

**FINAL**  
**Integrated Cultural Resource Management Plan**  
**Molokai Receiver Station**  
**Pālā'au, Moloka'i Island, Maui County, Hawai'i**  
**(TMK 5-2-06:63)**

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## EXECUTIVE SUMMARY

The Molokai Receiver Station is a United States Air Force (USAF) facility located in the traditional district of Pālā'au on the Hawaiian island of Moloka'i, County of Maui, Hawai'i. Vandenberg Air Force Base (VAFB), California, maintains the USAF Receiver Station in support of missile flight test programs and the land is leased from the Department of Hawaiian Home Lands (DHHL). As part of its commitment to uphold Section 110 of the National Historic Preservation Act (NHPA) of 1966 (as amended), the 30th Space Wing, Civil Engineering Squadron, Environmental Flight, Cultural Resource Section (30 CES/CEVPC) contracted SRS Technologies of Lompoc, California, to prepare an Integrated Cultural Resource Management Plan (ICRMP) for facilities under Vandenberg Command (GSA Contract GS-35F-5418H). In turn, SRS subcontracted with Cultural Landscapes to fulfill Task Order 9T1Y971A, preparation of an ICRMP specific to the Molokai Receiver Station. The intent of this volume of the ICRMP is to facilitate management of cultural resources found on the Receiver Station and to guide commanders, planners, project managers, and cultural resources specialists working at the Station.

In addition to NHPA Section 110, the ICRMP addresses cultural resource management issues raised by NHPA Section 106, Section 5 of the Archaeological Resources Protection Act (ARPA), Air Force Instruction 32-7065, The Native American Graves and Protection and Repatriation Act (NAGPRA), the American Indian Religious Freedom Act (AIRFA), and other relevant federal authorities governing cultural resources. Finally, the ICRMP is guided by community standards and State of Hawai'i statutes and rules, all of which reflect the unique emphasis on cultural resources in the state, and on the island of Moloka'i in particular.

Archaeological investigation of this portion of north-central Moloka'i began with the work of Southwick Phelps in the 1930s, during which time he recorded Site 20, consisting of a fishing shrine atop Pu'u Kapele (just north of the Receiver Station property) and several structures consisting of upright stones in association with boulder outcrops dubbed "sweet potato shrines," an interpretation of unknown origin. The latter appear to be partially within the property, and three have been tentatively identified as Site 50-60-02-1623 Features 1 and 2, and 50-60-02-843 Feature 13, all of which in or around a broad depression that may have been a suitable sweet potato cultivation area.

Formal inventory of the Molokai Receiver Station by the USAF occurred in 1994, when archaeologists from the Bernice Pauahi Bishop Museum, assisted by local residents Hālonā Ka'opuiki and Sterling Kalua, located, recorded, and evaluated the significance of historic properties within the property. Sites were initially located by surface survey, during which above-ground stone construction and eroded midden and historic rubbish deposits were found. Subsequently, excavation of shovel probe grids and controlled excavation units determined the boundaries of subsurface deposits and sought data to help evaluate the significance of the sites. In 1999, a supplemental survey was done at the northern edge of the parcel, using GPS to locate the unmarked boundary line, and to record an additional site.

Portions of Phelps' Site 20 appear to be within Site 50-60-02-1623, including Features 1 and 2, the former a 14 by 20-m enclosure encompassing a modified outcrop in the north wall, flat boulders as the interior "floor", and upright stones in much of the perimeter wall. Feature 2, less rectilinear in shape and smaller at about 8 by 8-m, also incorporated an outcrop and included upright stones in the wall construction. Excavations at both features failed to uncover a buried cultural

deposit, aside from a few weathered pieces of marine shell. On the basis of the upright stones, Phelps' shrine interpretation, and the absence of habitation debris, these sites were interpreted as shrines and evaluated as potentially significant under NRHP criteria C (as outstanding examples of their type) and D, for their potential to yield information useful in understanding past patterns of land use, agriculture, and religious architecture. Feature 3 consisted of a widespread, discontinuous deposit of early and mid-20<sup>th</sup> Century garbage, dumped at what was then the periphery of the Hawaiian Homestead lands beginning in the mid-1920s. While not a contributing element in terms of criterion C significance, Feature 3 does have the potential to inform on the material culture of the first generation of homesteaders, in particular their patterns of food and medicine consumption and rubbish disposal behaviors.

Site 50-60-02-1624, at the opposite, western end of the parcel, consists of a double-roomed enclosure on the east bank of a gulch (Feature 1) and an isolated basalt flake on the west bank (Feature 2). Excavations here found a fire feature in the north room of the enclosure, and a single layer cultural deposit associated with the surface architecture indicating a medium to high stability habitation. Radiometric dating of charcoal from the buried feature yielded a calibrated date of AD 1477 – 1644, consistent with expectations that relatively dry environment such as this one, which also lacks easy shoreline access, would have been settled relatively late in prehistory, during the Expansion Period (Kirch 1985).

Site 50-60-02-843 straddles the north boundary and consists of a series of 37 alignments, walls, modified outcrops, a depression, and a prominent natural boulder. This boulder and some associated walls that form an incomplete, irregular enclosure, appear to be strong candidates for one of the sweet potato shrines recorded as Site 20 by Phelps. Other walls, because they also included upright stones, have been interpreted variously as shrines, relict walls associated with sheep ranching (circa AD 1900), and being of undetermined function.

The final potentially significant property is Building 29, a part of the original array of tracking antennae used to monitor missile tests. Though it is now surrounded by more modern structures, it retains integrity of place relative to the Western Test Range distributed through the Pacific, and has the potential to inform about the history of the Cold War, and so is considered significant under NRHP criterion A.

Archaeological sites occur in greater profusion immediately to the north of the Receiver Station and historical and cultural significance are attached to a hill there called Pu'u Kapele (where the goddess Pele lived briefly), as well as the Kaiolohia Plain just to the south, where Kamehameha I encamped his troops during their stay on Moloka'i. In addition to these relatively obvious places, residents of the island maintain a strong connection to their land as a source of both physical and spiritual sustenance, and this document attempts to place the Receiver Station within a cultural context that encompasses more than known archaeological sites or famous cultural places.

Because archaeological sites within the Molokai Receiver Station property are concentrated in the northern, eastern, and western extremes, this plan recommends preservation in place and avoidance, a course that may be followed with very little potential to complicate the operations of the facility, or even to limit any future undertakings. Based in the Vandenberg AFB ICRMP, this plan recommends measures to preserve and protect the archaeological sites. The most basic element is to establish Cultural Resource Management Areas that encompass the known

sites, but protect them within buffers that relate to the local terrain and geomorphology. Short term preservation measures are specified, including:

- ❖ Establish Cultural Resource Management Areas (CRMAs)
- ❖ Get GPS locations of archaeologically and culturally significant features and integrate data into 30 CES/CEVPC's GIS layer supporting archaeological coverage
- ❖ Avoid grading or construction in CRMAs
- ❖ Establish cooperative relationship with DHHL

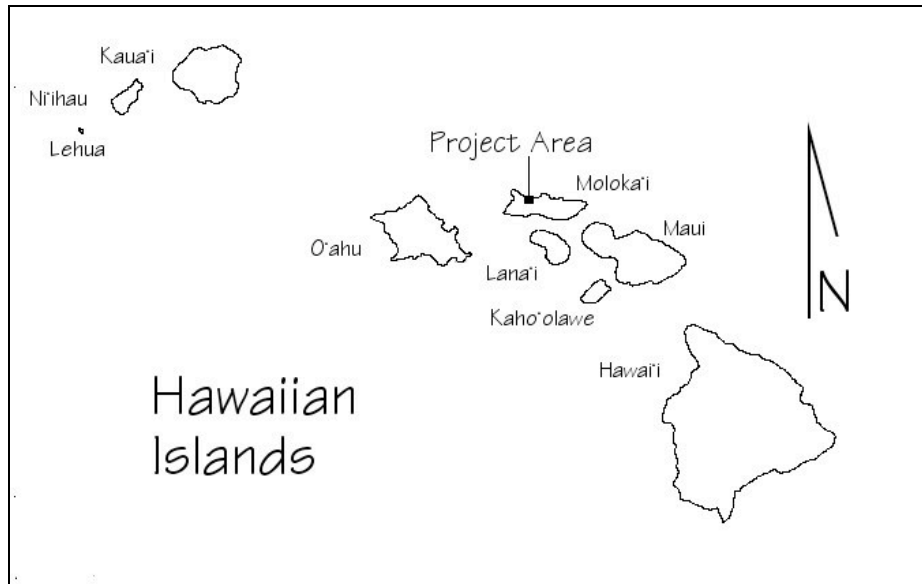
Long term measures are also proposed to help preserve the sites in good condition indefinitely. These include:

- ❖ Maintain relationship with DHHL
- ❖ Record oral history
- ❖ Incorporate CRM principles into facility planning
- ❖ Monitor CRMA conditions

## **BACKGROUND**

At the request of the 30th Space Wing, Civil Engineering Squadron, Environmental Flight, Cultural Resource Section (30 CES/CEVPC), prime contractor SRS Technologies of Lompoc, California, contracted Cultural Landscapes Hawai'i to prepare this Integrated Cultural Resource Management Plan (hereafter ICRMP) for the USAF Receiver Station on the island of Moloka'i in the Hawaiian archipelago (Figure 1), fulfilling task order 9T1Y971A of GSA contract number GS-35F-5418H. Vandenberg AFB (VAFB) is responsible for managing cultural resources under its jurisdiction in accordance with Sections 106 and 110 of the National Historic Preservation Act (NHPA) of 1966 (as amended), Section 5 of the Archaeological Resources Protection Act (ARPA), Air Force Instruction 32-7065 and other relevant federal authorities governing cultural resources. VAFB maintains the USAF Receiver Station on the island of Molokai, County of Maui, Hawaii in support of missile flight test programs. This land is leased from the Department of Hawaiian Home Lands (DHHL).

The intent of this volume of the ICRMP is to facilitate management of cultural resources found on the Receiver Station and to guide commanders, planners, project managers, and cultural resources specialists working at the Station. The project area comprises 147-ha (hectares, equivalent to 363 acres) near the island's northern coast in the ahupua'a (traditional land district) of Pālā'au, at the fringe of a larger area of Hawaiian Homestead Land more commonly known as Ho'olehua (Figure 1). Significant cultural resources ranging from prehistoric archaeological sites to facilities used in Cold War operations have been identified and evaluated (Major and Dixon 1995, Cole and Cagle 1995, Hartzell 2000), and surrounding parcels have additional cultural resources, including Pu'u Kapele, a hill considered a Traditional Cultural Property.



**Figure 1.** Island of Moloka'i and Molokai Receiver Station location.

## Physical Setting

The Molokai Receiver Station lies on the northern side of the island (Figure 2), sloping from the edge of the Kaiolohia Plain (called Ho'olehua in modern times) to sea cliffs that drop 300 – 500 feet to the ocean. At the western edge of the parcel, a gulch descends to the north (Figure 3), and Mane'opapa Gulch meanders along the northern boundary (Figure 4). The eastern and southern edges have less marked relief, and the main topographic features of the central project area are a tributary feeding the western gulch and a basin near the eastern edge (Figure 5).

The Kaiolohia Plain occupies the central saddle of Moloka'i, a low area with relatively unbroken topography between the eastern and western mountains. The soils here are silty clays and silty clay loams that have been the focus of agriculture historically, and almost certainly were the location of sweet potato cultivation prehistorically. Since the 19<sup>th</sup> Century introduction of ungulates, heavy grazing has combined with periodic drought conditions to cause massive soil loss as the strong trade winds scour the surface daily, punctuated by occasional downpours that wash away sediment. Historic and modern wildfires, military training operations, and to some degree the grading involved in constructing the antennae themselves have all exacerbated erosion to the point that there are areas of exposed hardpan, as well as advancing gullies.

At the northern edge of the project area, Mane'opapa Gulch represents a transition zone for terrain, soil, vegetation, and microclimate. Northeast of the project parcel, the gulch fans out into a 200-m (meter) wide, shallow depression filled with silty clay loam and few rocks; Pu'u Kapele bounds this to the north, while a 2-m tall rectangular stone outcrop rises to the south. Mane'opapa becomes an increasingly steep and rocky valley as it descends toward the west and northwest, with sediments occurring in pockets between outcrops, and in some cases behind constructed walls. Being protected from the constant winds and sun, the gulch interior is wetter, and local residents report fresh water seepage there. Water can run for days during heavy rains, channeling runoff from as high as 300-masl (meters above sea level) in the far northeast corner of Pālā'au near Pu'u Eleuweuwe and wearing smooth the lava in the channel. It is conceivable that a perennial—or at

least more frequent—stream ran during wetter climactic periods, when the 787-ha Mane’opapa watershed would have captured significant rainfall.

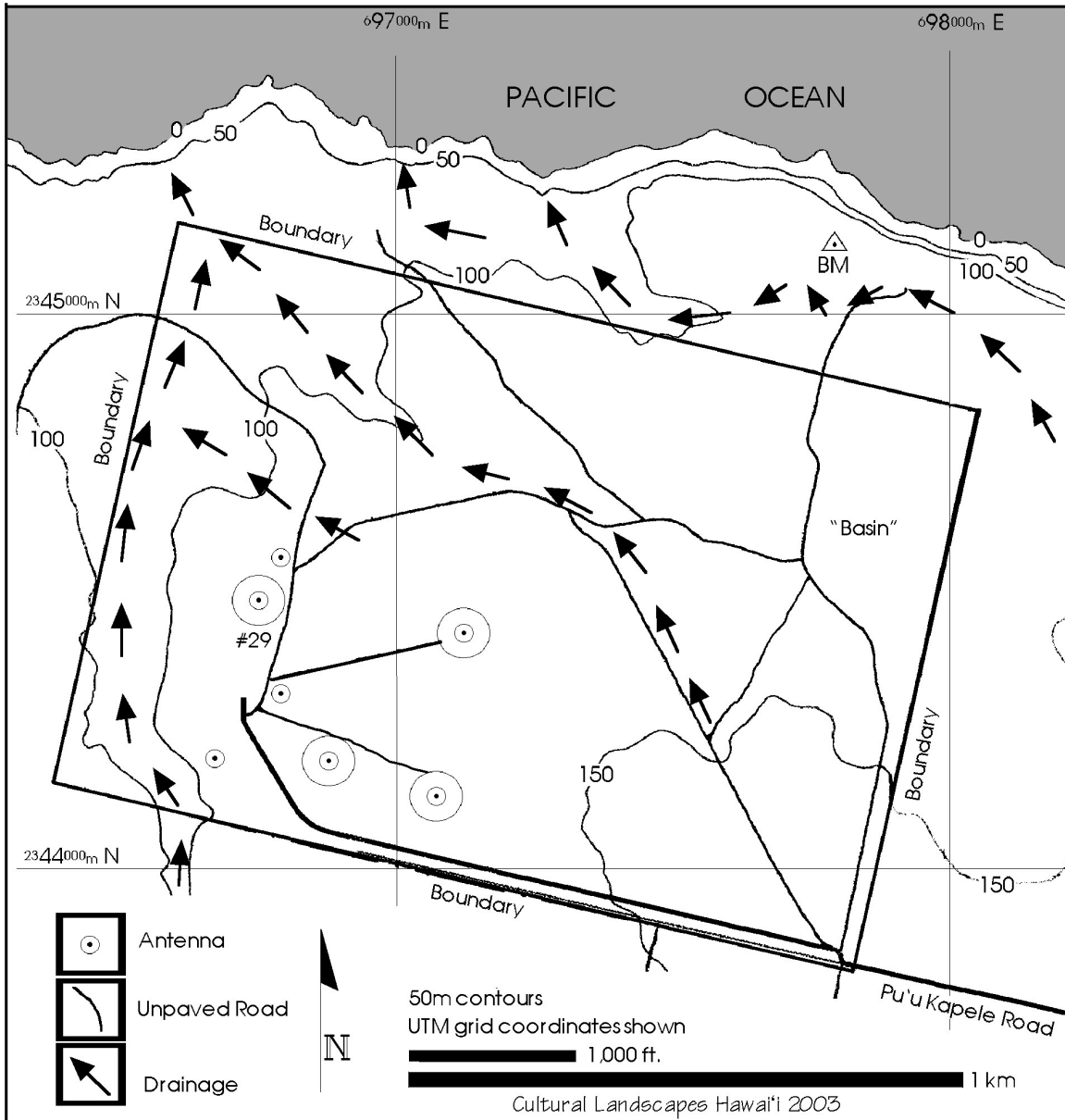


Figure 2. Project Area

FIGURE 3 REMOVED TO APPENDIX B

Vegetation in the project area reflects the impacts of domestic and wild grazers, wildfire, and modern disturbance, with primarily exotic grasses and scrub growth.



Some native 'ilima (*Sida fallax*) bushes coexist with lantana (*Lantana camara*), with kiawe (*Prosopis pallida*), kolū (*Acacia farnesiana*), and koa haole (*Leucana leucocephala*) occasionally taking root around outcrops and features, and in the western gulch. Mane'opapa has a higher proportion of native taxa, such as 'akoko (*Euphorbia* sp.), naupaka (*Scaevola taccada*), pua kala (*Argemone glauca*, the endemic poppy), pā'ū o Hi'iaka (*Jaquemontia sandwicensis*, Hi'iaka's skirt), Naiwa fern (named for the district of Naiwa), and possibly grasses.

While some vegetation in the gulch is fed by seepage, most of the project area depends on the 15 to 20 inches of rainfall that this area typically receives in a year (Baker 1968). Rain arrives in tradewind-driven squalls (with a noticeable decline in quantity as distance from the coast increases), larger winter rains that affect the windward coast or engulf the entire island, and nāulu (sudden shower) rains that result from convection when tradewinds meet leeward sea breezes along the center of the island. A cloud line extending from the windward Moloka'i mountains usually forms above the island and along its east-west axis each day by noon, providing some cloud cover and occasional mist and rain in the project area.

FIGURE 4 REMOVED TO APPENDIX B

Feral deer and goats sometimes range through the project area, and horses sometimes are tied up to graze. Few animals are visible in the project area, and we are not aware of a systematic biological survey. The most visible fauna are birds, with native species represented by the pueo (owl, *Asio flammeus sandwichensis*), red and white-tailed koa'e (tropicbird, *Phaethon rubricada rothschildi* and *Phaethon lepturus dorotheae*, respectively).

## Cultural Setting

The Hawaiian Islands constitute a unique cultural setting within the United States. Settled by Polynesian people, the high islands comprising the southeastern end of the archipelago were each colonized and developed stable occupations. A few small pinnacles and numerous atolls collectively called the Northwest Hawaiian Islands extend another 1,200 miles in that direction, but evidence of Polynesian culture is limited to shrines on Necker and Nihoa Islands, and the majority are significant culturally as the locales of action and bases during WWII (Wake and Midway, for example), or for their history of economic activity (such as bird feather and guano collection).

FIGURE 5 REMOVED TO APPENDIX B

The islands were certainly settled by Polynesians, based on material culture, genetics, linguistics, and oral histories. The timing and proximal source of migrations to Hawai'i, however, remain issues under dispute. Generally speaking, the homeland of Hawaiian people is Eastern Polynesia, with the Marquesan, Tahitian, and Cook Island groups being the most favored sources, based on affinities of material culture and linguistics, not to mention Hawaiian traditions regarding migrations from "Kahiki," a cognate of Tahiti which denotes an island

group to the south, but not necessarily the Tahiti we know. Though firmly ensconced in ethnohistoric and popular literature, no firm archaeological evidence has yet been produced to demonstrate that multiple waves of migration occurred. Traditions mention an archaic “Mu” people, followed by “Menehune,” and eventually a wave of Tahitians who brought with them a more stratified social regime and religion that included strict *tapu* (taboo, restrictions) and human sacrifice.

Archaeology done in the mid-20<sup>th</sup> Century, soon after the discovery of radiocarbon dating, yielded surprisingly early dates for initial settlement, as early as 2,000 years BP. Subsequent calibrations, consideration of old wood effects, and more carefully dated proveniences indicate that these dates are exaggerated, and that sustained settlements more likely began in the 8<sup>th</sup> Century AD. Pollen cores in wetlands indicate major changes in the pristine forest by about AD 1000, which have been interpreted as the result of introduced rats (which ate seeds of the native palms) as well as clearing for agriculture.

The agricultural foundations of Hawaiian culture came with the first settlers, who introduced all of the major crops: *kalo* (taro or eddo, *Colocasia esculenta*), *uhi* (yam, *Dioscorea spp.*), *mai’a* (banana, *Musa paradisiaca*), *ulu* (breadfruit, *Artocarpus altilis*), and other food, fiber, oil, and medicinal plants, numbering about 30 in all. The other staple, *’uala* (sweet potato, *Ipomoea batatas*) appears to have arrived in the 15<sup>th</sup> or 16<sup>th</sup> Century, perhaps as a result of Polynesian voyaging to South America, although early European introduction has not yet been eliminated as a possibility.

The Hawaiian islands experienced some of the most sophisticated developments in Polynesian subsistence. On the agricultural front, development of extensive, intensively managed irrigated systems allowed efficient production of *kalo* in flooded fields. In areas without streams that could be tapped for irrigation, or where flow was not dependable, sophisticated systems of mulching, multi-cropping, and terracing covered mile after mile of land, drawing crops from land not amenable to modern mechanized agriculture. Additionally, Hawaiians developed a surprising degree of diversity in food crops, given that almost all are produced vegetatively and are remain clones of their parents until mutation occurs; well over 100 varieties of taro and over 40 varieties of sweet potato existed. Although the irrigated and dry systems existed earlier, and can be found in other island groups, there appears to have been a period of intensification and expansion of agriculture in the 15<sup>th</sup> Century AD, and Hawaiian field systems observed by the first Europeans in the Pacific were frequently lauded as better developed and more sophisticated than other island groups, and even European fields.

Although Hawaiians never developed the forms of animal husbandry familiar to Europeans, their achievements in this realm also speak of a careful observation of nature, as well as a management of natural systems to optimize food production. Fishponds are the most notable examples. A permeable wall of stacked stone was built in shallow waters, enclosing a section of reef so that seaweed could grow and predatory fish could be removed. As a result, herbivorous fish species could reproduce successfully well beyond their ability to do so in nature, creating not just a captive stock, but small fry that would spread out into surrounding waters. By means of wooden gates built where tidal action would create flow in and out, Hawaiians could simply scoop mature fish out in nets. Evidence is just beginning to emerge that on Hawai’i island, nesting habitat may have been created intentionally for seabirds, indicating another kind of animal that was aided, if not outright raised.

Archaeological sites also show consumption of dogs and pigs, both introduced by Polynesians, and both becoming more common as time passed.

Development of agricultural field systems and fishponds was accompanied by an increased complexity of social systems and land tenure. Though the exact chronology has not yet been set, the increased incidence of religious structures, material culture elaboration, warfare, and evidence of land division (typically, cairns placed at boundaries, but also physical evidence of vertical economies focused within single watersheds, and oral histories of land tenure) all suggest a period of growing complexity in 16<sup>th</sup> to 18<sup>th</sup> Centuries AD. Archaeologists, anthropologists, and historians debate whether Hawai'i represented a complex chiefdom or a state at the time of first European contact (AD 1778, when Captain Cook first arrived), but it is clear that there were an elite class, craft specialists, and systematic collection of tribute, all hallmarks of a society that had moved beyond mere subsistence.

Moloka'i Island's experience of this trajectory is not especially well known, since archaeological research and cultural resource management studies have been relatively limited there. The earliest dated sites occur at about 900 - 1000 BP, but are not solidly associated with long term habitation; this likely reflects the limited excavation on the island, though, and there is no reason to presume that initial settlement occurred later than on other islands. By the 13<sup>th</sup> Century AD, stable occupation and agricultural intensification in the windward valleys and leeward valleys with perennial streams was accompanied by development of basalt quarries on the drier west end of the island. Outcrops on Mauna Loa (long mountain) and many of the smaller eruption cones on its flanks contained fine-grained basalt well-suited for adzes, as well as a host of secondary tools. In addition, volcanic glass (a form of obsidian occurring in 1 – 4-cm nodules, used for small flake and blade tools) and hematite (used for sinkers) occurred on the mountain.

By the 15<sup>th</sup> and 16<sup>th</sup> Centuries AD, populations had grown beyond the confines of their original bayside locales, spreading along the coast, in some cases into the valley interiors, and increasingly into the leeward areas. In large part, this was enabled by addition of sweet potato to the agricultural regime—whereas *kalo* requires upward of 70 inches of rain annually or flooded conditions with constant water circulation, sweet potato can get by with 20 inches of rainfall. This period saw intensification and extensification of the quarry complexes on the west end, where the largest quarry and production area, called Amikopala, covers many dozens of acres. In addition, smaller sources of adze-grade stone became encompassed within West Moloka'i settlement systems that typically had an adze quarry at the inland edge (typically less than a kilometer from the shore), agricultural features and a trail in the intervening gulch, and a stable settlement at the coast.

This arrangement of settlement space, in which people have access to resources from the near-shore waters to the uplands, came to be an organizing principal in land tenure at this time. The *ahupua'a*, the name for such districts, allowed residents access to a cross-section of resources, such that each had a reasonable chance of self-sufficiency, and has remained an important concept for land management and Native Hawaiian gathering rights down to the present day. Over most of the eastern end of Moloka'i, where water is more plentiful, *ahupua'a* generally conform to valley watersheds. On the west end, presence of the Amikopala quarry complex and numerous religious and cultural sites near the

summit, paired with the absence of perennial streams, caused a much larger *ahupua'a* to be formed, named "Kaluako'i," literally, "the adze pit."

The Molokai Receiver Station lies on the north coast of the neighboring district of Pālā'au, which illustrates two interesting aspects of land tenure. First, Pālā'au is also the name of a chief mentioned in oral histories; names serving both chiefs and land units are common on many of the islands. Neighboring Ho'olehua and 'Ilioli are also the names of chiefs. Pālā'au also shows how deeply embedded access to resources from the sea to the mountain was in land use and tenure. In this central part of the island, where the land slopes down from sheer cliffs in the north to wide, reef-fringed reefs in the south, there are neither valleys nor high uplands, and the north coast lacks canoe landings. For this reason, Pālā'au, Ho'olehua, and other districts each occur in three discontinuous parcels: one on the south coast with ocean access and a fishpond, a second in the fertile soils of the saddle, and a third in the uplands to the northeast, overlooking the Kalaupapa Peninsula and affording access to timber, medicinal plants, and other forest resources.

In the two centuries preceding western contact, Moloka'i became embroiled in conflicts between larger polities that were developing into island-wide, and sometimes multi-island chiefdoms on O'ahu, Maui, and Hawai'i. At various times, the island was battleground, prize, and ally in the wars that characterized the archipelago in the centuries just before and the decades just after Cook's arrival. Practically speaking, the nearly 40 fishponds on the south shore and the irrigated *kalo* complexes lining the valleys drew the attention of chiefs wanting to feed armies, which is exactly the scenario that played out when Kamehameha and his troops camped for two years on their advance up the island chain. The core area of this camp was immediately south of the Molokai Receiver Station, and the Hawai'i islanders must have crossed the property to gain ocean access at what is now called Cables.

Early explorers, merchants, and missionaries rarely landed at Moloka'i, and so we have relatively few of the written accounts that enrich the history of O'ahu, Maui, and Hawai'i. Historically, the island became synonymous with the quarantined leper settlement at Kalaupapa, perhaps contributing to the isolation of the island as a whole. While this has made it more difficult for historians interested in accounts of the island written by visitors, Moloka'i remains them most traditional and Polynesian of the major islands. About two-thirds of the population (currently less than 7,000 people) are Native Hawaiian, and cultural traditions run strong. Both Kamehameha III and V particularly enjoyed the islands, and the latter set loose seven Axis Deer in 1868, placing a *kapu* (restriction) on hunting them for 30 years, thus breeding the herds that have been major source of food for island residents for the past century; cattle ranching for the king, Princess Ruth Keelikolani, and later the Molokai Ranch has become deeply ingrained as well. Older traditions of farming and fishing also contribute strongly to the subsistence and culture of modern Molokaians. More than any other island, this is a place where outsiders do best to assimilate.

## Literature Review

Archaeological study of the project area has been limited to three projects, the first of which was an island-wide study that included a brief encounter with Pu'u Kapele, and the latter two of which completed archaeological inventory pursuant to Section 106. The north-central part of the island has been sparsely studied, and

the project area represents the most intensively covered area between Mo'omomi bay and Kalaupapa. The initial inventory survey includes detailed examinations of previous studies along this coast, as well as a synthetic discussion of the archaeology and history of the central region of Moloka'i (Major and Dixon 1994), and only the more recent work in the project area and regional highlights will be included here (Figure 6).

Investigation of the current project area began in the 1930s, when visiting archaeologist Southwick Phelps completed a regional study of the island (Phelps 1940, Figure 7). His Site 20, a *ko'a* (fishing shrine) and several other features interpreted as agricultural shrines appears to occur partially within the current project area, as well as to the north and east. He describes the agricultural shrines as having a high center rock surrounded by a wall of smaller stones, many of which are set upright, and suggests that they may be associated with sweet potato, although the basis for this is not known.

FIGURE 6 REMOVED TO APPENDIX B  
FIGURE 7 REMOVED TO APPENDIX B

### 50-60-02-1623

The 1994 inventory resulted in documentation of two sites, 50-60-02-1623 and -1624, at the east and west ends of the project area, respectively. Site 1623 included two features that appeared to match Phelps' descriptions of Site 20 sweet potato shrines. Feature 1, in particular, matched his "quadrangular" shape, but with sides measuring 14 – 20-m was larger than the "20 – 30 feet" he noted. Inside this feature, half a dozen or more embedded, low boulders formed a part of the surface (Figure 8). Shovel tests on a 5-m grid in and around the feature, as well as controlled units against the wall interior and a possible interior windbreak failed to recover cultural materials beyond a few marine shells, or even show a cultural layer. Architectural elements extended 10 – 20-cm below the modern surface, and a maximum of two layers were exposed, the shallower of which contained some evidence of wildfires.

FIGURE 8 REMOVED TO APPENDIX B  
FIGURE 9 REMOVED TO APPENDIX B

Feature 2 of this site consisted of an outcrop with attached wall sections that created an irregular enclosure, and a one-course terrace alignment extending to the southeast (Figure 9). Closer in size to Phelps' description, the shape was less rectilinear, with walls incorporating a natural outcrop. Excavations here also encountered few marine shells, no artifacts, and no buried features.

Feature 3 consisted of a widespread area in which historic glass and other rubbish occurred on the surface. The materials and styles present suggest domestic dumping in the first half of the 20<sup>th</sup> Century, when the project area was on the outskirts of the newly established Hawaiian Homesteads. With the artifacts generally occurring in concentrations 2-m or less in diameter and not far from the

road, it appears that Feature 3 is the accumulation of many individual disposal episodes at the household level, rather than a formalized community level dump.

Site 1623 was designated as potentially significant under Criteria C (Features 1 and 2 reflecting a distinctive architecture associated with shrines) and D (all features having potential to inform on prehistoric and early homestead era land use by Hawaiians). Site 1623 was also deemed significant under State of Hawai'i Criterion E, for sites with cultural significance, due to the shrines.

#### **50-60-02-1624**

Site 1624 included an isolated artifact (Feature 2) and a two-roomed enclosure (Feature 1, Figure 11) on opposite sides of the western gulch, just above where the project area tributary enters from the east. The southern room has stacked walls just one stone wide, less substantial than the northern wall. Occasional upright stones occur in both sections, but excavation showed a buried hearth or *imu* (ground oven) and midden in the north room, with one positive shovel test near the center of the southern room. Radiometric dating of wood charcoal from the basal charcoal lens of the buried feature yielded a calibrated age of AD 1477 – 1644, and although the fill was dated as modern, no historic era materials were recovered anywhere in this or other excavations. Feature 1 was interpreted as a habitation, possibly built in multiple stages. Site 1624 was judged potentially significant under NRHP Criterion D. The feature remains in fairly good condition (Figure 10).

FIGURE 10 REMOVED TO APPENDIX B

FIGURE 11 REMOVED TO APPENDIX B

#### **50-60-02-843**

In 1994, the inventory survey was completed without the benefit of project area boundary markers or GPS technology, and there was uncertainty about the northern boundary location. A complex of walls was found in and around Manae'opapa Gulch, and a reconnaissance of the area north of the project area revealed the presence of several features, including possible remains of the *ko'a* noted by Phelps, a few enclosures and partial enclosures, lithic work areas, and caves in the sea cliffs.

In response to lingering doubts about the location of features along the northern tier, a supplemental inventory survey was done in 1999. With advances in GPS technology, it was determined that a portion of the stone wall complex (50-60-02-843) on the south rim of Man'opapa Gulch did in fact fall within the project area (Hartzell 2000, Figure 12). This complex had 37 feature components (where a single wall exhibited multiple construction techniques, each was recorded as a distinct component), most of which were walls and single-stone alignments, but also including four enclosures, a depression, and a prominent (but natural) boulder.

Based primarily on the presence of upright stones in some wall segments, the supplemental inventory report judged Site 843 as potentially significant under Criterion C, this being a distinctive style not well represented elsewhere in the islands, as well as Criterion D for information content. Although not specifically invoking SHPD Criterion E, the report did note the area's significance culturally.

Mapping of the complex revealed that most of the walls lined the upper rim of Mane'opapa Gulch, with a few descending the gulch slope or crossing the bottom.

Unfortunately, the maps do not depict the project area boundary except at the least detailed scale, the result being that some unknown portion of the Feature 1 and 13 components are within the project area.

### **Building 29**

Cole's study of the station itself as a site found that Building #29 was potentially eligible to the NRHP despite being less than 50 years old. This structure, a monocone antenna node in the communications web covering missile launches in the Western Test Range, potentially qualifies under Criterion A, being directly associated with events contributing to and identified with the broad national pattern of the Cold War (Cole and Cagle 1995:15 – 16). This ring of six poles supporting a radial wire antenna is the only remaining original antenna from the 1967 construction of the USAF facility, and Cole proposes that it would be more significant as a component of a NRHP district (the communications network of the Western Test Range) than in its immediate context, most of the current station dating to much later (ibid:16).

### **Summary**

The USAF facility's footprint, including abandoned antennae sites and the access road, lacks any surface indication of sites with NRHP significance. Construction-related disturbances have not uncovered buried features or deposits, and the likelihood of additional sites in most of the parcel is low. Straddling the east and north borders and along the western gulch of the parcel, however, are sites likely to meet NRHP Criteria C and D, as well as SHPD Criterion E. On the east, Site 50-60-02-1623 consists of two probable shrines in a natural basin, presumably part of the Phelps Site 20 complex. To the north, Site 50-60-02-843 is a set of walls, enclosures and other features on either side of Mane'opapa Gulch, ambiguous in function but possibly related to agriculture, shrines, or even ranching. Along the western gulch, Site 50-60-02-1624 appears to be a prehistoric habitation.

FIGURE 12 REMOVED TO APPENDIX B

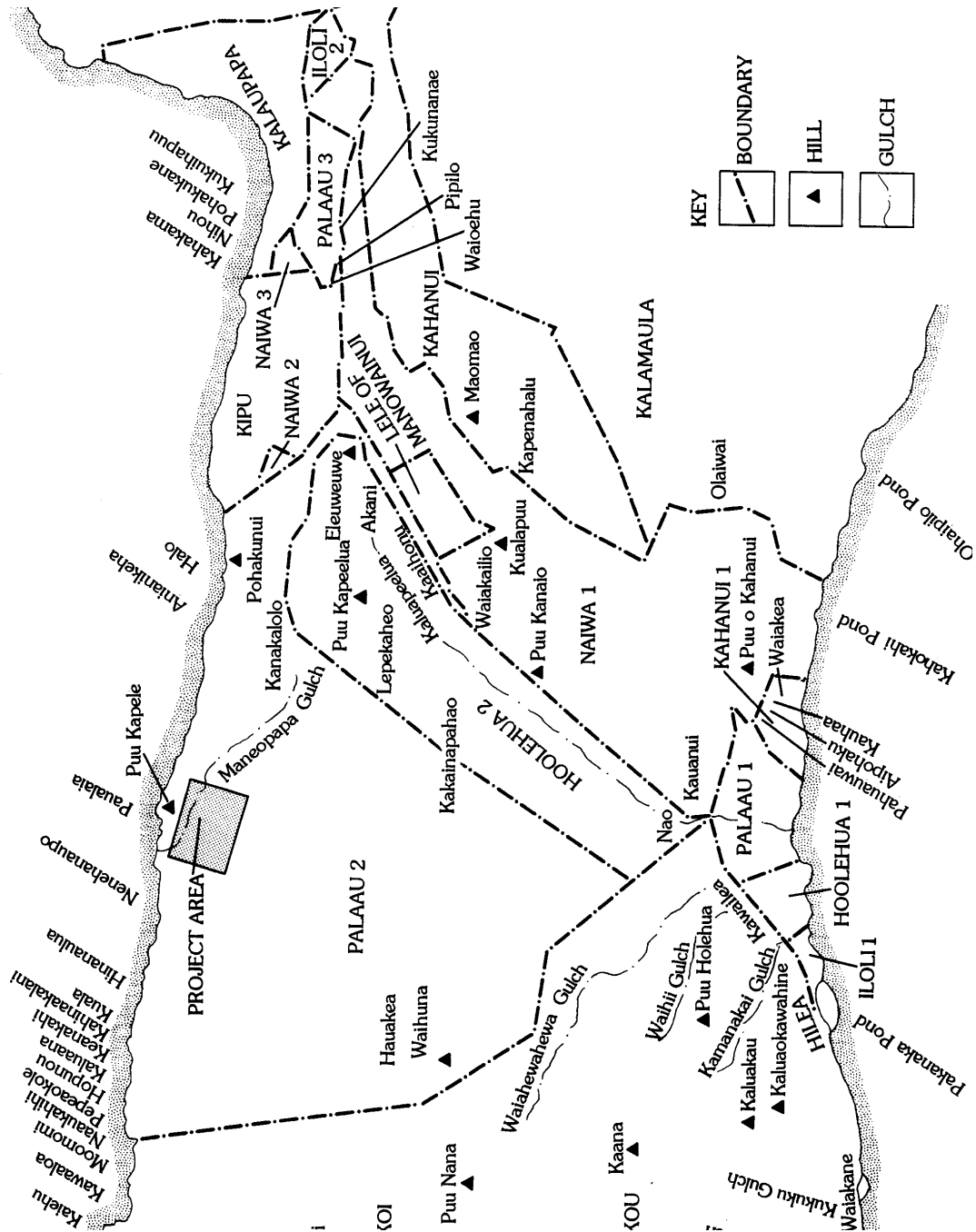


Figure 13. Traditional Place Names of Central Molokai, as recorded by Monsarrat 1886.



## Ethnographic Review/Cultural Landscapes

### Traditional Place Names

Other than a small portion of Mane'opapa Gulch and perhaps the *makai* (seaward) fringe of the Kaiolohia Plain, no places with surviving Hawaiian names have been identified within the project area. The western gulch, termed "Pālā'au" for convenience in the inventory report, could conceivably be Nēnēhānaupō, although this name has been identified ethnographically with the small gulch just to the east (also known as "Cables") and appears on the next point or gulch to the west in some historical maps.

*Makai* (seaward) of the project area, several traditional names dating at least to the 19<sup>th</sup> century do exist (Figure 13). Pu'u Kapele (sometimes written Pu'ukapele) sits just north of Mane'opapa Gulch. This weathered hill bears the name of Pele, and is understood by most people today as the first Moloka'i home of Pele, the volcano goddess. She then moved on to Kauhakō Crater, visible from Pu'u Kapele on the Kalaupapa Peninsula. *Kumu hula* (teacher or master of ancient chants and dances) John Ka'imikaua told the author of oral tradition stating that this hill smells of sulfur when there are major eruptions on Hawai'i (personal communication 1997). Although nobody has explicitly made the connection, the frequent occurrence of *kaona* (double meaning) in Hawaiian language causes the author to note that Pele is also the name of a Moloka'i woman whose love turned out to be a shape-shifting caterpillar associated with nearby Pu'u Kape'elua. Likewise, a shift in emphasis to the "a" yields Pu'u Kāpele, *kāpele* meaning "large, like an abdomen" (Pukui and Elbert 1986), which the hill resembles in shape.

Unfortunately, many of the translations of nearby place names are similarly speculative, or at least not well documented. Paulalaia Point, basically formed by Pu'u Kapele, is not listed in the standard reference (*Place Names of Hawaii* by Pukui, Elbert, and Mookini 1974). The 2000 supplemental inventory names Paulalaia as a sister of Pele (citing Poepoe), although she is not among the usual names. It is also possible that this place name, recorded before Hawaiian diacritical and spelling conventions were uniformly applied, could refer to *alaea*, the ochreous red deposits that occur on the point face, possibly alluding to a *pā'ū-alaea* (skirt of *alaea*). *Alaia* is a type of surfboard, but there are no surf breaks associated with this beachless shore, and the "ae" and "ai" sounds were frequently interchanged in 19<sup>th</sup> Century transcriptions of spoken Hawaiian. Ultimately, however, there are too many possibilities and not enough verifiable interpretation to translate Paulalaia with any certainty.

Mane'opapa also is not translated in the standard reference of place names. The roots *mane'o* (itchy) and *papa* (flat) have fewer alternative explanations, but the literal translation leaves us wondering what the cultural meaning is, and why a gulch would be called flat. No doubt there is an interesting story behind the naming of this place, but it has been lost to posterity.

Nēnēhānaupō has been more certainly translated as "goose born [at] night" (Pukui et. al. 1976:164). The name suggests that *nēnē* geese may once have lived in the area when people first arrived, and in fact one resident recalls her father talking about *nēnē* living at the fringes of the homesteads when they were first established in the 1920s. Fossil remains of extinct flightless fowl have been found at Mo'omomi, further west down the coast.

## Twin Boulders

During fieldwork for the ICRMP, it was learned that two boulders straddling the western gulch could have a chant or story associated with them. The eastern boulder was examined, and appears to have weathered in place. A hole about 15-cm deep and 3 – 4-cm in diameter goes into the eastern face of this boulder, and may be artificial (Figure 14). The boulder is split in half, roughly perpendicular to the gulch, with a rather flat upper surface. In Kaluako'i, the *ahupua'a* immediately west of Pālā'au, boulders split in two with a relatively flat surface appear to represent a form of shrine (Major 1997, IARII 1995), although they often have waterworn cobbles placed in the crack.

Regardless of the ultimate functional interpretation, the two boulders do stand out on the landscape. Documentation of a chant, legend, or oral history would more firmly establish their significance on the cultural landscape, and further archaeological investigation may reveal modifications that show them too be something other than naturally situated stones.



**Figure 14. Boulders at western gulch, view to west. Note hole and split in boulder. Dark spot across gulch is the other boulder.**

## Coastal Cliff Sites to the North

Sites just outside of the project area are also known to local residents versed in the area's past. One, an earth-filled platform with a collapsed stone wall facing, is thought to be a *heiau* (sacred site, temple, Figure 15), and is located amid what appears to be a heavily modified landscape atop the coastal cliffs between the

western gulch and Cables (the latter a break in the cliff where a cable anchored facilitates shore access). Roughly oval-shaped and about 10 by 11-m in area, the exterior is over a meter tall on the downslope, *mauka* (inland) side, and the facing rises above the interior soil surface, where there are several embedded stone uprights. The entry is from the north, *makai* side, where several stepping stones arc toward a narrow opening; it is not entirely clear whether this arrangement is original.

The ground surface *makai* (seaward) of this structure consists of a shale-like weathered basalt, and is probably at least partially the result of exposure to constant weathering, but abundant evidence of stone working here—both fine-grained basalt typically used for adzes and a crystal-laden type probably used for sinkers—suggests that this unusual surface may also be the result of quarrying and lithic reduction (Figure 16). Hematite is also present in the ground here, and the author has encountered a source elsewhere on Moloka'i where hematite quarrying led to removal of entire strata of soil and saprolitic matrix, leaving a similar environment.

FIGURE 15 REMOVED TO APPENDIX B

Additional features appear to be situated near the possible *heiau*. Atop a rise just to the southeast, a mound (similar in scale to the platform) of adze-grade basalt, two types of crystal-bearing basalt, volcanic glass, a polishing stone, and midden bear witness to lithic reduction as well as food consumption, implying that a workshop was present, along with one or more low to moderately stable occupations (figure 17). Like the Kukui summit hematite quarry, this area appears to have been the source of a particular type of stone, as well as work involving imported stone (in this case, the fine-grained basalt and volcanic glass). There seem to be wall foundation remnants in this mound, and one oblong stone is of a size and shape often associated with upright stones at shrines. Were it set upright, this stone would be visible from far out to sea and inland. The highly weathered condition of the mound and surrounding surfaces, however, make it difficult to evaluate this site.

*Mauka* (inland) of the possible *heiau* (temples) are two apparently natural features of the landscape: miniature mesas of sediment left intact after their surroundings were eroded away. How long they have stood isolated, and whether human activity had any role in the erosion is not known, but their form appears quite similar to what the interior of the platform must be, suggesting that the *heiau* was made by stacking a stabilizing veneer over an extant feature of the terrain.

Continuing east along the coast, a flat area atop the cliff just before the precipice dropping toward Cables has a single stone feature (Figure 18). Rectangular (about 4.5 by 4-m) and open to the sea, this form would normally be considered a *hālau wa'a*, or canoe shed. The walls are of the local crystal-filled basalt, and are mostly single boulders, with occasional stacking and averaging 40-cm high. Its location about 100-m above sea level would make such an interpretation ridiculous, were it not for a knowledgeable local resident who says there are old stories regarding canoe houses on cliffs. She is not certain that this is the location, but the possibility must be entertained. Unfortunately, there is almost no possibility that the interpretation can be proved archaeologically, since the feature sits on bedrock with no sediment capable of holding buried deposits. Being open to the wind, it is unlikely that the feature was a shelter, but other than an excellent ocean view (of

which there are many more along the coast), the advantage of this location is unclear. Outside the rear of the structure, on higher ground, is a boulder set in a way that it makes a comfortable seat facing the ocean.



**Figure 16.** Basalt with crystalline inclusions appears to have been quarried and worked near the possible heiau site. This stone is also used in structure walls.

### **“Cables” and Traditional Resources**

East of the features just described, a cleft in the coastal cliffs provides the best access to the shoreline for miles. Still, the path is dangerous, with loose rock and a trail so narrow that people who used it historically anchored a cable into the rock on one section, giving rise to the modern name “Cables.” Not as frequently used as in previous generations due to the increased access to motorboats, Cables nonetheless remains an important landmark on the cultural landscape, and the shoreline below continues to provide food. This gulch may be the same called Nēnēhānaupō in ancient times. The vegetation differs radically from that of the cliff tops, having a healthy community of native plants such as *naupaka* (*Scaevola taccada*), *pua kala* (*Argemone glauca*, the endemic poppy), and *pā’ū o Hi’iaka* (*Jaquemontia sandwicensis*, Hi’iaka’s skirt). At the base is a shelf of rock extending into the water where *’opihī* and *ha’uke’uke* (*Cellana* spp. limpets and *Heterocentrus mammilatus*, or helmet urchins, respectively) are gathered for food. The gulch creating this passage to the sea is unusual geologically, unlike the north-facing drainages created through erosion. Instead, it is an arc surrounding a large (about 150-m long) section of cliff that slumped down, with the west end much deeper than the east, where it terminates at Mane’opapa Gulch.



**Figure 17.** Sample of surface midden and artifacts on mound. Shells are white. Arrows highlight examples of basalt flakes (up), large crystal-laden basalt (down), small “sugary” crystal-laden basalt (right), and volcanic glass (left).

FIGURE 18 REMOVED TO APPENDIX B

The section of cliff that slumped, called Pu’u Ōkea (Pu’u is “hill”, while Ōkea means white sand”) in previous reports because of its mantle of white beach sand, slopes down away from the sea. At the western base of this hill is a secondary cliff 3 – 5-m tall which creates a series of low overhang shelters. The largest has a stone-faced terrace outside, parallel to the cliff and creating a total level surface of about 8 by 5-m, half of which is beneath the shelter. Midden and beer cans are present, and the area seems to have been used as a shelter by fishermen, perhaps over a very long period. This is one of the few spots along the coast offering shelter from prevailing weather, access to the shore, and fresh water (a seep occurs on the “Cables” route).

The hill itself has scant traces of cultural activity, the most obvious being a small stone ring about 50-cm in diameter, made of small basalt cobbles and located just below the summit. While this may have been a fire hearth, there is no charcoal remaining in this windy setting to prove it, and its age and function cannot be derived from available evidence. Across the sandy surface of the hill, there are

occasional pieces of fractured crystal-bearing basalt and some worked pieces of volcanic glass. The greater significance of this place may lie in either cultural values (unusual formations often being highlighted in traditional Hawaiian culture, although the author has no specific indications about cultural value of this place) or its natural environment. That sand is present at all is unusual, since the nearest sand beach is many miles away on the Kalaupapa peninsula; the south-facing slope resulting from the cliff's collapse creates a small leeward area that apparently caused wind-borne sand blown up the *makai* face to drop here. Some of the sand has lithified, and there are tubular formations that appear to be plant casts (Figure 20). The plant community on this island of calcareous substrate is heavily dominated by the indigenous species *naupaka* (*Scaevola* sp.), *'akia* (*Wikstroemia* sp.), the low-growing type of *'ilima* (*Sida* sp.), and others. Given the unusual environment, it is possible that this community may have unique varieties of these taxa. Evident on the sand in the eroded sediments in the gulch below are hints of an extirpated, perhaps extinct, faunal community. Land snail shells are abundant, but neither archaeologists nor local residents have observed living snails there. A small sample collected in 1994 included *Amastra* (*Amastra*) *humilis moomomiensis* and another undescribed species of the same genus (Major and Dixon 1995). Possibilities exist for other faunal remains in this environment, fossils of flightless geese and other birds having been recovered from the sands of Mo'omomi. Collectively, the former and present floral and faunal communities of this unique landscape hold potential for paleontological study of long-term climate and environmental change, as well as the impact of human activity.

FIGURE 19 REMOVED TO APPENDIX B

### **Mane'opapa Gulch**

Another unique environment, occurring within and just north of the project area, is Mane'opapa Gulch. Local residents report having found a cave with fresh water hidden in the gulch, and at least one hunter believes that there is a cave with evidence of human activity. Certainly, the existence of ferns habituated to wetter climates indicates that the gulch interior is a significantly moister micro-climate than the higher ground on either side. Water, either for drinking or for growing crops and useful plants, is extremely valued in Hawaiian culture, especially in environments as dry as this. The presence of stone water catchments above the gulch rim highlights the tendency to not let any fresh water—even a few liters dropped by a passing shower—go to waste.



**Figure 20. Portion of sand-covered hill showing naupaka plant and lithified root cast.**

### **Pu'u Kapele**

Finally, we return to Pu'u Kapele. The oral tradition naming this as the first landfall of Pele on Moloka'i makes this the most obviously significant place in the cultural landscape, certainly within the federal definition of a "Traditional Cultural Property." The *ko'a* (shrine) noted by Phelps in 1937 seems to be the only known religious structure associated with the hill, but the cultural significance undoubtedly extends to the landform itself. The base of Pu'u Kapele extends north to the old fenceline that runs along the eastern edge of the project area, and is bounded on the south and west by Mane'opapa Gulch. From the summit and eastern slopes, there is a clear view to Kauhakō Crater, the second Moloka'i home of Pele, in the *ahupua'a* (district) of Makanalua on what is today called the Kalaupapa peninsula (Figure 21).



**Figure 21.** View east from Pu'u Kapele to Kalaupapa. Pele's second Moloka'i residence, Kauhako Crater, is marked with an arrow.

There are some known and unrecorded archaeological sites at Pu'u Kapele. Part of Site 843, the rock wall complex, sits near the base. A smaller stone feature, shrouded in thick growth of *kiawe* (*Prosopis pallida*), occupies the western flank just above the coast, and the seaward face of the hill has deposits of *alaea* pigment, which was used in numerous medicinal preparations. Hematite is visible in eroded profiles around the base of the hill, although it is uncertain whether these deposits were exposed or used traditionally. Elsewhere on Moloka'i and in the islands, this material, whose high iron content made it easily polished and heavy, was a valued material for making net and fishtrap sinkers. Two mounds of stone remain on the summit, although they appear to be disturbed, if not entirely the result of modern activity; Phelps mentioned a single shrine, although it is not unknown for a shrine to have multiple features (Figure 22).

FIGURE 22 REMOVED TO APPENDIX B

### The Recent Cultural Landscape

Considering the area in terms of more recent activity, there are aspects of the cultural landscape that should not be overlooked. Feature 3 of Site 1623, the extensive dumping ground associated with Ho'olehua Homesteads, may hold data of interest to historic archaeologists working on particular issues, but is also interesting as a broader illustration of land use. The project area was on the fringe



of settlement early in Homestead history, and even since the 1994 survey, new households have been established that push that frontier further west in the *mauka* areas. That dumping occurred here, and not solely on individual lots, implies several things. One is that agriculture, either on the part of homesteaders or pineapple company leases, had priority over dumps in the heart of the homesteads, pushing dumping to a communal periphery. Another is that the road down the eastern end of the project area, along which dumping is concentrated, predates the USAF and FAA facilities. That it ends at Pu'u Kapele indicates that the hill was some sort of destination. Finally, dumping here indicates a cultural tendency to remove trash from the household area, emphasizing stewardship of individual lots while the unsettled common ground could be used for disposal.

Currently, and for an unknown period before, the place at the end of the road is known by homesteaders as the place to adjust gun sights. A couple of old appliances, an occasional box, and even professionally printed targets can be found here along with a variety of rifle, pistol, and shotgun cartridges (Figure 23). The slope of Pu'u Kapele provides a safe backdrop, and shooters can be reasonably sure that nobody will walk onto the range. The closest residence is more than a kilometer away, behind the shooters, and is in no danger of anything more bothersome than the occasional sound of gunfire. Although this is a very different cultural aspect of the area than archaeological sites or Pele's home, the target range is nonetheless a part of the social fabric of the homesteads. It is a place on the periphery of settlement, not owned or leased by any individual or family. Access is allowed to the community, and although some things have been dumped there, they seem to be chosen specifically as targets, rather than the older pattern of dumping food containers and other everyday refuse. It is telling that when telling locals about the location of Mane'opapa Gulch, it is just as effective to describe it as at place where you sight guns as at the foot of Pu'u Kapele, whereas fewer people know the gulch name.



**Figure 23.** Firing range from Pu’u Kapele, view to southeast. Arrows point to sign frame and appliances used as targets. Mane’opapa Gulch is a shallow swale here, running from left to right just beyond the dark vegetation.

In summary, there are several reasons to believe that portions of the project area and most of the strip of un-leased Hawaiian Home Lands north of the parcel are culturally significant for reasons beyond archaeology. Although further research would certainly help document that significance, the likely existence of what noted chronicler Nathaniel Emerson called “the unwritten literature of Hawai’i” is enough to merit further attention for the boulders at the western gulch, for Cables, Nēnēhānaupō and Mane’opapa Gulches, and Pu’u Kapele. Access to the ocean, to fresh water, perhaps to medicinal plants, and to certain types of stone and *alaea* made this seemingly forbidding place a fairly resource rich area to past residents of the Kaiolohia Plain. Historically, its position on the periphery of the Ho’olehua-Pālā’au Homesteads has made it a part of the cultural landscape used at the level of community, rather than individuals. Geological, hydrological, and biological attributes of Pu’u Kapele, the sand hill, Mane’opapa Gulch, and the coastal *pali* (cliffs) suggest that this coastal tier of north-central Moloka’i is significant for additional reasons.

# **CULTURAL RESOURCE MANAGEMENT PLAN**

## **Cultural Resource Management Issues**

### **Planning**

Base operations and maintenance of existing facilities do not pose a threat to archaeological or cultural resources, since the significant sites do not occupy the same physical space as do the facilities or operations of the receiver station, and there is no indication that future operations would impact cultural resources. The very low likelihood that the receiver station's mission and the significant cultural resources could come into conflict is reflected in the facility supervisor's statement during the 2003 field check, "Nobody went down there since you folks [in 1994]." By limiting improvements to areas already affected, future undertakings need not affect cultural resources. Because of the cultural significance of archaeological and natural features in and around the project area, the Native Hawaiian neighbors must have a voice in cultural resource management, and should be part of the early planning process for any future construction.

To ensure that adverse impacts to cultural resources do not occur in the future, cultural resources should be a consideration early in the planning and design process should future construction be planned at the receiver station. Any undertakings should comply with Air Force Instruction 32-7065, the Archaeological Resource Protection Act (ARPA), and undergo Section 106 review. Archaeologists at Vandenberg AFB, CA, 30<sup>th</sup> Civil Engineering Squadron, Environmental Flight, Cultural Resource Section are familiar with the cultural resources of this installation, and have the information and expertise necessary to provide the initial assessment of whether cultural resources may be affected by undertakings, and whether archaeological permits or activities will be necessary. The Hawaii State Historic Preservation Division's (SHPD) current rules require that archaeological contracting firms, academic institutions, and independent scholars apply for annual permits to excavate or otherwise alter sites. Incidences of vandalism to or theft from archaeological sites are potential violations of ARPA, and must be reported within 48 hours to AFCEE, MAJCOM, SHPD, and the National Park Service. Although not required by law, the DHHL representative for Moloka'i should also be notified as a courtesy.

### **Erosion**

Overgrazing, wildfires, and possibly WWII-era training caused widespread devegetation in the 20<sup>th</sup> Century, and leading to the erosion that advances during periods of heavy and/or protracted rains (Figure 24). In nearly 10 years since the initial inventory survey, however, vegetation has regenerated on the surfaces of sites that were cleared for mapping and excavation. Droughts and downpours have occurred during that period, and it appears that the existing sites are on landforms and soils with low potential for erosional impacts: Site 1623 lies within a basin where accumulation of sediment is more likely than erosion, Site 1624 occupies a low ridge above the western gulch and is protected from freshets and wind. Erosion is, however, active within portions of the project area, and could pose a risk to Site 843, at Mane'opapa Gulch, which drains a catchment of nearly 790-ha (about 1950-acres). Features within the Molokai Receiver Station parcel appear to be the most stable, with the water diversion structures in the gulch bottom (Features 1E, 1H, 10, 12, and 13, north of the parcel) at most risk. North of the project area, sites

in the coastal tier are exposed to wind erosion, and water has clearly has effects as well—a line of eroded slopes stretches from east to west at about 120-m elevation.

### **Natural Resources**

Threatened or endangered species are not known at this time, and there is no reason why management of cultural resources should impact areas where indigenous and endemic Hawaiian taxa are present. The field check confirmed that sites cleared during the 1994 survey have since become covered with grass and shrubs that protect the archaeological features and stabilize surrounding sediments. North of the project parcel, Mane'opapa Gulch, the sand hill, and the sea cliffs all present environmental niches in which native plant and animal taxa may have occurred in the past or even remain now. There are some indications that extinct, and certainly extirpated, fauna are represented in the paleontological record. Further investigation is required to determine whether unique variants of flora or fauna have evolved in these locations, and if any of the current taxa are threatened or endangered. To the extent possible, the Air Force should cooperate with DHHL in assessing biological resources from the northern edge of the parcel to the sea.

### **Community CRM**

Hawaiian Homesteaders have been involved with cultural resource management of the receiver station parcel since the initial survey in 1994, both as field assistants and as cultural consultants. Besides those who have directly participated, more Hawaiians are familiar with the landscape and sites in and near the project area, and many more have a interest in how cultural resources are managed. While staff of the station perform particular tasks in defined areas, the community in general use a broader portion of the property for hunting, resource gathering, and other functions.

At an official level, the Department of Hawaiian Home Lands has a say in resource management on their lands, which include the entire Receiver Station parcel. More broadly, individuals and groups within the homesteads have preferences, interests, and experience in how resources are managed. Through local and broader organizations such as the Mo'omomi Cultural Park, the Moloka'i Island Burial Council, the Nature Conservancy, the Governor's Subsistence Task Force, the Office of Hawaiian Affairs, and others, homesteaders and other Hawaiians on Moloka'i have gained experience with managing cultural and natural resources, and can combine that with the knowledge that can only be gained through growing up on the island to improve cultural resource management. Hawaiian *mana'o* (thought, theory) will provide a solid foundation for efforts to *mālama* (take care of) cultural sites.



**Figure 24.** Detail of eroded bank of western gulch. Exploded ordinance embedded in hardpan suggests one agent of erosion. No records indicating training or target ranges have been found, and this may date to WWII, when documentation was less stringent.

Cultural Landscapes has consulted with the DHHL and several Hawaiian homestead residents with particular expertise and knowledge about cultural resources and the project area with regard to this project. The two issues that emerged are preservation and access, and this plan incorporates local Hawaiian *mana'o* on those topics.

Preservation proves to be the more straightforward issue. Hawaiians want the sites on the Receiver Station to be preserved. This is already the treatment being followed, and there appears to be no community desire to erect barriers or interpretive signs. The status quo seems to be acceptable.

The only access to the Molokai Receiver Station is a road through Hawaiian Homesteads. Currently, this access is not formally controlled. Because people must first know of its existence and then cross miles of Homestead land to get there, however, few non-residents visit. Local residents who do so mostly drive the dirt road along the east end of the project area to reach Pu'u Kapele, where the predominant activity is to test and sight rifles. Since the advent of motorized boats, access to the sea via "Cables" has become less common, but the traditional route remains nonetheless.

No contemporary Hawaiians have been identified that visit Pu'u Kapele for religious or cultural reasons, but a reverence for the hill and its association with

Pele abides among some. Elsewhere in the state, devotees of Pele do continue a cultural tradition and trace their genealogies to Pele and her priesthood. These people in particular and Hawaiians in general have a right to access Pu'u Kapele under state law and the federal American Indian Religious Freedom Act (AIRFA), and arguably under the First Amendment to the Constitution. Any consideration of policies or projects that would impede access to the coast through the project area must consider that there are traditional foundations for access by Native Hawaiians.

At the same time, access by people who either intend to damage or loot sites, or who simply lack the awareness and respect for Hawaiian culture to avoid damaging sites, could lead to adverse impacts. These impacts are not occurring now or in the recent past, but facility managers should be aware of the potential, and of any changes in the frequency or nature of access.

If the receiver station were to disappear tomorrow and the staff never return, there would still be eyes watching the land. On Moloka'i, there is also a strong tendency to *maka'ala*, or be vigilant. This may not prevent all potential damage to sites, but does present a powerful disincentive to locals who might do anything, and a good means of identifying outsiders. There is no anonymity on this island, and that fact may be better protection than gates or barriers. In fact, were the Air Force to erect barriers, some Hawaiians would inevitably perceive it as an unjust or hostile act.

## **Preservation and Mitigation Strategies**

The fact that sites in the project area do not occur in the same physical space as the receiver station facilities makes cultural resource management much easier. Rather than formulate detailed data recovery plans for sites, they may be preserved in place. Furthermore, Air Force and Hawaiian interests coincide as far as the character of preservation, since neither has a great interest in opening sites to tourism or other active interpretation. The primary issues facing cultural resource management are erosion and community relations. Short and long term measures addressing those issues are discussed in this section.

Though adapted to the unique cultural and physical environment of the Molokai Receiver Station, site treatment strategies proposed here do not depart from the process or intent expressed in Volume 5 (Management of Prehistoric Archaeological Resources) in the *Final Integrated Cultural Resources Management Plan, Vandenberg Air Force Base* (hereafter referred to as the ICRMP VAFB), and more generally with any appropriate triggering of Section 106 oversight of federal undertakings. The most pertinent sections of that document are Chapters 7 and 8, which describe procedures for monitoring and inadvertent finds of human burials, respectively, and which are paraphrased below under **Procedures for Inadvertent Discoveries** below. Interested parties are directed to the ICRMP VAFB for more detailed accounts, but this document will allow cultural resource managers to proceed at the Molokai Receiver Station.

### **Cultural Resource Management Areas**

For decades, cultural resource management has focused on sites as units. Sites have been defined in widely divergent ways in Hawai'i, most often as individual features or closely spaced clusters of features. Preserved sites here generally consist of surface features surrounded by a buffer of 5 – 10 meters. Cultural properties that straddle land boundaries or were recorded inconsistently over a span of decades has resulted in multiple site numbers for what are in reality continuous sites. (An

example occurs in this project area, where the supplemental inventory a rock wall complex recorded as Site 843 comes within 20-m of Site 1623.) While this may be a useful approach for minimizing restrictions on grading or construction, it often results in fragmented cultural landscape, an archipelago of site-islands amid a transformed landscape. While such outcomes may be the best that can be hoped for in some situations—cultural resource preservation being but one factor in modern land use decisions—they fail in terms of the intent of federal preservation rules, which stress the *integrity* of sites, not just of each discrete feature component, but of the spaces between them, the landscape around them, and even less tangible characteristics like the “feeling” of a place.

In the current project area, pressures for development and other modes of land use that could cause impacts are low, and there is an opportunity to apply a cultural landscapes orientation. In this, archaeological features are considered in relation to the surrounding physical landscape, the history of human land use, and the cultural significance of natural and man-made attributes of the land now and in the past.

Another trend in cultural resource management is to integrate with Geographic Information Systems (GIS), in which maps and data converge to create a powerful management and information tool. Typically, a GIS is arranged in layers, such as topography, roads, or cultural resources. Although extremely small sites could form *points* in a GIS, and trails may be treated as *lines*, most sites are best conceived of as *areas*, an extent of space with defined boundaries.

Combining the cultural landscape orientation with GIS, it is clear that the best route for managing cultural resources at the receiver station is to define Cultural Resource Management Areas (CRMA). At first glance, these may appear to be sites, but they differ in several respects. First, the CRMA is not limited to the extent of an archaeological site; that is, it does not end at some set radius from the outermost surface feature. The CRMAs proposed here consider landforms and viewplanes, placing material cultural remains within a broader context. Also, CRMAs may include multiple sites. The CRMA serves as a management tool; while it does not do away with or replace site numbers, it does form a more convenient GIS area, one that better reflects the distribution of cultural resources across space and their relation to landscapes as a whole than individual site labels.

Looking at Site 1623, for example, many archaeologists would have defined each individual shrine structure as a site because of the “empty” distance between them. As it stands, the official site boundary extends no further than the receiver parcel east boundary, and is defined by the horizontal extent of two shrine structures and historic dumps. Since Phelps counted five shrines, the two that were recorded in 1994 represent just a portion of the overall shrine complex, and it probably extends into the neighboring parcel. It is also possible, given the limited precision of Phelps’ report, that a portion of Feature 1 in Site 843 may also be one of the shrines. Stepping back from the archaeological sites to look at the landscape, it is clear that the two Site 1623 shrines occupy a low, wide depression in the natural terrain, the northwestern end of which runs through the possible shrine in Site 843 before descending into Mane’opapa Gulch.

Figure 23 depicts the “Pu’u Kapele CRMA,” which would include Sites 1623 and 843, encompassing shrines and rock walls, as well as unrecorded sites and Pu’u Kapele to the north. Note that the eastern boundary currently corresponds with the receiver parcel eastern boundary. If an agreement can be reached with the homesteader adjacent to the property, the CRMA should be extended in that direction. The “Western CRMA” occupies a portion of the gulch along the western

side of the project parcel, as well as a small portion of the old community pasture beyond the parcel boundary. The upper elevation limit has been set to encompass the boulders, while the *makai* end utilizes an old dirt road corridor as a convenient boundary.

FIGURE 25 REMOVED TO APPENDIX B

The importance of working together with DHHL is underlined by the fact that all three sites in the project area cross the boundaries into DHHL parcels. Because the general approach to managing cultural resources here—avoidance with some monitoring—it should be easy to come to agreement, and maintaining the relationship should be simple on the part of both the Air Force and DHHL. The reward of cooperation will come in the preservation of culturally and archaeologically significant sites.

### **Short Term Preservation Measures**

The location of cultural resources at the edges of the project area, not coinciding in space with receiver facilities, means that no change in normal operations is required. Measures that contribute to preservation in the near future include:

- ❖ Establish Cultural Resource Management Areas (CRMAs)
- ❖ Get GPS locations of archaeologically and culturally significant features and integrate data into 30 CES/CEVPC's GIS layer supporting archaeological coverage
- ❖ Avoid grading or construction in CRMAs
- ❖ Establish cooperative relationship with DHHL

Avoidance of the cultural sites, which has never been a formal policy, should simply continue with a more explicit recognition of the sensitive areas. Toward this end, maps in this report depict CRMAs, and the Air Force should incorporate these areas into GIS layers of the receiver station, which should also include survey and GPS of the station boundaries. At present, it appears that only Site 843 has had coordinates recorded using GPS; reference points on other archaeological features should be so recorded, as well as the boulders in the western gulch and the Pu'u Kapele benchmark.

Cultural Landscapes does not recommend erecting fencing or other physical markers at this time, since this would impinge on view planes and the rural character of the landscape, as well as increase the potential for impacts to cultural resources. Marking CRMA boundaries and feature locations on facility maps and in GIS records, and providing coordinates and maps to the Hawai'i SHPD will suffice to locate them. The SHPD generally advises placement of site buffer markers (typically, orange plastic fencing) in the field, but to do so in this case would require over a kilometer for the Pu'u Kapele CRMA perimeter alone, and would detract from the integrity of this rural landscape. By using extant dirt roads and geological formations as boundaries, we have incorporated landmarks as site buffer markers.



Cultural Landscapes recommends that the dirt road down the east edge of the property remain open to allow vehicle access to Pu'u Kapele. This road is clearly defined, and there is no reason to erect fencing or other barriers. Instead, the Air Force should develop a relationship with DHHL so that access rights can be protected, behaviors that could cause impacts to cultural resources are discouraged, and cultural resources can be managed in a manner consistent with Hawaiian values and surrounding lands. This could take the form of a Memorandum of Agreement or other such document, but may be just as well served by maintaining communication as needed and avoiding what are often seen on Moloka'i as bureaucratic irrelevancies. Support the local impetus to *maka'ala*.

Preparation of this plan has involved consultation with DHHL (including Moloka'i Land Manager George Maioho) and individual homesteaders. It is recommended that the Air Force establish a relationship with DHHL so that the cultural resources extending beyond the current project area may be managed in a consistent manner. Individuals and organizations with a stake in the treatment of cultural resources are listed in Appendix B of this document. To provide a focus around which the relationship may build, it is recommended that the Air Force seek DHHL cooperation in ethnographic research regarding the boulders of the western gulch, Mane'opapa Gulch and the Site 843 rock wall complex, Pu'u Kapele, the Site 1623 shrine complex, and the homestead era use of the project area. The Air Force and DHHL have complementary resources and a common goal in managing cultural resources.

### **Long Term Preservation Measures**

Cultural resources in the project area should be preserved. Because most of them occur both within the receiver station parcel and homestead lands (including an individual lot and unleased commons), long-term management is best served by maintaining a working relationship with DHHL. Neither that Department nor individual Native Hawaiians consulted during preparation of this plan express any desire to treat the sites as an interpretive resource, or to encourage tourism or visitation, especially by non-Homesteaders. This and the fact that erosion appears not to be a hazard for integrity of most features mean that the major long term strategy should remain the same as the near term: avoidance. Cultural Landscapes recommends that long term measures include:

- ❖ **Maintain relationship with DHHL.** Continue communication with the Department with regard to resource management issues for the parcel, and work toward integrated management of sites straddling the Receiver Station boundaries. Toward this end, cooperate with DHHL in completing inventory, evaluation, and treatment recommendations for sites in the narrow coastal tier north of the Receiver Station; this would be most efficiently accomplished in tandem with the next recommendation, and represents a relatively small project.
- ❖ **Record oral history.** Identify knowledgeable individuals and interview them regarding north Pālā'au in general, and about specific topics including: the sweet potato shrines, place names, medicinal resources, Pu'u Kapele, historic Homesteader use of the area, Cables, and World War II.
- ❖ **Incorporate CRM principles into facility planning.** Maintain CRMA boundaries and site locations in a GIS. Avoid these areas in future undertakings. Continue to solicit community input for issues concerning cultural resources.

- ❖ **Monitor CRMA conditions.** Erosion presents the only likely source of adverse effects to archaeological sites, but the various mitigation measures available (geotextile stabilization, animal enclosure fencing, and revegetation) are problematic in this windswept, dry environment. Archaeological monitoring of CRMAs at five-year intervals should result in identification of developing erosional impacts, and also for salvage of data from actively eroding deposits. Monitoring should include visits to each recorded feature in the Receiver Station parcel. There are currently local residents with sufficient archaeological training to do this, although discovery of previously unknown deposits requiring inventory or major damage requiring mitigation would require a qualified Principal Investigator become involved directly.

### **Cultural Resources Monitoring and Treatment of Archaeological Discoveries**

Although archaeological sites with surface traces have been recorded and the entire project area has been surveyed, it is possible that buried deposits or features, or surface artifact scatters hidden by vegetation could turn up in the future. Based on findings thus far and settlement pattern models for Moloka'i, no substantial discoveries are likely.

The current ICRMP is not being developed in anticipation of any potentially damaging undertakings at the Molokai Receiver Station, and should such plans emerge in the future, the existence of CRMAs should help avert the potential for impacts. However, should any such undertaking occur, construction and Native Hawaiian monitoring must occur as a means of protecting sites and ensuring the discovery and assessment of any unexpected or new finds. Much of the information provided in this section is general and is modified from the VAFB ICRMP Vol. 5 which will need to be consulted for specific requirements should any archaeological survey, data recovery, or stabilization projects be undertaken at the Molokai Receiver Station.

It is Vandenberg AFB policy to monitor potentially destructive construction activities within or near CRMA's and all known archaeological sites, regardless of a site's status under the NHPA. This policy was developed for several reasons. First, sites that are ineligible for the NRHP might have values important to the Hawaiian community. Second, ineligible sites are still subject to ARPA and monitoring reduces the likelihood of ARPA violations by construction personnel. Third, it is possible for ineligible sites to contain undetected features or cultural deposits that would be overlooked if monitors were not present (ICRMP VAFB, Section 7).

The goals of monitoring are to keep construction activity limited to the designated Area of Potential Effect (APE), to ensure that sites are marked and avoided, to find previously unknown sites, and to deter ARPA violations (ICRMP VAFB, Section 7-2). Monitoring will occur if the APE passes within 60 meters of the CRMA boundary. If cultural resources outside of the APE are highly visible, monitoring may be necessary, even if the site is more than 60 meters away, to help deter vandalism and artifact collection. Decisions as to where monitoring will occur relative to sites and isolated artifacts are made by the 30 CES/CEVPC. Those decisions are typically made during the Section 106 and/or the NEPA compliance process. In addition, Native Hawaiian monitoring will occur during construction as well as any archaeological excavation (*ibid.*, Section 7-1); in the past, this has been

accomplished by hiring residents from the local pool of experienced field assistants to participate in archaeological projects.

**Pre-field Preparation for Monitors:** Monitoring during construction, or for preservation measures associated with CRMA condition assessment, requires pre-field preparation. The monitor must have information about archaeological studies completed at the site in order to anticipate possible discoveries. The monitor should have maps showing site boundaries and excavation unit locations, stratigraphic profiles, descriptions of the types of artifacts that were recovered, and descriptions of features. The 30 CES/CEVPC will provide monitors for construction efforts with copies of SHPD correspondence that identifies project requirements. The 30 CES/CEVPC will also provide copies of project maps and conditions of approval attached to the project's 35 SW Form 35 and/or Form 813.

Monitors for construction efforts should have the name and telephone number of the 30 CES/CEVPC archaeologist and other persons authorized to issue a stop work order in the event that an archaeological discovery halts work for an extended period of time. Monitors should have shovels, screens, trowels and other tools needed on the job site in order to make initial assessments of site significance should cultural deposits be discovered.

**Monitoring Field Work:** If unexpected cultural constituents or features are observed, monitors must make an initial assessment of the deposit's significance to determine if additional investigations are warranted. Monitors will collect cultural materials only if they are unexpected and are temporally or functionally diagnostic, or are otherwise unusual. Cultural resource construction monitors have the authority to temporarily stop all ground disturbing activities in the immediate vicinity to examine potentially significant archaeological materials, and can redirect construction efforts to another non-sensitive location if necessary.

If unanticipated cultural deposits are discovered and the monitor determines that further investigations may be warranted, the monitor should immediately notify the 30 CES/CEVPC project manager. In the case of construction monitoring, the project's Contracting Officer at VAFB is the only person authorized to stop construction work for extended periods; therefore, if the 30th CES/CEVPC project manager determines that further investigations are warranted based on the monitors verbal report, the project manager will make the call to the Contracting Officer. Depending on the nature of the cultural deposits encountered, the project manager will also coordinate with the SHPD and/or the Maui Burial Council in determining appropriate action.

**Monitoring Report:** If no unexpected cultural deposits are discovered, a report documenting the monitoring effort should be prepared that clearly states this. If monitoring was simple and involved only one or two sites, the Site Visit/Monitoring Summary form and Daily Monitoring Record (Mo-You will need to add or recreate these forms to document- see ICRMP, Vol 5, Page 7-7, 7-8) can be submitted as the monitoring report. It should be accompanied by a cover letter. If the monitoring was more comprehensive, the report will be in letter format that includes information asked in the Site Visit/Monitoring Summary & Monitoring Record, and will also summarize associated archaeological studies (if any). For both types of reports, a map showing the general project location and a second map (or set of maps) showing the specific monitoring locations must be appended. The report should also include: type and scope of construction (e.g., length and depth of trenching) or condition assessment; soils and/or sediments (including Munsell colors and texture); evidence of disturbance; time construction was stopped to

investigate deposits; photodocumentation on color slide film including pictures of construction crews and/or CRMA monitors at work, the general work area, direction of the view, and electronic files of the photographs will be provided to the 30 CES/CEVPC.

If unexpected cultural deposits are discovered, treatment of that discovery will follow standards outlined in Section 7.3, Volume 5 of the VAFB ICRMP. In that case, description of the monitoring effort will be incorporated into a report documenting the specific archaeological treatment. A CRMA condition assessment monitoring report must recommend whether the deposit may be stabilized or mitigated through data recovery. Because the expectation that any inadvertent finds in the vicinity of the Receiver Station will consist of a small number of flakes and/or sparse midden, and because the project area is relatively remote, the most practical approach is for the archaeologist to implement recommendation measures in the field during the same trip. The 30 CES/CEVPC project manager will make the final decision as to implementation of archaeological treatment and timing of that treatment.

### **Burial Treatment Plan**

Archaeological survey has not identified burials in the project area, and thus far no living people have indicated that any are present. It is conceivable that the apparent house feature at Site 1624 could have an interior sub-floor burial, or that one or more burials could be found in or near the Site 1623 or 843 shrines. However, with the stable sediments and planned preservation of these sites, there is almost no possibility of burials being found.

The proposed measures in this plan comply with both Federal and Hawaii State laws and rules, which prevent the intentional damage of human remains, burial features, and burial goods. While the ICRMP VAFB provides an excellent and detailed account of relevant federal legislation and rules in Chapter 8, the proposed treatment of preserving sites in place and the low likelihood of any inadvertent burial finds make a recapitulation unnecessary here, and readers are referred to that document for details. The Hawaii Burials Act of 1990 and the associated rules (Hawaii Administrative Rules 13-13-300) specify the procedures to be followed with regard to inadvertent burial discoveries. Rather than repeat the statutory and administrative language relevant to all contingencies, however, the current ICRMP recommends that all human remains, burial features, and burial goods be preserved in place without intrusive excavation, osteological study, or removal.

In the unlikely event that facility operations or erosion results in inadvertent discovery of human remains, Cultural Landscapes recommends that any work in the vicinity be halted, and that the remains be covered while SHPD and the Moloka'i Island Burial Council are notified. At the present time, there are no registered lineal descendants for the vicinity, and to the knowledge of Cultural Landscapes, no unregistered descendants who claim ancestral burials in the Molokai Receiver Station parcel, but the Moloka'i Island Burial Council provides a venue where interested parties customarily make their views known. Unless the Council and SHPD advise otherwise, the policy should be to re-bury and stabilize any burials, after first searching the area for bones or burial goods that may have been scattered, and reintering them with the main burial. There is no compelling reason for the Air Force to seek disinterment and relocation. The Burial Council can provide guidance on cultural protocol and blessings. Following any inadvertent find and subsequent measures, a letter should be submitted to the Burial Council and SHPD.

## REFERENCES

- Alexander, W. D. [Surveyor General]  
1897 Map of Molokai. Scale 1:60,000. Hawaii Government Survey.
- Athens, J. Stephen  
1985 *Prehistoric Investigations at an Inland Site on the Leeward Slopes of Central Molokai*. Ms. on file in SHPD Library, Honolulu.
- Barrera Jr., William  
1982 *Kaluakoi, West Molokai: Archaeological Investigations*. Prepared for Kalua Koi Corporation by Chiniago, Inc., Honolulu. Ms. on file in SHPD Library, Honolulu.
- Beckwith, Martha W.  
1940 *Hawaiian Mythology*. Yale University Press, New Haven.
- Bonk, William  
1954 *Archaeological Excavations on West Moloka'i*. M.A. Thesis, University of Hawai'i at Mānoa, Honolulu.
- Carlson, Norman K.  
1952 *Palaau and the Saltwater Fishponds of Molokai*. Ms. on file in Bishop Museum Archives, Honolulu.
- Cartwright, Bruce  
1927 *Place Names on Moloka'i*. Ms. on file in Bishop Museum Archives, Honolulu.
- Cole, Alexandra and Chantal Cagle  
1995 *Historical Eligibility Evaluation of Molokai High Frequency Site*. Prepared by Science Applications International Corporation for ITT Federal Services Corporation. Ms. on file, SHPD library, Kapolei.
- Cooke, George P.  
1949 *Moolelo o Molokai: A Ranch Story of Molokai*. Honolulu Star Bulletin.
- Cooke, Sophie  
1964 *Sincerely, Sophie*. Tongg Publishing, Honolulu.
- Dixon, Boyd, Maurice Major, Michael Price, Alan Carpenter, Cary Stine, and Bruce Longton  
1993 "Changes in Lithic Tool Procurement and Dryland Agricultural Strategies as a Response to Production Demands." *Bishop Museum Occasional Papers* 39, Bishop Museum Press, Honolulu.
- Dixon, Boyd, and Maurice Major  
1993 *Kapukahehu to Pu'uhakina: An Archaeological Inventory Survey of Southwest Moloka'i, Hawai'i*. Ms. on file, Anthropology Department, Bishop Museum, Honolulu.

- Dye, Tom, Marshall Weisler, and Mary Riford  
 1985 *Adze Quarries on Moloka'i and O'ahu, Hawaiian Islands*. Ms. in Bishop Museum Archives, Honolulu.
- Emory, Kenneth  
 1922a Field Notebook. On file at Bishop Museum Archives, Honolulu.
- 1922b *Report to the Director*. [Concerning West Moloka'i] Ms. on file at Bishop Museum Archives, Honolulu.
- 1952 Field Notebook. On file at Bishop Museum Archives, Honolulu.
- Foote, Donald E., Elmer Hill, Sakuichi Nakamura, and Floyd Stephens  
 1972 *Soil Survey Manual of the Islands of Kauai, Oahu, Maui, Molokai and Lanai, State of Hawai'i*. USDA Soil Conservation Service, U.S. Government Printing Office, Washington, D.C.
- Fornander, Abraham  
 1880 *An Account of the Polynesian Race and its Origin and Migrations*. Vol. 2. Trubner and Co., Ludgate Hill, London.
- 1917 *Hawaiian Antiquities and Folk-Lore*. B. P. Bishop Museum Memoirs, Vol. 4. Honolulu.
- Fowke, Gerald  
 1922 *Archaeological Investigations: Archaeological work in Hawaii*. Smithsonian Institution, Bureau of American Ethnology, Bulletin 76, pp. 174-182. Government Printing Office, Washington.
- Handy, E. S. Craighill, and Elizabeth Green Handy  
 1972 *Native Planters in Old Hawaii Their Life, Lore, and Environment*. Bernice Pauahi Bishop Museum Bulletin 233. Bishop Museum Press, Honolulu.
- Hartzell, Leslie  
 2000 *The Pu'ukaPele Rock Wall Complex: Supplemental Archaeological Inventory Survey, USAF Receiver Station, Island of Moloka'i, Maui County, Hawai'i*. Prepared for USAF Vandenberg AFB, 30 CES/CEVPC by the Anthropology Department, Bernice Pauahi Bishop Museum, Honolulu. Ms. on file at SHPD library, Kapolei and Anthropology Department, Bishop Museum, Honolulu.
- Johnson, Kevin, Boyd Dixon and Maurice Major  
 1993 *Geochemical Sourcing of Artifacts in Southwest Moloka'i*. Paper presented at the sixth annual Society for Hawaiian Archaeology Conference in Kaluako'i, Moloka'i, Hawai'i.
- Judd IV, G. P.  
 1936 *Puleoo: The Story of Molokai*. Porter Printing, Honolulu.
- Ka'imikaua, John  
 1994 *Ka Hula Piko*. Lectures delivered at Kaluako'i Resort in association with the Fourth Annual Moloka'i Ka Hula Piko Hula Festival, Kaluako'i, Moloka'i.

- Kamakau, Samuel M.  
1961 *Ruling Chiefs of Hawaii*. Kamehameha Schools Press, Honolulu.
- 1991 *Tales and Traditions of the People of Old*. Bishop Museum Special Publication 64. Bishop Museum Press, Honolulu.
- Kame'eleihiwa, Lilikalā  
1992 *Native Lands and Foreign Desires*. Bishop Museum Press, Honolulu.
- Kay, E. Alison  
1979 *Hawaiian Marine Shells*. Bernice Pauahi Bishop Museum Special Publication 64(4). Bishop Museum Press, Honolulu.
- Keesing, Felix  
1936 *Hawaiian Homesteading on Molokai*. University of Hawaii Research Publications, No. 12, vol. 1 no. 3.
- Kent, Harold W., Ed.  
1972 *Charles Reed Bishop Letter File*. Bishop Museum Press, Honolulu.
- Kirch, Patrick V.  
1985 *Feathered Gods and Fishhooks*. University of Hawaii Press, Honolulu.
- Lee, Pali Jae, and Koko Willis  
1994 *Tales from the Night Rainbow*. Revised and Enlarged Edition. Night Rainbow Publishing, Honolulu.
- Major, Maurice  
2000 *Archaeological Inventory Survey at Kukui Summit, Ahupua'a of Kaluako'i, Moloka'i*. Prepared for Molokai Ranch, Ltd. by Cultural Landscapes. Ms. on file in SHPD library, Kapolei.
- Major, Maurice, and Boyd Dixon  
1993 *Archaeological Reconnaissance from Halena to Kaumanamana Point, Kaluako'i Ahupua'a, Moloka'i, Hawai'i*. Prepared for Molokai Ranch, Ltd. by Anthropology Department, Bernice Pauahi Bishop Museum. Ms. on file, SHPD library, Kapolei and Anthropology Department, Bishop Museum, Honolulu.
- 1995 *Archaeological Survey and Evaluation USAF Receiver Station Ho'olehua, Moloka'i, Maui County, Hawai'i*. Prepared for National Park Service Western Regional Office by Anthropology Department, Bernice Pauahi Bishop Museum. Ms. on file in SHPD library, Kapolei and Bishop Museum, Honolulu
- Malo, David  
1951 *Hawaiian Antiquities*. Bishop Museum Press, Honolulu.
- Monsarrat, M. D.  
1886 Map of Western and Central Molokai. Reg. No. 1259. In Hawaii State Archives, Honolulu.

Nakaa, G. W.

1893 "He Mo'olelo Hawai'i." *Ka Nupepa Ku'oko'a*, April 29. Translation by Dorothy B. Barrere. Ms. on file in Bishop Museum Archives, Honolulu.

Nakuina, Moses

1992 *The Wind Gourd of La'amaumau*. Kalamakū Press, Honolulu.

The Nature Conservancy of Hawai'i

1994 *Moloka'i Receiver Station Biological Survey*. MS prepared for Environmental Management Department, Vandenberg Air Force Base.

Ne, Harriet

1981 *Legends of Molokai*. Topgallant Press, Honolulu.

1982 *Brief Cultural History of Portions of the Ahupua'a of Ka Lua Ko'i, Moloka'i*. Ms. On file at Bishop Museum Archives, Honolulu.

1992 *Tales of Molokai: The Voice of Harriet Ne*. Institute for Polynesian Studies, La'ie, Hawai'i.

Neller, Earl

1982 *An Archaeological Reconnaissance of Proposed Marine Corps Training Areas on Moloka'i: Palaau (Hoolehua), Kalamaula, and Kapaakea Kamiloloa*. Prepared for United States Marine Corps. Ms. on file in SHPD library, Kapolei.

Olson, Storrs, and Helen James

1984 "The Role of Polynesians in the Extinction of the Avifauna of the Hawaiian Islands." In *Quaternary Extinctions: A prehistoric revolution*. P. S. Martin and H. F. James, editors. Pp. 768-780. University of Arizona Press.

Pantaleo, Jeffrey

n.d. Fieldbook and notes on reconnaissance survey on the south coast of Moloka'i. Ms. on file, Anthropology Department, Bishop Museum, Honolulu.

Phelps, Southwick

1937a Annotated 1922 USGS Kualapuu Quad advance sheet. In Bishop Museum Archives.

1937b Letter to parents, dated September 17, 1937. On file in Bishop Museum Archives.

1937c Letter to parents, dated September 29, 1937. On file in Bishop Museum Archives.

1940 *A Regional Study of Molokai*. Ms. on file in Bishop Museum Archives, Honolulu.



- Poepoe, Joseph Mokuohai  
 1906 "Mo'olelo no Kamehameha." *Ka Na'i Aupuni*, May 14. (Translated by E. P. Sterling) Ms. on file in Bishop Museum Archives.
- Pukui Mary Kawena, and Samuel Elbert  
 1986 *Hawaiian Dictionary Revised and Expanded Edition*. University of Hawaii Press, Honolulu.
- Pukui, Mary Kawena, Samuel Elbert, and Esther Mookini  
 1974 *Place Names of Hawaii Revised and Expanded Edition*. University of Hawaii Press, Honolulu.
- Rice, William H.  
 1923 *Hawaiian Legends*. Bernice Pauahi Bishop Museum Bulletin 3. Bishop Museum Press, Honolulu.
- SA (Honolulu Star Bulletin and Advertiser)  
 1964 "Army Training on Molokai." April 19. P. A7:1.
- S-B (Honolulu Star Bulletin)  
 1935 "Pine Record Set on Molokai." August 21. p. 1
- 1937 "Ready to Sell Corn." May 11. p. 3.
- 1939 "National Guard Armory." March 1. p. 15.
- 1940 "Potential Food Basket." March 27. p. 9.
- 1958 "Salt Crops." May 6. p. 23:3.
- 1960 "Poacher Raid." November 6. p. 1:1.
- 1967 "Hoolehua Potatoes." February 1. p. B1:4.
- Schlanger, Sarah H.  
 1992 "Recognizing Persistent Places in Anasazi Settlement Systems." In *Space, Time, and Archaeological Landscapes*. Edited by J. Rossignol and L. Wandsnider, pp. 91-112. Plenum Press, New York.
- Stokes, John F. G.  
 1909 *Molokai, Survey of Heiau*. Ms. on file at Bishop Museum Archives, Honolulu.
- Summers, Catherine C.  
 1971 *Molokai: A Site Survey*. Pacific Anthropological Records No. 14, Anthropology Department, Bishop Museum, Honolulu.
- USGS (United States Geological Survey)  
 1923 Mahana Map. Scale: 1:31,680.
- 1983 Molokai West Map. Scale: 1:25,000, metric.

Wagner, Warren, D. R. Herbst, and S. H. Somer  
1990 *Manual of the Flowering Plants of Hawaii*. Bishop Museum Press, Honolulu.

Weisler, Marshall

1984 *Impressions of Prehistory: An Archaeological Survey of Selected Areas of Southwest Moloka'i, Hawaiian Islands*. Ms. on file, Anthropology Department, Bishop Museum, Honolulu.

1987a *A Second Look at the Archaeology of Kawakiu Nui, West Moloka'i, Hawaiian Islands*. Prepared for Kaluako'i Corporation by Archaeological Consulting and Research Services, Seattle. Ms. on file in SHPD library, Kapolei.

1987b *Inventory, Significance, and Management of the Archaeological Resources of Northwest Moloka'i, Hawaiian Islands*. Prepared for Kaluako'i Corporation by Archaeological Consulting and Research Services, Seattle. Ms. on file in SHPD library, Kapolei.

1989a Chronometric Dating and Late Holocene Prehistory in the Hawaiian Islands: A Critical Review of Radiocarbon Dates from Moloka'i Island. *Radiocarbon* 31(2):121-145.

1989b *An Intensive Archaeological Survey of Kipu, Moloka'i*. Prepared for Molokai Golf, Inc., by Archaeological Research and Consulting Services, Berkeley, California.

1989c *Archaeological Investigations of the Kaunakakai Field System, South Central Molokai*. Prepared by Archaeological Consulting and Research Services, Seattle. Ms. on file in SHPD library, Kapolei.

1993 Provenance Studies of Polynesian Basalt Adze Material: A Review and Suggestions for Improving Regional Data Bases. *Asian Perspectives* 32(1):61-83.

Weisler, Marshall and Robert Gargett

1993 Pacific Island Avian Extinctions: The Taphonomy of Human Predation. *Archaeology in Oceania* 28:85-93

Weisler, Marshall and Patrick V. Kirch

1985 The Structure of Settlement Space in a Polynesian Chiefdom: Kawela, Moloka'i, Hawaiian Islands. *New Zealand Journal of Archaeology* 7:129-158.

## APPENDIX A

### Contact Information for Cultural Resource Managers

Office of Hawaiian Affairs  
P.O. Box 1717  
Kaunakakai, HI 96748  
Phone: (808) 560-3611  
Fax: (808) 560-3968

Contact People: Collette Machado (Moloka'i Trustee) and Hālonā Ka'opuiki  
(Cultural Program Assistant)

Department of Hawaiian Home Lands  
Planning Division  
Department of Hawaiian Home Lands  
1099 Alakea Street, Suite 2000  
Honolulu, Hawaii 96813  
Phone: (808) 586-3836

Department of Hawaiian Home Lands  
Molokai District Office  
PO Box 2009  
Kaunakakai, Hawaii 96748  
Phone: (808) 560-6104  
Fax: (808) 560-6665  
Contact Person: George Maioho (Supervisor)

Molokai Receiver Station  
Ho'olehua, HI 96748  
Phone: (808) 567-6554  
Contact Person: Henry Bush (Supervisor)

State Historic Preservation Division  
Burials Program (**This is also the contact for the Moloka'i Island Burial Council**)  
P.O. Box 621  
Honolulu, HI 96809  
Phone: (808) 692-8015  
Fax: (808) 692-8020  
Contact Person: Position Vacant

Mac Poepoe (Interested party, archaeological field assistant)  
Kualapu'u, HI 96757  
Phone: (808) 567-6150

Louella Albino (Interested party, Burial Council member)  
Kualapu'u, HI 96757  
Phone: (808) 567-6861

Lawrence Aki (Interested Party, Burial Council member)  
Phone: (808) 553-9803

# APPENDIX C

## Glossary

*ahupua'a* - the name for traditional land districts

*'akia* – a native plant used for fiber and fish poison (*Wikstroemia* spp.)

*'akoko* – a native shrub used for firewood (*Euphorbia* spp.),

*alaea* - ochrous red clay deposits used in traditional medicines

*alaia* – a type of surfboard

*hālau wa'a*, or canoe shed

*ha'uke'uke* – *Heterocentrus mammilatus*, or helmet urchin

*heiau* (sacred site, temple)

*Ho'olehua* - the name of a traditional district, and of a chief in oral history

*'ilima* – a native shrub (*Sida fallax*)

*Īloli* – the name of a traditional district, and of a chief oral history

*imu* – ground oven

*kalo* – taro or eddo (*Colocasia esculenta*),

*Kaluako'i* – a traditional district whose name means “the adze pit”

*kāpele* – large, like an abdomen

*kapu* – taboo, restricted

*kiawe* – an introduced tree (*Prosopis pallida*)

*ko'a* – shrine, fishing shrine

*koa'e* – the red or white-tailed tropicbird (*Phaethon* spp.)

*koa haole* – an introduced small tree (*Leucana leucocephala*)

*kolū* – an introduced shrub (*Acacia farnesiana*)

*kumu hula* – teacher or master of ancient chants and dances

*mai'a* – banana (*Musa paradisiaca*),

*maka'ala* – to be vigilant

*makai* – seaward

*mālama* – take care of

*mana'o* – thought, theory

*mane'o* – itchy

*mauka* (inland)

*naiwa* – a fern named for the district of Naiwa

*nāulu* – sudden rain showers, typically caused by convection

*naupaka* – a native plant (*Scaevola taccada*)

*nēnē* – the native Hawaiian goose

*‘opihi* – Limpets (*Cellana* spp.)

*Pālā‘au* – the name of a traditional district, and of a chief in oral history

*pali* – cliff(s)

*papa* – a flat area

*pā‘ū-alaea* – a skirt of *alaea*

*pā‘ū o Hi‘iaka* – a native vine (*Jaquemontia sandwicensis*, Hi‘iaka’s skirt),

*pua kala* – “spiny flower,” the endemic poppy (*Argemone glauca*)

*pueo* – the Hawaiian owl, *Asio flammeus sandwichensis*,

*pu‘u* – hill

*tapu* – taboo, restrictions)

*‘uala* – sweet potato (*Ipomoea batatas*)

*uhi* – yam (*Dioscorea* spp.),

*ulu* – breadfruit (*Artocarpus altilis*)

## **APPENDIX D**

### **State of Hawaii Historic Preservation Statutes and Burial Rules**

#### **Part I: Historic Preservation and Burial Statutes**

Hawaii Revised Statutes, Chapter 6E covers historic preservation. They are attached on CD in this report and available online at:

[http://www.hawaii.gov/dlnr/hpd/hrs\\_6\\_e.htm](http://www.hawaii.gov/dlnr/hpd/hrs_6_e.htm)

Complete administrative rules governing historic preservation review in Hawai'i are listed at:

<http://www.hawaii.gov/dlnr/hpd/275-284.htm>

#### **Part II: Administrative Rules for Burials**

Attached on CD and available online at:

<http://www.hawaii.gov/dlnr/hpd/hpburials.htm>