A PRISTINE PREHISTORIC SITE WITHIN A HISTORICAL SITE
AT GREEN HILL (CA-RIV-12608/H)

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Dos Palmas Preserve is situated along the eastern high shoreline of ancient Lake Cahuilla. The Preserve features a complicated and rich prehistory and history from the last desiccation of the lake. The Bradshaw Trail, the stage stop, the Ranch House Adobe, and all the colorful cast of characters within have contributed to the interesting history. The BLM plans to open up the Preserve to the public for the interpretation of its history, geology, botany, and wildlife.

THE BEGINNING

Within an Area of Critical Environmental Concern (ACEC) called the Dos Palmas Preserve lies the Green Hill site (CA-RIV-12608/H). The Dos Palmas Preserve also hosts various wildlife and historical sites. The geography and topology in this area affect the reasons why this area was critical to prehistoric and historical peoples, due to the many natural resources that were available. The Green Hill site itself was identified in the aftermath of a fire that swept through the area in 2015.

DOS PALMAS PRESERVE

Green Hill is a recently discovered site that lies on the southwest corner of the Dos Palmas Preserve. Dos Palmas was the stopping place on the old San Bernardino and Yuma Roads and is part of the Bradshaw Trail. The Salton Sea lies to the east a little more than eight kilometers (five miles) away. Two desert fan palms (Washingtonia filifera) originally surrounded the spring; hence, the name “Dos Palmas” was given to the spring found on the Preserve. A “spring” is a non-seep water flow where the surface and groundwater table intersect. Over time, the palms have multiplied and enhanced the oasis, making it a very lush area. The spring contains a sizable amount of brackish water that remains drinkable. For this reason, Dos Palmas was an important oasis for Native Americans and was later used by stagecoach operators, passengers, and other travelers along the Bradshaw Trail. This oasis has multiple pools of water that are fed by artesian springs and, in modern times, by leakage of the nearby Coachella Canal, which passes through two sections of the Preserve. The springs at Dos Palmas are fault-caused springs within the Salton Trough, which stretches from the Gulf of California to San Gorgonio Pass and is part of the San Andreas fault system. Water flows from an underground fissure, which intermittently breaks the surface along the San Andreas Fault system within the Salton Trough.

All this water yields a lush wetland environmental setting which includes fan palms (Washingtonia filifera), common reed (Phragmites communis), arrowweed (Pluchea servicea), and cattails (Typha). Other plant life at the Preserve includes includes Orocopia Sage (Salvia greatae), mesquite (Prosopis glandulosa), brittle brush (Encelia farinosa), arrow weed (Pluchea servicea), cat claw acacia (Senegalia greggi), beavertail cactus (Opuntia basilaris), and diamond cholla (Cylindropuntia ramosissima).

The Preserve is also home to many threatened or endangered animal species, as well as animals that are seen in the normal desert habitat. Documented examples of endangered or threatened species at the Preserve include the desert pupfish (Cyprinodon macularius), a species dating as far back as the Pleistocene era and found in the pools of the Preserve. Also found in the Salton Sea area, specifically in the Salt Creek pools, are the snails Purgolopsis logingua, which are only found in this region in a remote pool on the Dos Palmas Preserve. The snail Tryonia protea can also be found on the Preserve but are found in more areas of the Colorado Desert. Avian life includes the black rail (Laterallus jamaicensis) and the endangered Yuma clapper rail (Rallus longirostris yumanensis), which nests in the cattails in the surrounding environment. Some other birds seen here are the snowy egret (Egretta thula), prairie falcon (Falco mexicanus), osprey (Pandion...
haliaetus), and American coot (Fulica americana), which is a member of the rail family. Since the oasis lies along the Pacific Flyway, many birds stop over at the Preserve.

Other animals that can be seen in the area of the Orocopia and Chocolate Mountains, which border the Preserve, include desert bighorn sheep (Ovis canadensis nelsonii), burro deer (Odocoileus hemionus), bobcat (Lynx rufus), ringtail (Bassariscus astutus), kit fox (Vulpes macrotus), coyote (Canis latrans), mountain lion (Puma concolor), American badger (Taxidea taxus), and leaf-nosed bat (Phyllostomidae). Other wildlife includes the flat-tailed horned lizard (Phrynosoma mcallii), the federally endangered Palm Springs pocket mouse (Perognathus longimembris bangsi), and the desert woodrat (Neotoma lepida).

According to the Palm Springs South Coast Field Office of the BLM, the Dos Palmas Preserve was created to protect these important biological resources and is part of the Salt Creek Area of Critical Environmental Concern.

**HISTORICAL IMPORTANCE OF DOS PALMAS**

Bill Bradshaw was an adventurer who searched for a faster way to transport gold from the La Paz gold fields in Mexico to California. Throughout his travels he befriended Native Americans who were able to help him. By following Native American routes, he established a wagon route over the 290-kilometer (180-mile) span of desert between Redlands and the Colorado River in the late 1800s, with one of the stage stops at Rancho Dos Palmas. From the Desert Cahuilla Indians, Bradshaw learned the location of the springs and waterholes along the southern Chuckwalla and Orocopia Ranges leading to the Colorado River. Bradshaw befriended Chief Cabazon, a Cahuilla leader and guide, and established a route by connecting dependable springs, one of which was Dos Palmas. “In explaining their trail to the frontiersman, the Indians did not leave any doubt as to its exact location. They were most careful to give him at least two native names, Tabaseca and Chu-col-walla, both water points on the trail” (Johnston 1987:114–115). Much of the freight road can still be seen today and is traveled by high clearance vehicles.

The stage stop at the Dos Palmas site holds three unmarked graves. One of the graves was reported to be that of Herman Ehrenberg, a government surveyor who also searched for gold. It was reported that he was murdered in his sleep on October 9, 1866 at the stage stop. Though there were various rumors regarding his murder, the killer or killers were never identified, though the gold he had been carrying was missing. The other two graves were that of an unknown woman and her infant child.

The ranch house that sits on the Preserve was built originally by Raymond Morgan as a desert guest resort for friends to come and relax. It was maintained as a ranch-desert retreat. Many artists frequented Rancho Dos Palmas, such as Barry Atwater, the painter, who had a little cabin there and had done some landscape paintings of the area. Morgan later increased his ranch to 2,000 acres, including the Dos Palmas oasis.

**ANCIENT LAKE CAHUILLA**

Lake Cahuilla was a prehistoric lake in southern California and northern Baja, Mexico. “For more than a century, it has been recognized that an immense freshwater lake filled much of the Coachella and Imperial Valleys very late in the region’s prehistory” (Laylander 1997:1). The lake formed and desiccated many times during the Pleistocene and Holocene eras, and finally ceased to exist in the late 1500s. It covered 5,700 square kilometers. It was affected by the Salton Trough, which was also called the Cahuilla Basin. The Salton Trough was “a 290-kilometer-long (ca. 180 miles) structural depression reaching from roughly Palm Springs to the Sea of Cortez, some 90 miles south of the Mexican border” (Love and Dahdul 2002:66). During the Holocene, most of the water obtained was due to changes in the course of the Colorado River on its terminus delta, which diverted its water into the Salton Trough. Not only was the water diverted, but due to the length of time of the diversion, millions of tons of silt were deposited into the lake.

The history of ancient Lake Cahuilla spans the entire Pleistocene and the Holocene periods. Pleistocene water levels were generally higher than those of the Holocene, which did not exceed 12 meters above sea level. Ancient Lake Cahuilla is not considered to have been a pluvial lake. A pluvial lake is filled
by rain and colder weather. This lake was filled by the diversion of the Colorado River. The weather is arid, and the region experiences high temperatures in the summer, humidity, and an exceptionally low amount of rainfall. In the summer, temperatures can exceed 120 degrees, and yet in early winter the area may experience frost.

The changes in course of the Colorado River may have been the result of earthquakes across the region, mainly from the San Andreas fault system, seasonal flooding of the Colorado, and/or the diversion of the silt on the delta. “The (silt) deposition flattened the stream gradient until the channel reached a point where the gradient to the south was steeper. When this occurred, the river redirected its discharge south into the gulf. The isolated lake left un replenished within the Salton Trough eventually dried” (Waters 1980:23). The lake formed rapidly and disappeared after river water was diverted on a direct course to the Gulf of California. This pattern occurred numerous times during the Holocene. Today the evaporation rate is approximately 1.524 meters (five feet) per year.

During its existence, the lake supported a variety of fish species and vegetation along its shorelines. The presence of freshwater mollusks during the time of filling indicates that Lake Cahuilla was, for the most part, a freshwater lake during its many stands. However, during the periods of evaporation, brackish water would develop as the water became increasingly saline. As this happened, marine brackish fauna developed in the desiccating (drying) lake water.

**EVIDENCE OF NATIVE AMERICAN PRESENCE AT LAKE CAHUILLA**

Archaeological sites belonging to the Cahuilla, Kumeyaay, and possibly others can be found within and around the margins of the ancient lake. (Figure 1) “Prehistoric and ethnohistoric groups exploited Lake Cahuilla throughout its existence” (White and Roth 1990:183). The resources of the lake supported human populations on its shores. Remains of ancient fish traps, camp sites, and fish and shell middens that date to the Holocene era have been identified and well documented.” The lake would have produced a water table which would have supplied surface soil moisture by capillary action in irregular areas along the changing shore. This arable land would have been relatively free of salinity” (Bean and Saubel 1972). These are all indicators that the indigenous populations were using this land for thousands of years.

Pumice and obsidian are among the resources that were used by the Native Americans to fashion tools during the Holocene period. It is to be noted that Obsidian Butte was underwater during the high stands, but at lower water levels it would have formed an island in ancient Lake Cahuilla (Figure 2). During the late prehistorical period it was a common source of obsidian. The lake supported a substantial population that relied mostly on resources from the lake. When the lake desiccated (dried up), the inhabitants switched to other economic activities and relocated to different living areas. As mentioned by Wilke (1978), the desiccation of the lake could have contributed as a stressor to the population depending upon how heavily they utilized the lacustrine resources. The living conditions of the Cahuilla changed according to the rise or the recession of the lake. When the lake receded, villagers would reside out across the lake bed. “We suppose that occupation at the lake was either seasonal or year-round, that fishing was an important subsistence activity, and that waterfowl were hunted. We can also infer use of aquatic plant foods” (Wilke 1978:13). The change in the region from lacustrine (lake) to desert conditions may have resulted in cultural adaptions, as well.

**THE DISCOVERY OF AN ARCHEOLOGICAL SITE – GREEN HILL (CA-RIV-12608/H)**

The Green Hill site sits at the eastern shores of what was ancient Lake Cahuilla. It is approximately 1.6 kilometers (one mile) south from the oasis and the old adobe building on the Dos Palmas Preserve. The site itself is on a land formation that suggests it would have been an island within the great lake as the levels of ancient Lake Cahuilla rose and fell. Green Hill’s maximum elevation is -28 meters (-91 feet). The high-water level of ancient Lake Cahuilla was ~12 meters during the Holocene period and ~31–52 meters during the Pleistocene period.
Figure 1. Tribal Boundaries Map.
This site was identified by BLM Archaeologist George Kline in 2015 when he was called to work on the “Palmas” fire that was caused by a lightning strike during a monsoonal thunderstorm. He was called at home in the late afternoon and arrived at the location just before sunset to advise the Incident Commander (IC) of the “fragile and threatened environmental concerns” in the area of the fire. His arrival coincided with darkness, which prevented him from surveying the perimeter at that time. He instructed the IC not to use mechanical equipment on the fire line, but rather to use existing fire breaks and hand crews only. Upon his arrival the next morning, Kline observed that his instructions had been followed. He walked the fire line and found a large, complex site on the southwestern and western sides of the hill, just outside of the fire’s blackened perimeter. George Kline and a California Archaeological Site Stewardship Program (CASSP) volunteer team came out multiple times to perform the site survey and to document the site.

**METHODOLOGY AND THE TEAMS**

After the fire, the initial surface survey was accomplished by Kline, Martin R. Jespersen and Mary G. Jespersen, CASSP volunteers. During this preliminary pedestrian survey, the site boundaries were documented, and artifacts were located, photographed, and mapped. The preliminary site boundary was determined using a Garmin Montana GPS unit. Once the boundaries were determined and some artifacts were identified, a more thorough survey was scheduled, and a larger team was assembled so the site could be documented on DPR523 forms.

The larger team consisted of Kline, Travis Armstrong, Martin R. Jespersen, Mary G. Jespersen, Michael Savala, and Cindy Stoddard. Each team member was assigned a particular task in order to completely document the site. These tasks included verifying the site boundaries, locating and relocating artifacts that were previously identified, photographing and measuring points and tools, and identifying the vegetation. Additionally, the site perimeter was established, and the site boundary was expanded from the preliminary survey. During both surveys, it was noted that there was a deep covering of ash on the site from the fire. Once the information was gathered, the DPR523 forms were completed and sent to the Eastern Information Center, which assigned a trinomial for the site.

**RESULTS OF SURVEY AND ARTIFACTS FOUND**

The new mapping of the site determined that it is bordered by four-wheel drive two-track roads and a canal on private land. Fifty percent of the site is on the Dos Palmas Preserve and the remaining 50 percent is on private land. During both surface surveys, many artifacts were identified, photographed, and plotted with the Garmin Montana GPS unit. Of the artifacts, there were 15 arrow points. These arrow points included Cottonwood Triangular, Cottonwood Convex, and Desert Side-notched forms. Materials used were jasper, obsidian, basalt, and cryptocrystalline silicates. Other artifacts identified included pumice.
abrasion tools that showed wear (one of which was abraded down the center), a fire-affected bifacial schist mano, and a pumice rock cache with stones that also showed evidence of wear. Multiple pottery sherds were located, plotted, and photographed. The abraded pumice abrasion tool was collected.

Figures 3-A, 3-B and 3-C show pictures of some of the artifacts that were located and plotted.

Figure 3-A: Exhibit 1 is a jasper Cottonwood Triangular arrow point, Exhibit 2 is a cryptocrystalline Desert Side-notched arrow point, Exhibit 3 is a jasper Desert Side-notched point, Exhibit 4 is a jasper Cottonwood Triangular, Exhibit 5 is a basalt Cottonwood Triangular, and Exhibits 6,7 and 8 are obsidian Cottonwood Triangulars.

Figure 3-B: Exhibit 9 is the distal end of a basalt projectile point, Exhibit 10 is the pumice abrasion tool that is abraded down the center, Exhibit 11 is the fire-affected bifacial schist mano, Exhibit 12 is a brownware rim sherd with a diameter of 10 centimeters, and Exhibit 13 is another piece of brownware rim sherd.

Figure 3-C: Exhibit 14 is a pumice abrasion tool showing wear, and Exhibit 15 shows a cache of pumice stones with abrasion wear.

CONCLUSION AND MOVING FORWARD

The Dos Palmas site is significant for its intact, undisturbed nature and its potential to contain data for answering research questions of this region. By having a caretaker on site and a locked gate restricting vehicle access, the site itself is well protected. Barring any unforeseeable adverse impact to the site, there should be no further ground disturbance. This site is at an elevation range from 70 feet to 100 feet below mean sea level. Any older sites at this elevation would have been destroyed by wind-wave action of the previous receding shorelines. This narrows the number of prehistoric lake shore sites, and practically eliminates the likelihood of any older intact sites in the Salton basin below an elevation of +40 feet above mean sea level. This site, being below the high lake stand, and remaining in pristine condition gives us a rare view of one receding shoreline occupation in the late prehistoric period just before European contact. Actions that should be taken need to be protective in nature. It is recommended that an annual or biannual site visit be done for all of the Dos Palmas sites.
Figure 3-A. Artifacts: Arrow Points.

Figure 3-B. Artifacts: Projectile Points and Tools.
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