production of buff ware, particularly Tumco Buff, from lowland sedimentary clay sources. Toro Canyon stands out with some of the La Quinta sites, as lowland Lake Cahuilla associated

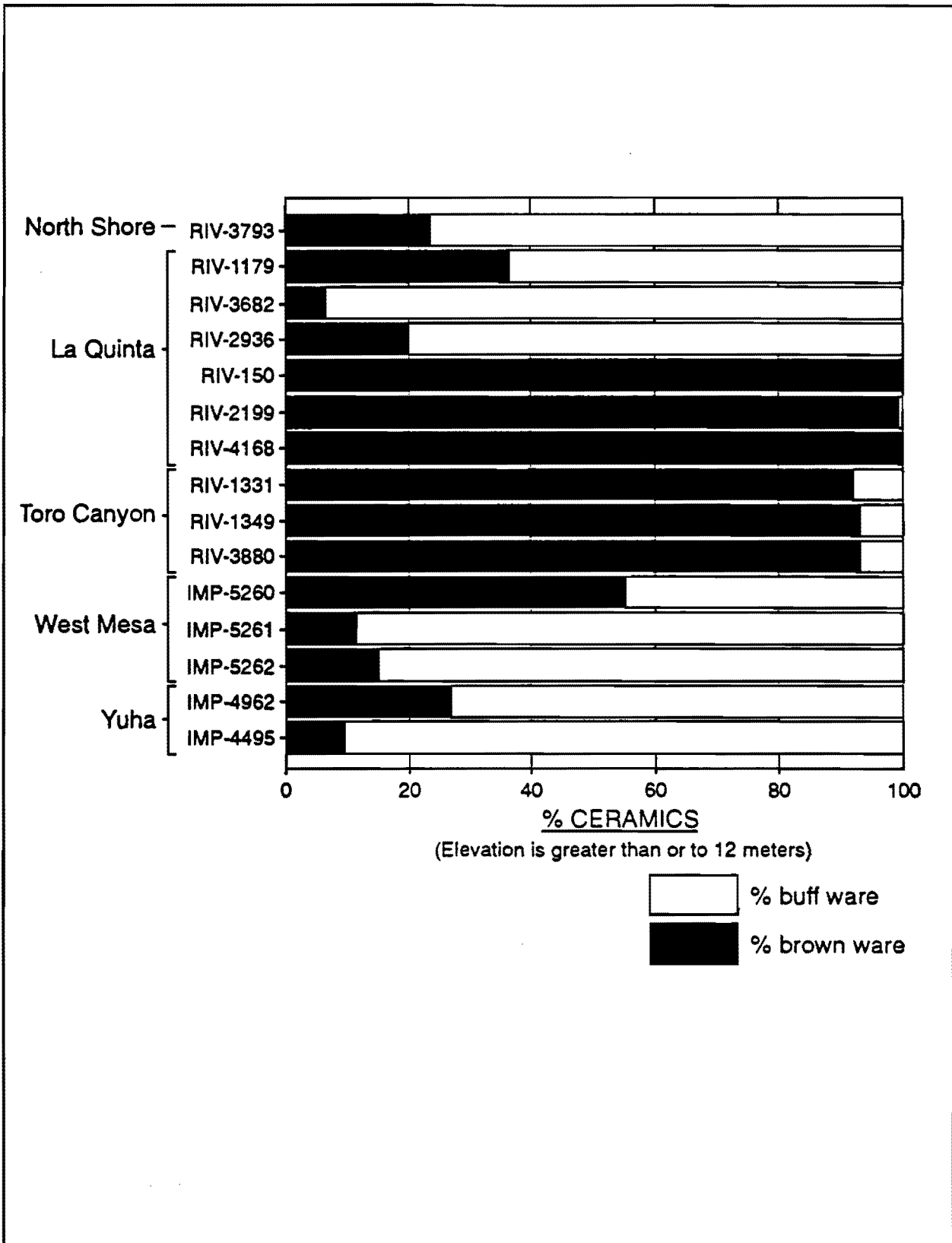


Figure 8. Relative quantities of brown ware versus buff ware sherds at selected sites along the west shoreline of Lake Cahuilla.

habitations that bear ceramic assemblages more characteristic of upland areas.

This unusually high frequency of Tizon Brown Ware can be explained by the proximity of the shoreline to the mountains. Other shoreline areas are usually much further from the base of the Peninsular Range where greater opportunity existed to find sedimentary clay sources on the desert floor, as well as to extend the settlement/subsistence system to a more accessible Lower Sonoran Desert habitat and the resources that it offered. preference for residual clay sources extended into ethnohistoric times after Lake Cahuilla dried up. Saturino Torres reported to Lowell Bean (in Schaefer et al. 1993:72) that the best clays were located in bat infested caves in the Tuva Mountains and at Grand Canyon. Men were sent by designated trails to quarry clay for the women of Toro.

The predominance of Brown Ware also may be explained by a settlement pattern that favored upland occupation, even during the maximal infilling of Lake Cahuilla. This supports Weide's (1976) model of seasonal temporary camps along the Lake Cahuilla shoreline. Substantial residential bases in transitional and upland areas would have formed part of the seasonal round. A large amount of the pottery would have been produced at such bases and then transported down to Lake Cahuilla during fishing and hunting trips. Many of these vessels would have been cached at or near the Lake Cahuilla sites rather than transported back up the mountains. The sites under consideration here would have been optimal locations for caching strategies because of the numerous crevices in the Martinez Mountain Rock Slide. Indeed, several caches were reported by local pot hunters. This "gravity model" explanation of ceramic type distributions is even better illustrated by ceramic type distribution on the southwestern shore of Lake Cahuilla in Imperial County. Here a wide alluvial terrace provided sufficient exposures of sedimentary clay to produce substantial quantities of Tumco Buff and other buff ware types in Patayan II times. This type constitutes over 50% of the assemblage at shoreline sites on West

Mesa. The remainder is usually a combination of Salton Brown, the only lowland sedimentary Brown Ware type from West Mesa, and Tizon Brown Ware from upland areas. Sites in upland areas of the Laguna Mountains, however, contain less than 1% buff ware types with the vast majority being Tizon Brown Ware. Clearly, brown ware was transported down to the Lake Cahuilla, but little effort was made to bring buff ware up the steep grades.

## CONCLUSIONS AND INTERPRETATIONS

The two rockshelter sites can be characterized within a collector-oriented settlement system, based on site morphology and artifact content. This must be an explicit exercise whereby inferences concerning chronology, economic activities, residence patterns, and social organization are empirically derived from material correlates. Through such an explicit approach, the archaeological investigations of RIV-1331 and RIV-1349 can then be placed within the larger context of known cultural resources and thus contribute to a better understanding of hunter-gatherer adaptation to the Lake Cahuilla/Santa Rosa Mountains interface. When added to the corpus of excavated and tested sites along the entire Lake Cahuilla shoreline, these studies help to solidify a more sophisticated model of Late Prehistoric period lacustrine adaptations in the Colorado Desert.

### A. Chronology

A charcoal sample from a hearth feature in the southern portion of RIV-1331 yielded a date of  $320 \pm 80$  B.P. Dendro-calibration suggests a most probable date range of A.D. 1460-1663, although averaging is affected by the DeVries Effect of secular variation in atmospheric carbon isotopes. Two charcoal samples were dated from a possible hearth feature (Units 15 and 16) located in the eastern chamber of the rockshelter at RIV-1349. The samples were obtained from the 10-20 cm level and dated to  $110 \pm 80$  B.P. and  $80 \pm 70$  years B.P. Dendro-calibration suggests dates of A.D.

1675-1943 and A.D. 1686-1929 respectively. The date from RIV-1331 conforms well to a fourth maximum lacustral phase of A.D. 1450-1600 and to the associated ceramics, fish bone, beads, and *Anodonta* sp. shell. A date coterminous with a fifth infilling between A.D. 1600 and 1700 is also a possibility. The anomalous late dates from RIV-1349 may result from recent historic uses of the rockshelter, as evidenced by recent ammunition casings in the 0-10 cm level. The charcoal may indeed be recent or contaminated by recent soil disturbance from pot hunters or rodents. All other artifact categories and fish remains indicate a contemporary, Patayan II occupation for both rockshelters. Radiocarbon dates, the presence of Lake Cahuilla fish bone, and shell bead types all provide evidence that the two sites were occupied during the final phases of the Patayan II period.

The lack of Patayan III pottery types (Colorado Buff and painted pottery) within the ceramic assemblage and lack of ethnohistoric period items also suggests a Patayan II association. Evidence of a post Lake Cahuilla (Patayan III) use of the sites is limited. It is during this period that a shift in settlement and resource procurement occurred as a result of the desiccation of the lake. The village of Toro had been established by ethnohistoric times and was located 3 km east of the two sites. The inhabitants are known historically to have gathered plants for food and medicine in the general vicinity. The very late dates from the hearths in the east chamber of the rockshelter at RIV-1349 may be alternatively interpreted as the only evidence of late ethnohistoric use. The sites were probably visited and possibly used for plant processing during Patayan III period, but no temporally specific artifacts representative of that time frame were recovered.

#### B. Settlement and Subsistence

Both RIV-1331 and RIV-1349 are interpreted as field camps that were used primarily during times of fishing along the lake shore and plant procurement in the surrounding desert. This is indicated by several lines of evidence. Both sites

exhibit little or no midden accumulation. Midden is here defined as dark, carbonaceous, organic deposits from sustained or intensive human habitation. Artifact densities were also very low and culture bearing deposits only extended to a maximum of 20 cm in most areas. Only one area of RIV-1331 (Locus 1, Feature A) contained any density of artifacts and an associated hearth. The 27 m<sup>2</sup> area of Feature A would not be large enough to accommodate more than a single nuclear family residential unit. All other features of RIV-1331 produced small artifact samples characteristic of ephemeral nonresidential activities. These other features, including the bedrock milling stations and low density artifact scatters throughout the area, may be interpreted as specialized activity areas around one or more habitation or hearth zones. Likewise, the maximum usable space at RIV-1349 is only 28 m<sup>2</sup> and also accommodates a single hearth feature and very light and shallow midden accumulation. Such an enclosed rockshelter could have been alternatively or simultaneously used as a single residential unit or as a cache and storage facility. Ceramic concentrations and the wonderstone flake cache, from the Rainbow Rock area 25 km to the south, in the east chamber indicate storage, while the hearth and other artifact classes point to food procurement, processing, and consumption.

The artifact and faunal assemblages suggest general activities of what were primary economic kin-based domestic units. Both male and female associated activities are represented. Milling implements reflect seed and plant processing, as do the bedrock milling elements found throughout the site complex. Food preparation and consumption are reflected in the ceramic and faunal assemblages. Two bone awl fragments suggest basketry manufacture or repair, as well as other fabrications of fiber or hide. Preparations for hunting are well indicated by debitage and broken projectile point preforms. The successful outcome of hunting expeditions is found in the wide array of animal species, with the usual focus on lagomorphs and possibly rodents. Given the lowland location, the low frequency of identifiable bighorn sheep bones may be more a function of off-site

meat processing prior to returning to the temporary camp. Certainly, unidentifiable deer-sized mammal bone constitutes a major component at both rockshelters. High frequencies of fish remains relative to mammal bone (34 to 52% of the total faunal assemblage) and quantities of *Anodonta* sp. shell indicate substantial fishing and mollusk collecting activities. Gutting and open air drying of fish may account for why so little of the fish bone was burned. Fish bone was not sufficiently concentrated in certain areas, however, to ascertain if specialized fish camps were established during specific episodes of site occupation.

No longer can we accept simplistic, unilineal models of lake infilling, large-scale population movement to shoreline residential bases, recession, and population resettlement to mountain and desert habitats. Study after study has shown that seasonal temporary camps were established along the shoreline. The two sites represent small temporary camps used during times when prehistoric peoples exploited the lacustrine shoreline of Lake Cahuilla located several hundred meters to the east. These sites may be considered as fundamental, short-term occupancy, residential units of basic domestic groups. Many of the larger sites or loci located on the relic Lake Cahuilla shoreline represent aggregations or sequential accumulations of remains from these basic domestic units.

The inhabitants of the Toro Canyon area were collectors who used sites similar to RIV-1331 and RIV-1349 as temporary campsites while fishing and gathering along the shoreline of prehistoric Lake Cahuilla. Collected resources may have been cached within the rockshelters for subsequent return to residential bases or camps at higher elevations within the Santa Rosas. Gathering of lacustrine vegetation was somewhat restricted due to poor access. Ethnographic and ethnohistoric accounts, as well as the ceramic analysis that demonstrated a predominance of upland brown ware ceramics at the site, suggest that residential bases were located in more strategic and productive vegetative communities, such as Upper Sonoran or Pinyon-Juniper zones.

Whether the final desiccation of Lake Cahuilla around A.D. 1700 caused an abandonment of the desert floor areas remains unknown. Shackley (1984) has suggested a change in emphasis on certain plant species such as agave in the post-Lake Cahuilla period. Whether this change also included an increase in the use of desert plants such as mesquite and cactus remains to be demonstrated. However, certainly by the late Patayan III and early ethnohistoric periods, permanent villages had been established on the desert floor in areas such as Toro, Indian Wells, and San Felipe Creek and at the mouths of major canyons such as are found at Palm Springs. The seasonal scheduling and mobility continued to be practiced, with people moving from the desert floor to the higher elevations to gather resources as they became available.

By the time of first European contact, the Desert Cahuilla of Coachella Valley were well-established and occupied about 14 villages and numbered perhaps 3,000 persons. Most villages were located on the valley floor in areas of a high water table where large mesquite groves grew and walk-in wells could be dug, or at reliable springs or streams (e.g., Thousand Palms, Andreas). Horticulture was being practiced by the time Romero came through the valley in 1823.

Only limited archaeological investigations have been conducted on post-Lake Cahuilla sites. Most of what is known is detailed in oral traditions of the Cahuilla Indians of Coachella Valley. Early 20th century ethnographers recorded many of these traditions (Wilke 1978; Wilke and Lawton 1975). Oral traditions tell of life around Lake Cahuilla, fishing and hunting there, and of the final desiccation. Ethnographic evidence provided by Cahuilla living in the Toro area indicates that they originally were located in the higher elevations of the Santa Rosas (Agua Alta, Rockhouse Canyon, and Coyote Canyon) west of the present-day village (Bean 1990; Sutton and Wilke 1988). Wilke has argued that this oral tradition provides evidence of abandonment of the shoreline after the final recession, movement to higher elevation, and the subsequent repopulation of the valley floor



after the establishment of substantial mesquite groves (Sutton and Wilke 1988:9). Of course, the same stories lend credence to a post-lake model where the population moves from already existing residential villages in the mountains or foothills to the desert floor following the drying up of the lake. The next step is to investigate more post-Lake Cahuilla sites and villages and compare them to earlier sites.

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