

Phase II Archaeology Survey at Moku'ula: King Kamehameha III's Royal Residence, Lahaina, Maui

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Introduction

Moku'ula is the site of the private residential complex of King Kamehameha III from 1837 to 1845, when Lahaina was the capital of the kingdom of the Hawaiian Islands. The site was buried under about 60 cm of fill in 1914, and is now in the process of being rediscovered through community and governmental efforts.

Heritage Surveys, under the direction of Dr. Paul Christiaan Klieger, was contracted by the Friends of Moku'ula to conduct a Phase II Archaeological Survey at Moku'ula. This Phase II work supplements the previous Phase I Archaeological Inventory and Survey Excavation of Moku'ula undertaken by the Bishop Museum in 1993 (Klieger 1995). Dr. Susan A. Lebo was selected to be the principal archaeologist.

The present supplemental phase was designed to provide non-intrusive remote sensing data on, and subsurface verification of, the limits of the island of Moku'ula within Malu'ulu o Lele Park, Lahaina, Maui, Hawai'i. It was further designed to assist in revealing additional cultural features associated with the construction and utilization of Moku'ula by the Hawaiian royal family during the nineteenth century. The results and recommendations of the Phase I research (Klieger 1995), including extensive historical

information in the form of maps and descriptive accounts, provided the foundation for designing and implementing Phase II remote sensing survey and limited subsurface excavations. Metal structures (e.g., billboards, fences, electrical stations, water and sewer systems, playground equipment) impacted, but did not, prevent the recovery of significant subsurface cultural data pertaining to Moku'ula.

The Site

Moku'ula, Loko o Mokuhinia, and Hale Piula in Lahaina are collectively referred to in this report as "the site" (H.S. #50-50-03-2967). It is registered in the National Register of Historic Places as being coextensive with Tax Map Keys (TMK)2-4-6-07; Parcels 0 1, 02, 3 5, 3 6, 3 8, 41 and TMK 2- 4-6-02: Parcel 23; it is also on the State Register of Historic Places. The site includes the modern parcels of Malu'ulu o Lele Park, an adjacent parking lot that is primarily used by patrons of 505 Front Street, a vacant state parcel, and a beach front park known locally as Kamehameha Iki Park (Figure 1). It is bisected on the west by Front Street, which also during Kamehameha I's reign, separated the Hale Piula palace from the Moku'ula residences. The site is bounded today also by Mokuhinia Street on the north, Shaw Street on the south, and a stone wall to the east belonging to Wai'ola Church.

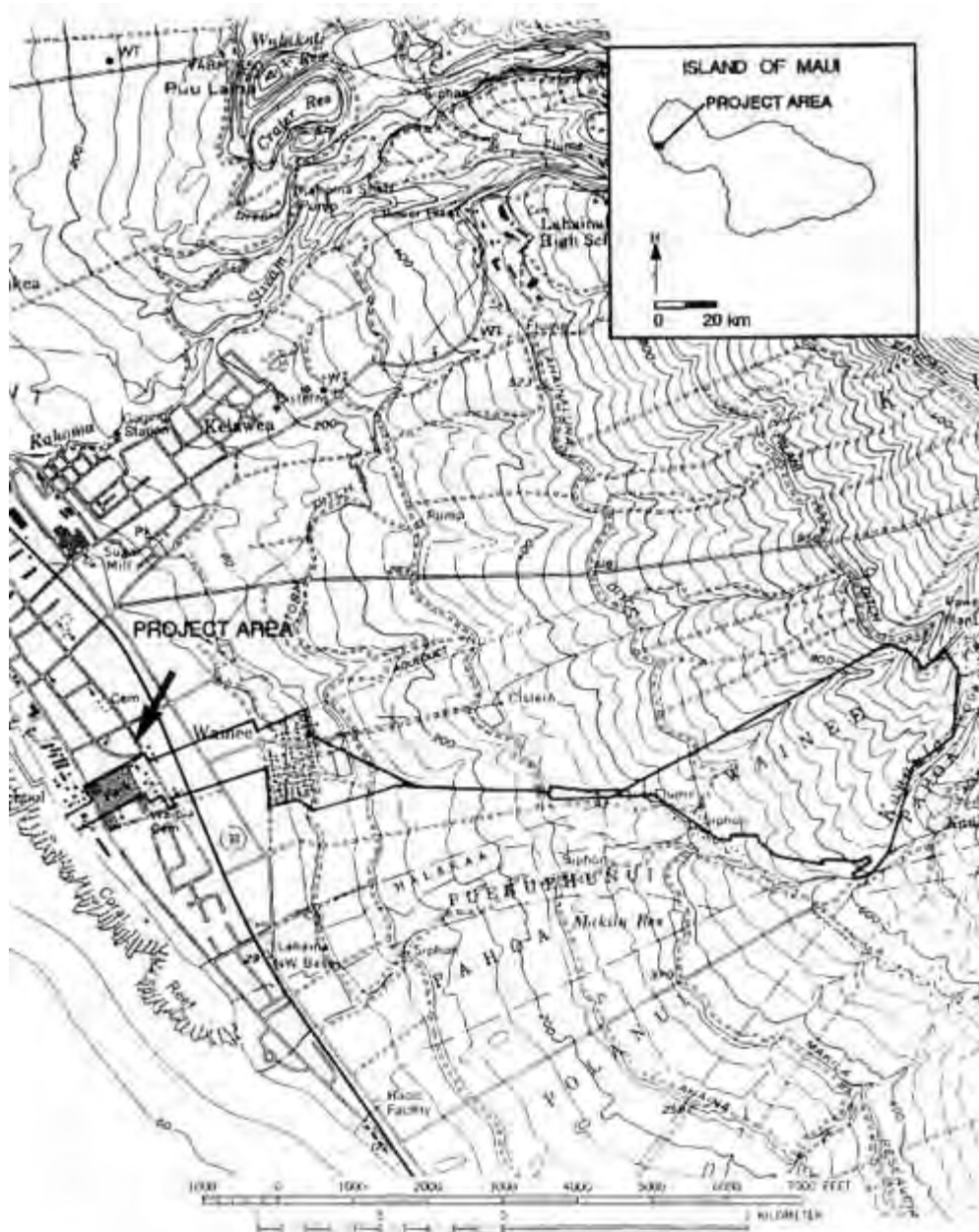


Figure 1. The Present Project Area and Waine'e Ahupua'a, Lahaina District, Island of Maui. U.S.G.S. Topographic Map 1:24000. (Klieger 1995)

The Loko o Mokuhinia probably once extended beyond these boundaries, especially to the north and south (Major et al. 1996). The location, also known as Kalua o Kiha (the pit of Kiha[wahine]), is highly significant as the royal residential complex of Kauikeaouli (r. 1825-1854). The site was especially important during the early nineteenth century when Lahaina was capital of the kingdom (1837-1845). The fishpond of Mokuhinla and possibly the island of Moku'ula have antecedent references in Hawaiian history going back to the Maui Chief Pi'ilani of the fifteenth century. The northern half of Moku'ula, containing the royal tomb, was abandoned in the late nineteenth century. The southern half of Moku'ula was abandoned in the 1970s. The entire complex was filled in and covered during the period between 1914 and the 1970s (Klieger 1995, 1998).

In addition to being on the state and national registers of historic places, the royal residence of Kauikeaouli is within the Lahaina Historic District, a group of 60 sites in Lahaina administered by the County of Maui Cultural

Resource Commission since 1962. This complex array of overlapping jurisdictions and tenures at the site underscores the need for exacting cooperation between various governmental agencies, nonprofit groups, and dedicated individuals. It is a precious historical and sacred place to a broad segment of the Maui community, and is recognized internationally as the seat of the Hawaiian kingdom in the early nineteenth century.

Historical Background

Moku'ula served as a political and religious center from ancient times in Hawai'i, through the emergence of the Maui kingdom, the unification of the islands, the introduction of Christianity, and the period when Lahaina was the capital of the Hawaiian kingdom. This sacred island, constructed in a freshwater pond-Loko o Mokuhinia, was the home of the lizard goddess Kihawahine. Kauikeaouli, who ruled as King Kamehameha III, resided in *hale pili* and in other structures on Moku'ula from 1837 to 1845, although a coral block palace called Hale Piula was erected for him fronting the beach makai of Moku'ula (Klieger 1998)(Figure 2).

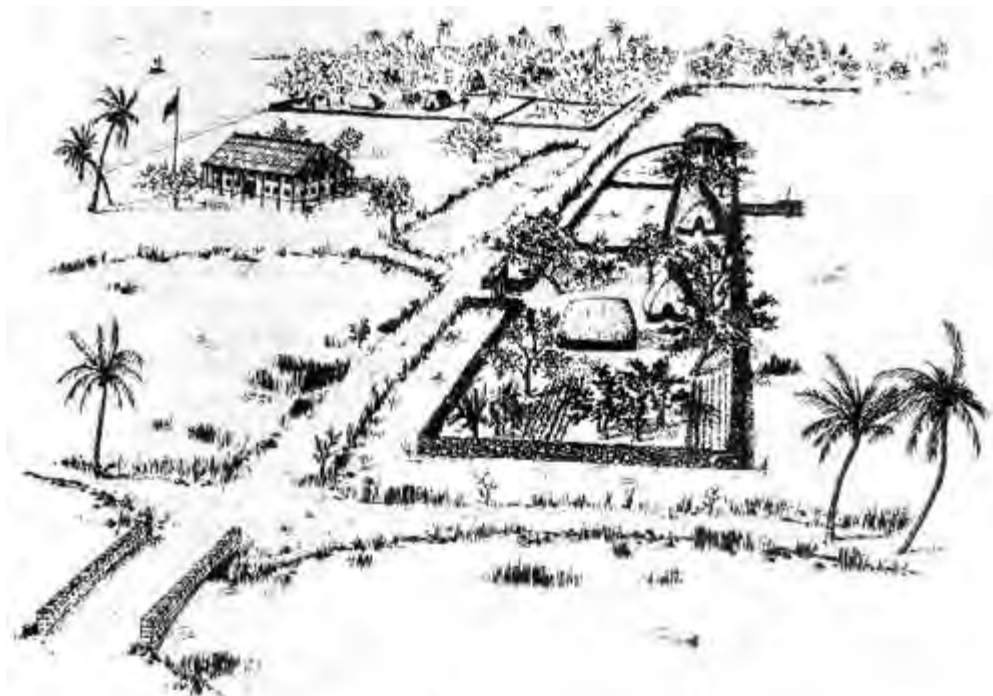


Figure 2. Artist's conception of the Moku'ula complex in the 1830s-1840s. (Klieger 1998)

Kihawahine was the *'aumakua*, or guardian, of Kauikeaouli and the royal family. For extensive information about the political and sacred history of Moku'ula, the reader is referred to *Moku'ula: Maui's Sacred Island* (Klieger 1998) and *Moku'ula: History and Archaeological Excavations at the Private Palace of King Kamehameha III in Lahaina, Maui* (Klieger 1995). These two resources present detailed historical and archaeological research of the sacred island of Moku'ula undertaken by the authors and other researchers during the past ten years (Klieger 1995, 1998).

Additional ethnographic data was obtained during the Phase II survey at Moku'ula. Many of these stories are sensitive, however, and consistent with Moku'ula being a place of burial and kapu. It is anticipated that some of this material will be presented at a later time. None of the stories related to the

authors, however, change the basic nature of the site.

Notable contemporary cultural activities since Klieger wrote *Moku'ula* (1998) should be mentioned, however. Moku'ula is now recognized as an ancestral home by the leaders of the Rapa Nui (Easter Island) community in the southeast Pacific. The Honorable Petero Edmunds Paoa, Mayor of Hangaroa, Rapa Nui, along with other Rapa Nui delegates participated in a ceremony at Moku'ula along with various Maui County officials on May 21, 1998. Other Polynesian societies were represented, including Iwi Henare of Aotearoa (New Zealand), Penisimani Taufua of Tonga, and Chief Vaifale Tevaga of Samoa. Kumu Kale Kaupu, Kumu Akoni Akana, Kumu John Lake, Kumu Hokulani Holt-Padilla, Kumu Cliff Ahue, Kupuna Pua Lindsey and Kupuna Mahl Poepoe represented Hawai'i. Maui County Councilmember Sol Kaho'ohalahala stated on that occasion that the relationship between Moku'ula and Rapa Nui is ancient. In the oral and spiritual traditions of Rapa Nui, Moku'ula is known as Moto Ura.

In addition to the signing of a formal agreement by officials from both islands, the public was encouraged to sign a second document to officially state their support for recognition of a sister-island relationship.

The construction of a *heiau* on a portion of Moku'ula in recent years is also an example of contemporary Native Hawaiian cultural activity at the site (Figure 3). Religious ceremonies have been held regularly at this I-shaped stone platform.



Figure 3. Contemporary *heiau* built over a portion of Moku'ula. Heritage Surveys.

Previous Archaeology

Archaeology on Maui began relatively early with Emory's work at Haleakala (1921) and Walker's survey of *heiau* on the island (n.d.). Few remains of temples noted in local ethnohistorical account could still be identified by the 1930s when Walker was active. Wailehau Heiau (50-50-03-6) at Malika Beach was significant for Moku'ula and the royal complex. Halekumukalani (50-50-03-7) was also a small *heiau luakini* in the Puehuhunui canefields above Lahaina. At Kuia Ahupua'a (50- 50-0308) near upper Waine'e, the Apahua Heiau was located, in addition to temples named Wai'ie, Luakona, and Halulukoakoa. Moku'ula should also be considered a religious site.

Little additional archaeological work was done in West Maui until the mid-1960s when the Fredericksens investigated the foundations of Kamehameha I's brick "palace" in Lahaina (1970). More extensive analysis of a region of Lahaina was performed near the mouth of Kahoma Stream near Mala pier. Hommon (1973), Connolly (1974), Joerger and Kaschko (1979), and Ahlo and Morgenstein (1980) also examined this area. Sinoto (1975), Davis (1974), and Hammatt (1978) further tested the Mala pier area. Numerous Hawaiian burials were found in the beach berms.

There have been several projects in the immediate project area, or within the *ahupua'a* associated with Moku'ula. They are listed here in chronological order, as of November 1998:

1965, Report on the archaeological excavation of the "brick palace" of King Kamehameha I at Lahaina, Maui. Fredericksen, Walter; Fredericksen, Demaris; Morris, Ray, 2-4-6-001:007. [M-00019]

1970, draft - Final report on the preparation for exhibit of King Kamehameha I's "brick palace" at Lahaina, Maui, Fredericksen, Walter; Fredericton, Demaris, 2-4-6-001:007. [M-00018]

1978, Report on the Excavation of the Outbuildings Adjacent to the Baldwin House, Undertaken for the Lahaina Restoration Foundation, Lahaina, Maui, Fredericksen, Fredericksen, Walter; Fredericksen, Demaris; 2-4-6-008:007. [M-00183]

1981, Report on the archaeological excavation conducted at Hale Pa'i site, (1981 - 82), Fredericksen, Walter; Fredericksen, Demaris, 2-4-6-018:005. [M-00180]

1982, An archaeological reconnaissance survey of an area near Waine'e Village, West Maui. Hommon, Robert, 2-4-6. [M-00074]

1986, Archaeological walk-through examination of proposed housing site, Lahaina, Maui, Kennedy, Joseph, 2-4-6-013:006. [M-00140]

1988, The Aus Site: H.S. #50-03-1707. A preliminary archaeological inventory survey report, Fredericksen, Walter; Fredericksen, Demaris; Fredericksen, Eric, 2-4-6-009:021. [M-00186]

1988, Historic site survey for Lahainaluna, Road and Wainee Street widening projects. Spencer Mason Architects, 2-4-6. [M-00261]

1989, Archaeological report concerning subsurface testing at TMK: 4-6-08:

12, Lahaina, Maui. Kennedy, Joseph, 2-4-6-008:012. [M-00210]

1989, An archaeological survey of the Plantation Inn Site, Lahaina, Maui, Hawai'i., Fredericksen, Walter; Fredericksen, Demaris; Fredericksen, Erik, 2-4-6-009:042, 2-4-6-009:043. [M-00219]

1989, Archaeological data recovery report on the Aus Site, Lahaina, Maui, Hawai'i., Fredericksen, Demaris; Fredericksen, Walter; Fredericksen, Erik, 2-4-6-009-.021. [M00222]

1989, An archaeological inventory survey of a parcel of land adjacent to Malu-ulu-o-lele park, Lahaina, Maui, Hawai'i., Fredericksen, Walter; Fredericksen, Demaris, Fredericksen, Erik, 2-4-6- 007:001. [M-00239]

1990, Archaeological Data Recovery Report on the Plantation Inn Site, Lahaina, Maui, Hawai'i., Fredericksen, W.M.; Fredericksen, D.L., 2-4-6-009:042, 2-4-6-009:043. [M00285]

1991, Supplemental Archaeological Survey Lahaina Master Planned Project Offsite Sewer, Water Improvements, & Cane Haul Road, Lands of Wahikuli, Hanaka'o'o, Honokawai, Kuhua, Kuholilea, Puou, Pu'uiki, and Aki, Lahaina District, Maui Island, Jensen, Peter M.; O'Claray, Jenny, 2- 4-4, 2-4-5, 2-4-6. [M-00336]

1993, An Archaeological Inventory Survey on a Parcel of Land Located in the Ahupua'a of Paunau, District of Lahaina, Island of Maui, Fredericksen, W.M.- Fredericksen, D.L., 2-4-6-009:012. [M-00448]

1994, An Archaeological Inventory Survey for Waiola Church, Ahupua'a of Waine'e, Lahaina District, Island of Maui, Heidel, Melody; Folk, William H. Hammatt, Hallett H., 2-4-6- 007:016. [M-00517]

1995, Moku'ula: History and Archaeological Excavations at the Private Palace of King Kamehameha III in Lahaina, Maui, Klieger, Paul Christiaan (Ed.); Dixon, Boyd; Lebo, Susan A.; Lennstrom, Heidi; Gosser, Dennis; Clark, Stephan D., 2-4-6-002:023, 2-4-6-007:001, 2-4-6-007:002, 2-4-6-007:035, 2-4-6-007:036, 2-4-6-007:037, 2-4-6-007:038, 24-6- 007:041. [M-00503]

1995, Report on Human Burials at Site 50-50-03-2967, Moku'ula, Lahaina, Maui., Klieger, Paul Christiaan; Clark, Stephan D., 2-4-6-007:002. [M-005471]

1995, Draft: Emergency Mitigation at Malu'ulu o Lele Park, Lahaina, Maui, Hawaii, Site of Moku'ula, Residence of Kamehameha 111 (50-50-03-2967; TMK: 2-4-6-7 Parcel 2; BPBM 50-Ma-D5-12). Klieger, P.C.; Somer, Lonnie, 2-4-6-007:002. [M-00734]

1996, Historical Background and Archaeological Testing at Pikanele's *Kuleana* in Lahaina, Maui: An Inventory Survey Report of LCA 310.3 (Royal Patent 1729, TMK [2] 4-6-07:13). Major, Maurice, P. Christiaan Klieger, and Susan A. Lebo.

The last work is an archaeological survey of the northeastern edge of Loko o Mokuhinia. In this portion of Kalua o Kiha, a mixture of traditional and

nontraditional artifacts was found. Stratigraphic analysis of the site indicates that the Loko o Mokuhinia once extend further north than it did during the latter surveys of the nineteenth century.

Additional reports (e.g. Klieger and Prismont 1994) were prepared in conjunction with Front Street widening and other improvements.

Research Design

The Phase II Archaeological Survey involving geophysical remote sensing was recommended to supplement the findings of the Phase I Archaeological Inventory Survey and Excavations at Moku'ula. The original recommended geophysical approach (Klieger 1995:333) called for conducting seismic refraction, using an EG7G ES- 1225 portable refraction unit with a 12-geophone streamer and microprocessor-based receiver. Nine seismic refraction lines were proposed to provide coverage of 360 lineal meters in areas of probable habitation predicted on the basis of Phase I subsurface excavations. This recommendation was put forth to recover additional subsurface data pertaining to the boundaries and occupation of Moku'ula, which could be used by governmental and other agencies in planning large-scale excavation, site restoration, or educational presentations of Moku'ula in the future. Prior to implementing Phase II, Heritage Surveys proposed an electromagnetic (EM) survey as an alternative to the recommended seismic refraction (SR) survey. Following consultation with the client and appropriate governmental (Maui CRC; SHPD-Maui) and community agencies, an EM survey was approved.

The Scope of Work for Phase II Archaeological Survey defined seven tasks:

1. To conduct a noninvasive EM survey to more fully determine the precise boundaries of the one- acre island of Moku'ula under coral rubble fill at Malu'ulu o Lele Park. This survey will utilize the grid system established during Phase I and include the collection of data at least every 1m along each collection array, spaced a maximum of 5m apart. These data will be used to provide a plan view of subsurface cultural data across the site.
2. To collect and summarize historical or ethnographic data augmenting information provided in prior publications (Klieger 1995, 1998) and to present these data in a report for future use either by the client or contractor.
3. To train community volunteers to assist in the collection of, the use, and the dissemination of ethnographic, historical, or archaeological information pertaining to the site.
4. To consult with the Friends of Moku'ula, most particularly on all aspects pertaining to traditional Native Hawaiian perspectives, protocols, and interpretations regarding the historical, political, and religious significance of the site.
5. To undertake an effort to determine the age of Moku'ula utilizing radiocarbon dating or other appropriate means.

6. To submit to the State Department of Land and Natural Resources (DLNR, SHPD) a written report on the findings of the survey in accordance with the appropriate rules and regulations.
7. To provide other archaeological, ethnographic, and historical services deemed necessary according to professional standards, and the interests of historic preservation and science for the Lahaina national Historical site and in matters dealing with the continued recognition of Moku'ula on the national and state registers of historic places.

Research Methods

Four primary research methods were utilized during Phase II to address the tasks specified in the Scope of Work: (1) an EM survey, (2) subsurface testing, (3) historical/ethnographic research, and (4) radiocarbon dating. Also undertaken as part of Phase II was a public-outreach program. The EM survey comprised the largest component, followed by subsurface testing. As such, they are discussed in greatest detail.

EM Survey.

The purpose of the EM survey is presented here, followed by an overview of electromagnetic surveying and previous applications. Finally, the use of this technique during Phase II at Moku'ula and our results are detailed.

Purpose. The Phase II EM survey was designed to augment an exploratory geophysical survey undertaken by the Bishop Museum in 1993. This earlier survey (not published) involved the use of electromagnetic resistivity (ER), which yielded results suggesting that geophysical surveying might prove useful in further delimiting the boundaries of the island of Moku'ula, particularly where it might be defined by a basalt perimeter wall. The rationale for using remote sensing rather than subsurface excavation centered on the desire to obtain additional data while maximizing preservation of intact subsurface deposits.

EM Method. The electromagnetic (EM) survey technique provides a means of measuring ground resistivity, one of the oldest geophysical techniques available. Features are defined as shapes rather than actual resistivity values. It is best accomplished with instrumentation that permits rapid and accurate measurement of terrain resistivity. The EM31 instrument was selected because it fulfills this requirement and can be used to measure the electrical conductivity of the ground and to detect buried metal objects. In addition, high resolution in conductivity can be measured, with changes of five percent being evident (Geonics Ltd. 1992:1-3, 10, 15).

The EM instrumentation consists of a transmitter (Tx) and a receiver (Rx). The transmitter induces eddy current loops in the subsurface, in which the resulting magnitude of these current loops is proportional to the terrain conductivity in the vicinity of the generated loop. The output voltage displayed by the receiver is also linearly related to terrain conductivity (Geonics Ltd. 1992: 1). Two components of the induced magnetic field are measured: (1) a quadrature-phase and (2) an in-phase. The quadrature-phase provides data for measuring subsurface distributions of cultural features (e.g., buried walls, living surfaces) related to the construction of the island, while the in- phase is useful for calibration purposes and for detecting metal

(Geonics Ltd. 1992:3, 15). Of the two instruments employed frequently in EM surveys of sites (Geonics EM31 and Geonics EM34), the EM31 was utilized at Moku'ula. These instruments provide a direct readout of apparent ground conductivity, which is logged into a data recorder. The data are then downloaded to a computer for analyses and production of plan view maps of ground conductivity using Surfer software.

Extensive successful applications of the Geonics EM31 and similar instruments at archaeological sites are summarized by Geonics Ltd. (1993). These surveys reveal that this geophysical approach may be used to identify pit features such as unmarked graves, trenches, postmolds, razed or buried structures, and changes in stratigraphy. Of particular relevance to Moku'ula is the demonstrated success of this technique for mapping the remains of structures under paved surfaces; about one-third of Moku'ula is under a paved parking lot. The technique was also selected because of its appropriateness in revealing buried stone walls, burial pits, and stratigraphic changes associated with the construction and occupation of Moku'ula (Klieger 1995).

Moku'ula EM Survey. Prior to conducting the EM survey, the site datum (NO, EO) established during Phase I was rediscovered; the X-axis extends roughly N-S at 125 and 325 degrees, while the Y-axis extends E-W at 55 and 235 degrees. Using the 1993 grid system (Klieger 1995), wooden stakes were pounded in every one to three meters along NS or EW grid lines depending on the nature of the area to be surveyed. Wider spacing was used in easily accessed areas, while closer spacing was necessary in areas with vegetation or other obstructions (e.g., fencing, parking barriers).

EM data were collected (Figure 4) every 0.5m along transects spaced 3m apart (e.g., N0, N3, N6), except in areas where access was not feasible because of obstacles (e.g., power station boxes, public restrooms, billboard, baseball backstop). The orientation of the data collection along transects was designed to obtain strings of readings perpendicular to predicted buried features. For example, transects used for mapping the assumed basalt rock wall perimeter of the island were oriented perpendicular to its estimated boundaries. This approach maximized the potential of identifying ground conductivity indicative of this boundary, which might be missed if transects were oriented parallel to target features.



Figure 4. Greg Van and Bill Stoller surveying Moku'ula with an EM31. Heritage Surveys.

All measurements were recorded using a Geonics EM31-DL ground conductivity meter and recorded in the field by a Polycorder data logger. The conductivity meter consisted of a transmitter and receiver coils separated by about 3.7m. The instrument was operated in the vertical dipole mode, providing a nominal depth of penetration of approximately 5m. Readings were taken at 0.6 to 0.8 second intervals, which corresponds to a reading every 0.5 in along a given transect. Both apparent ground conductivity (quadrature-phase) and in-phase data were recorded. The operators aligned themselves along each transect and paced with the instrument parallel to the target transect. This procedure was repeated until the entire target area was covered. The entire island and the area of the two smaller holding ponds was covered, with an additional buffer of about 20m on the north, west, and east sides of the island of Moku'ula. Areas not surveyed were the southeastern section of the island that extends into the current Salvation Army property and portions covered by various structures or metal fences. When completed, the survey covered an area of about 10,300m² or slightly over 1 hectare (2.47 acres).

During the course of each field day, data were transferred from the data logger to computer diskettes. These data were processed using DAT31 software from Geonics Ltd. and color-contoured using Surfer software. Contour maps of apparent conductivity and in-phase data were produced for the site. Figure 5 provides ground conductivity data for the assumed island area (Figure 16 presents the in-phase data for the same section). The blank areas represent unsurveyed areas related to major above-ground obstacles. Cool colors indicate contours of lower ground conductivity and in-phase values. Warm colors represent contours of higher conductivity and in-phase values.

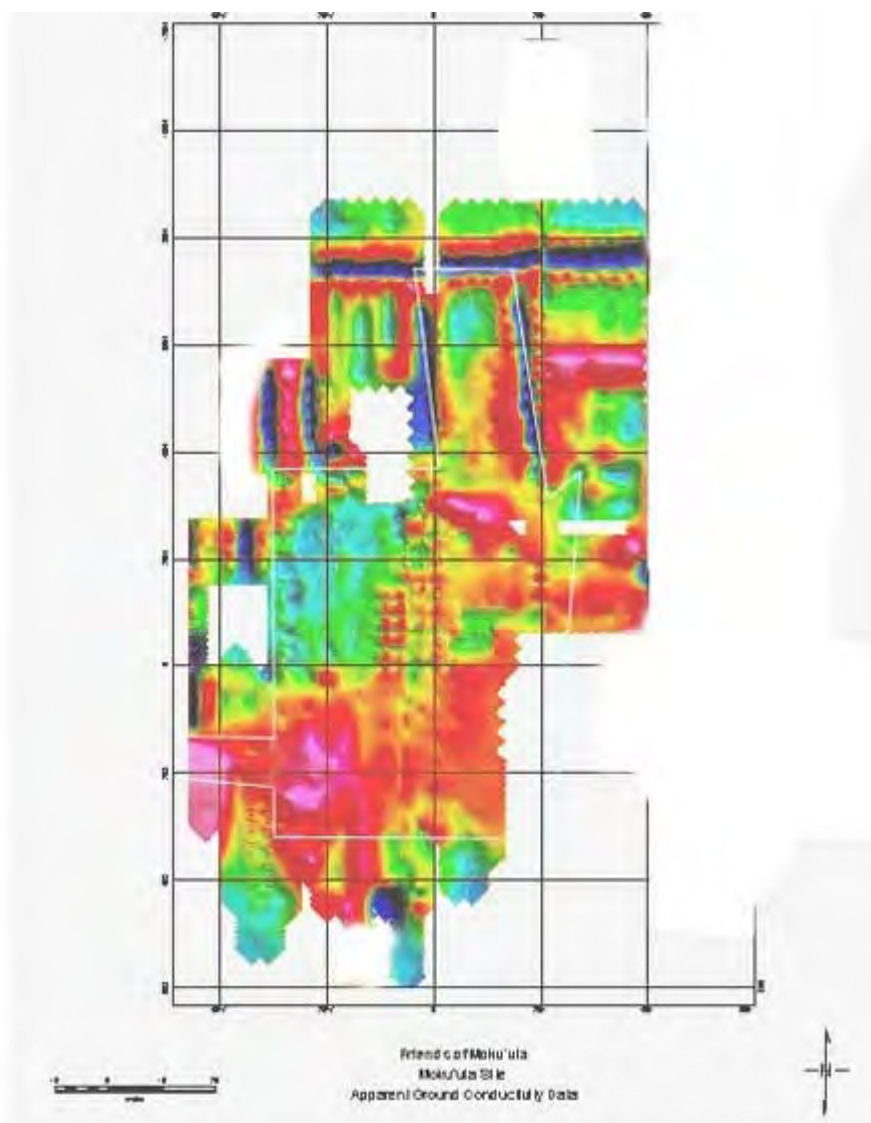


Figure 5. Apparent conductivity map of Moku'ula and the buried fishpond of Mokuhinia. Alexander map of 1855 superimposed. Heritage Surveys.

Moku'ula EM Results. The EM survey revealed subsurface differences in stratigraphy and cultural disturbances, some of which correlate with activities dating to the twentieth century. These disturbance-related activities include infilling of the area and the development and maintenance of Malu'ulu o Lele Park. Features at Moku'ula representative of the island boundaries or early nineteenth century habitation of the island were less clearly discerned. Despite the various twentieth-century impacts, informative patterns are indicated:

1. The ground conductivity of Moku'ula itself appears to be largely moderate to high, being expressed as oranges, reds, and pinks (Figure 5). This conductivity pattern differs markedly from the low conductivity of the pond areas. This would indicate that the island extended from about W5 to E30 and from N80 to under the parking lot on the south. Data from Phase 1, including the exposure of a buried cut basalt block (Feature 21) in STP 1, indicates the island extended easterly from E20. The intact *'ill'ili* pavement in Units 3-4 in Phase II further provide evidence that the island extended to at least E20. A similar pavement in Phase II Units 1-2 reveals the island extended westerly at least to W2. The extension of the orange and red values

east of a possible pier (N10-20 E20-40) suggests the island may also have extended further easterly in this area; this does not appear to correspond with any of the documentary descriptions of the island.

2. Three areas of low conductivity, expressed as light shades of green, within the island may be related to specific cultural features. The most northern of these, a green rectangle at N60-70 E0-10, is a clear contender for the footprint of the royal tomb. This locale matches closely with the alignment of the Monsarrat survey of the 1840s the only primary document found that shows the location of the tomb on the island (Figure 6; Klieger 1998:60). Excavations in this area during Phase I and II revealed deposits of volcanic cinder and ashy clay-materials of relatively low conductivity. This signature appears to match those of buried pit features described in archaeological literature (see Geonics Ltd., 1993). The light green square at N18-25 E22-28 corresponds with the Feature 11 pier uncovered during Phase I excavations (Klieger 1995). This wooden pier extended from the eastern edge of the island. The signature of the green L-shaped feature at N0-10 E0-10 corresponds to the contemporary *heiau* monument.
3. The blue-green V-shaped anomaly at N30-36 E20-28 corresponds closely with a notch-shaped, eastward extension of the island noted in the Alexander survey of the 1850s (see Figure 5). The extension of this area of low conductivity southward, forming a green area on the EM conductivity plot, corresponds to known wall segments and a probable pier (N20 E24-28) that extended eastward from the island (Klieger 1995).
4. Long linear patterns of dark blue are concentrated in the ballpark, basketball courts, public restrooms, and power substation portions of Malu'ulu o Lele Park. They correlate with underground metal sewer, water, and sprinkler pipes, and are visible on both the conductivity and in-phase plots. One such pipe was uncovered during excavation of Phase II Unit 5 at N75 E10.
5. The low conductivity values shown in light blues and greens appear to correspond with areas either off the island or with significant depositional disturbance on island (e.g., tomb area, possible pier, modern *heiau*). The off island areas include the large area at N 0-30 W5-30, which correlates closely to the dimensions of the "southern holding pond" described in Phase I. From prior excavations, this area may be an extensive basalt cobble-lined region covered by a fill of sand and coral rubble. This light blue pattern at N0-20 W25-30 corresponds to the alignment of the southern holding pond on the basis of at least three of the historical surveys (i.e. Monsarrat 1840s, Alexander 1855, Bishop and Alexander 1884). The light blues and greens north of N80 and those east of E30 probably relate to the Loko o Mokuhinia. A less discernable pattern was obtained for the area of W0-20 N30-70, which may have been the locus of a "northern holding pond" also described in Phase I. Metal interference prevented recovery of reliable data from this area.
6. The two major north-south linear anomalies at W1-2 and E15-20, which are thought to be metal pipes, correspond well with historical

data related to the island perimeter. In extent and direction, they are in close alignment with the Alexander survey of Moku'ula of 1855.

Assuming that the planning of the park occurred in concert with the filling of Loko o Mokuhinia, it is possible that the irrigation system was installed as early as 1914. If these anomalies are metal pipes, they may have been excavated in areas along the perimeter of the island or on island in areas with no significant structural remains (e.g. basalt walls or foundations). The long linear east-west anomaly at N75 may similarly correspond with the northern perimeter of the island, and may represent an irrigation pipe whose value surfaces at N75 adjacent to the baseball court.

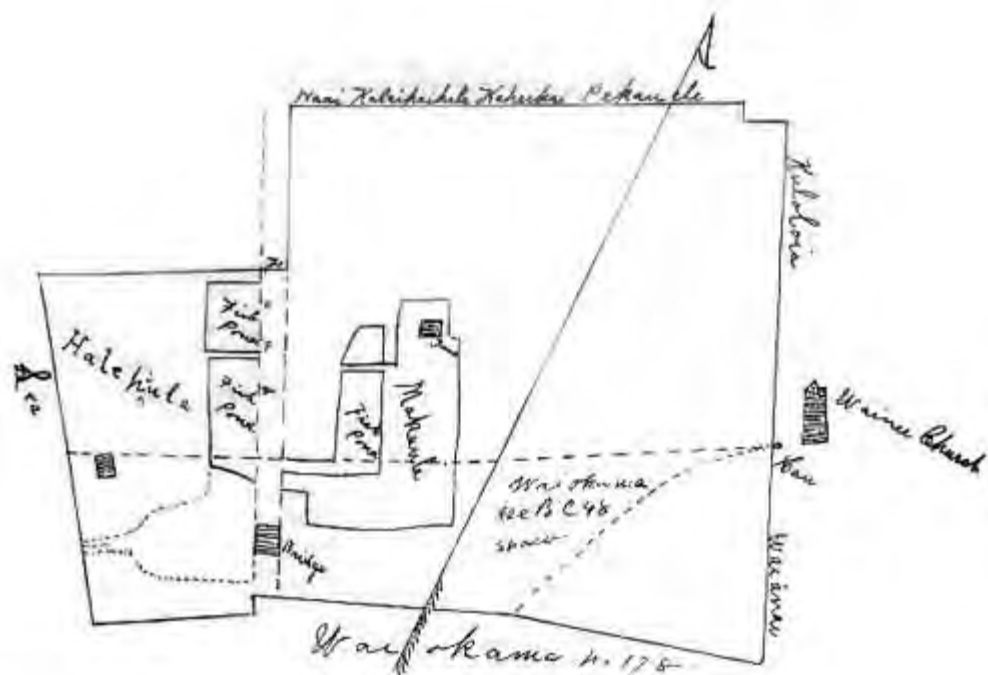


Figure 6. Monsarrat Survey of Moku'ula from the 1840s showing the royal tomb (in Klieger 1998:60)

Subsurface Testing

Seven units were excavated in Phase II in an effort to identify the cultural source of particular ground conductivity signatures produced by the EM survey. These units were excavated using the same grid established for Phase I investigations and the Phase II EM survey. The NW corner of each unit was designed as the unit datum. They were excavated using arbitrary 10-cm levels within natural or cultural strata. Picks, shovels, and trowels were used. All depth measurements were recorded in centimeters below surface (cmbs). The sediments were primarily screened through 1/8-inch or 1/4-inch wire mesh, except for some fill deposits that were removed without screening. Photographs, plan views, and profiles were recorded for each unit. Features at Moku'ula were numbered following the Phase I series. The recovered cultural materials were bagged by level and are currently being curated by Friends of Moku'uta in Lahaina.

Units 1 and 2

Unit 1 (N42.5 W1.5) was opened as a 1.0 x 0.5-m unit to look for the west wall of the island. This locale corresponded with the southern end of a long, linear, low-conductivity (dark blue) signature. Such low-conductivity

signatures were thought to possibly correlate with buried basalt blocks. This location and signature shape roughly matches the projected western boundary of the island on the basis of available historical data examined in Phase I.

Unit 1 was excavated to a depth of 60 cmbs (Figure 7). Directly below a dark grayish brown topsoil (10YR3/2), the upper 55 cm consisted of Ballpark Fill. The topsoil is a silty clay loam with some sand, few gravel, no roots, no rocks. The fill is layered, consisting primarily of friable clay loam, dark reddish brown (2.5YR3/3) to dark grayish brown (10YR3/3) to dark brown (10YR3/4). It contains few to many eroded gravel, few *'ili'ili*, no roots. The sediment is friable and easy to screen. Snails were abundant between 30-50 cmbs. Gravel increased between 40-50 cmbs, with a dramatic density between 50-70 cmbs. This increase is associated with a pipe trench, which was infilled with gravel of decomposing coral and basalt.

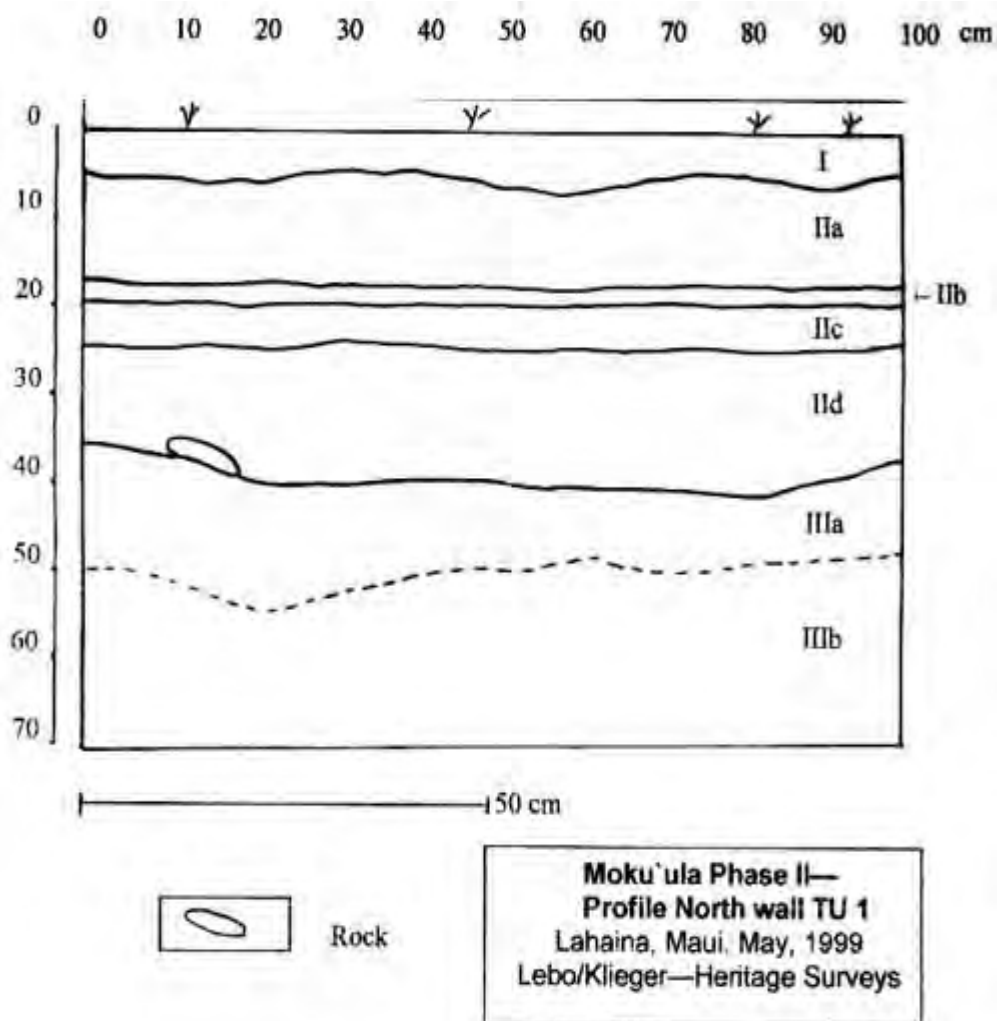


Figure 7. Profile of Test Units 1-2; north wall.

At 60 cmbs, the decision was made to expand the unit to facilitate better exposure with depth. Unit 2 (N42 W1.5) was excavated as a single level, without screening, to a depth of 60 cmbs. The metal water pipe, Feature 42, was exposed between 40-50 cmbs, extended eastward from a drinking fountain west of the backstop. A plan view of this pipe and a board with machine-cut nails was drawn (Figure 8). Other cultural materials in Unit 2 (40-50 cmbs) are fragments of animal bone. The machine-cut nails indicate

the board likely was recycled, as such nails were common during the nineteenth century, but largely are used for special woodwork today. This board appeared to have been used a fill or stabilizing material within the pipe trench. Snails were noted, but were less common than the deposits outside the pipe trench in Unit 1. Numerous gravel and *'ili 'ili* were found in the pipe trench fill.

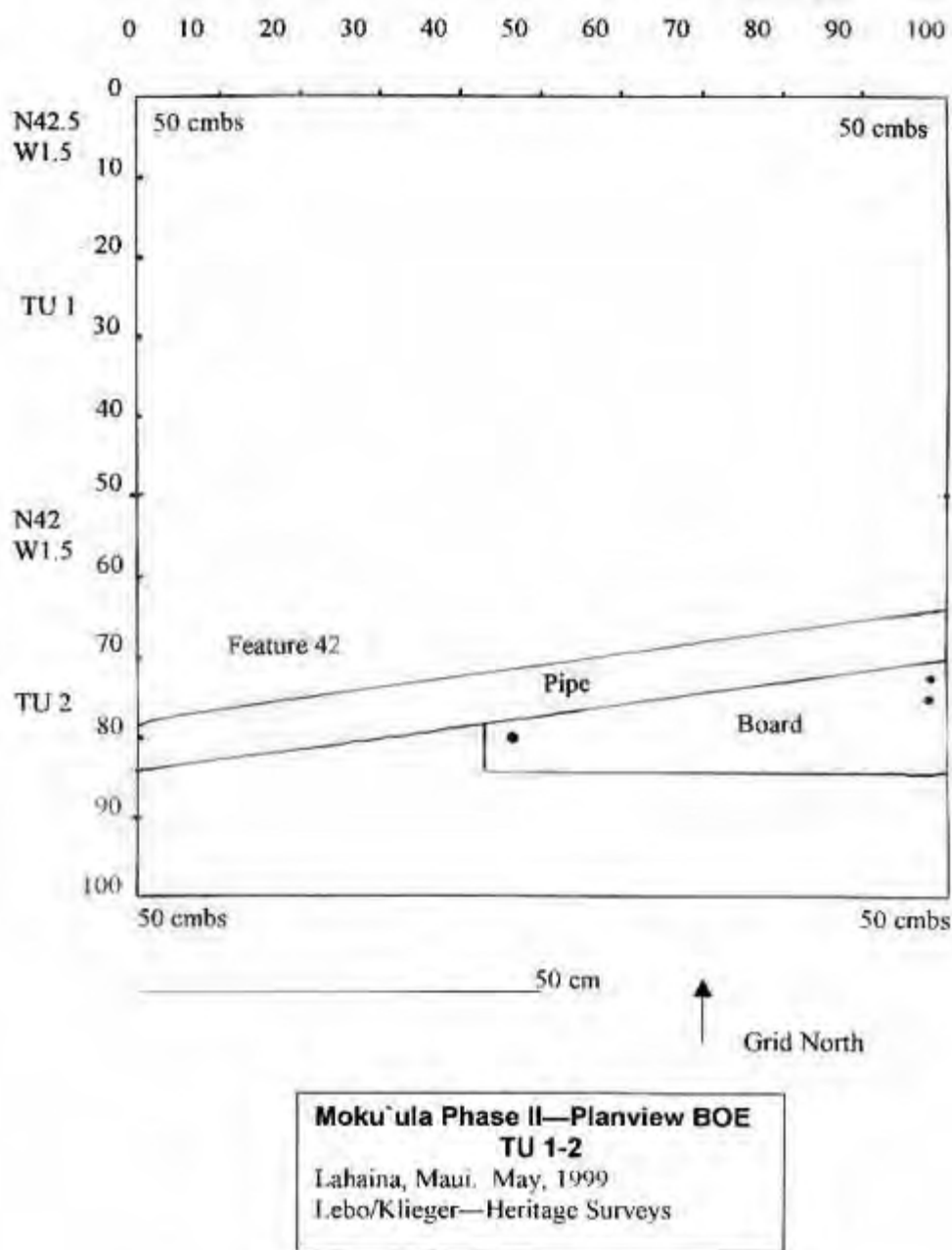


Figure 8. Plan view of Test Units 1-2. B.O.E.

Units 1 and 2 were excavated together from 60-70 cmbs. The upper portion continued to consist of fills related either to the recent fill of the park (Ball Park Fill) or the excavation and infilling of the pipe trench. In the matrix below the fill are pockets of red (2.5YR4/6) clay loam and pockets of mottled dark brown (10YR3/3) clay loam, charcoal, and eroded coral sands. Below the infilled trench, the dark reddish brown (5YR3/3) clay loam contained few to moderate gravel, abundant *'ili'ili* and cobbles associated with a pavement. Few to moderate eroded coral cobbles were also present.

The upper limit of the pebble and cobble pavement was exposed at 62 cmbs. The pavement was drawn, photographed, and left in situ. Excavation ceased at 70 cmbs. Mottles of red (2.5YR4/6) clay loam were present at the base of excavation. Cultural materials recovered in association with this cultural pavement are charcoal and animal bone fragments.

The stratigraphic sequence of Units 1 and 2 correspond to Phase I strata: Topsoil, Ball Park Fill, and below the fill, possibly with Layer Ib Mottled or Layer 11 (Klieger 1995). The anticipated basalt perimeter wall was not uncovered in Units 1 and 2. The metal water pipe, which extended east-west, does not correlate in orientation with the low conductivity signature we sought to test. The recovery of data indicative of a cultural occupation layer, as indicated by the *'ili'ili* cobble pavement, places Units 1 and 2 on the island or on a possible causeway between the island and one of the holding ponds. The low-conductivity signature may indicate Units 1 and 2 are near the island perimeter. The available data may also suggest that the resolution of the ground conductivity data was insufficient for us to reliably test the dark blue linear signature as opposed to nearby higher conductivity areas (e.g., the orange region).

Units 3, 4, and 7

Unit 3 (N54 E18) and Unit 4 (N54 E18) were opened as adjoining 1.0 x 0.5-m units to look for the eastern basalt perimeter wall of the island. This locale corresponded with the middle section of a long, linear, low-conductivity (dark blue) signature. Such low conductivity signatures were thought to possibly correlate with buried basalt blocks. The location and shape of this signature roughly matches the projected eastern boundary of the island at about E20 on the basis of the Phase I investigations (Klieger 1995).

Unit 3 was excavated in arbitrary 10-cm levels to a depth of 60 cmbs, after which Unit 4 was established to provide greater exposure. The upper 60 cm of Unit 4 were shovel removed without screening. An *'ili'ili* pavement was exposed, drawn, and photographed at the base of these units (60 cmbs) (Figure 9). The south wall was profiled. Once this was completed, a decision was made to expand both units to 1.0 x 1.0-m. These units were expanded in a southerly direction, creating a trench 1.0 x 2.0-m in length. A profile of the new south wall (N53 E19-21) was drawn (Figure 10). After which, Unit 7 was established at the eastern end of Unit 4. This 0.5 x 0.5-m unit (N54 E20) was designed to better delimit what appeared to be evidence of the edge of the island.

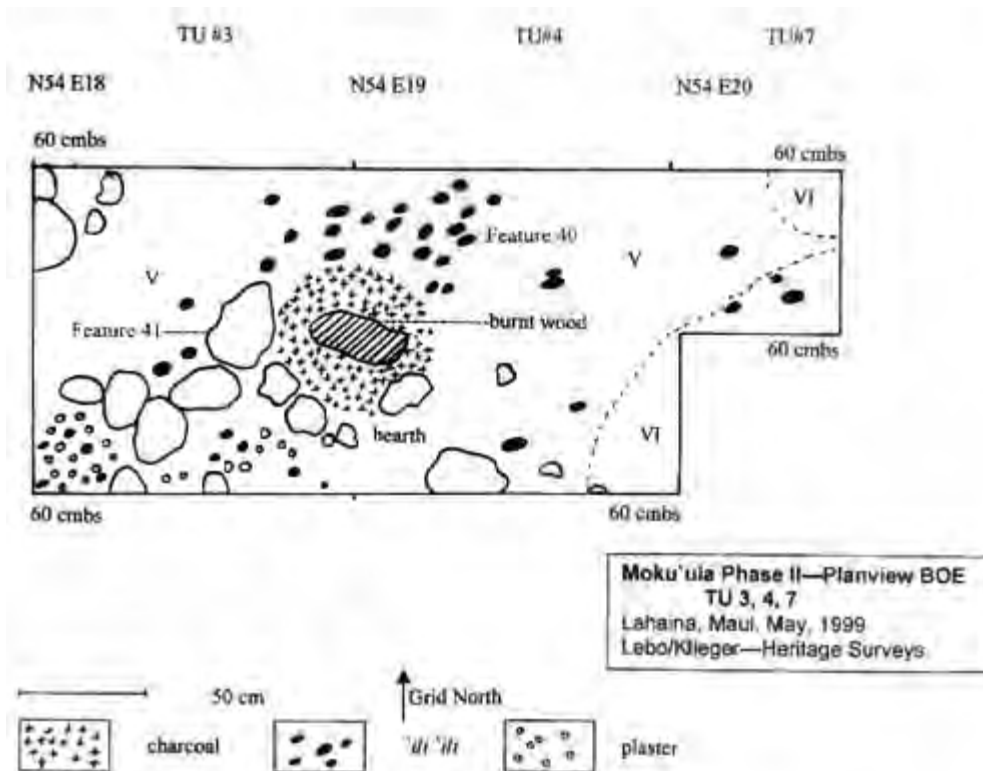


Figure 9. Plan view of Test Unit 3-4 and 7. B.O.E.

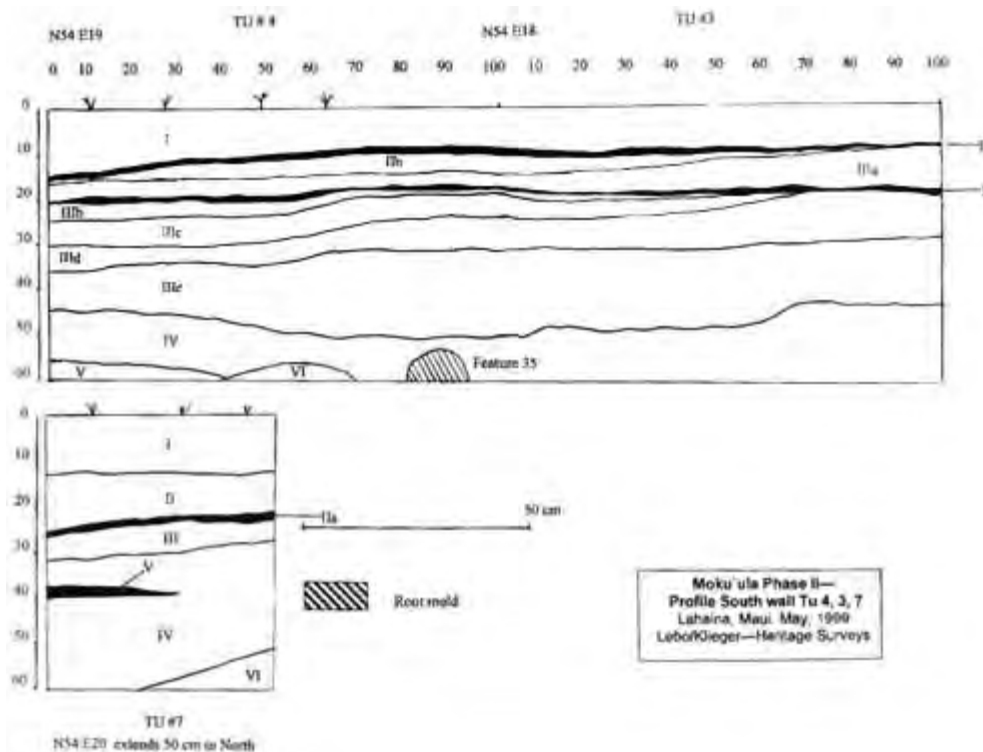


Figure 10. Profile of Test Units 3-4 and 7—south wall.

The upper 10 cm is a brown (10YR3/2) topsoil with grass, roots, no gravel. Below this is a series of silty clay loam layers, extending to about 50 cmbs. They contain no roots, no to few gravel, no to few 'ili'ili, some pockets of cinder, sand, or ash, and limited cultural materials. Charcoal and animal bone were recovered from 20-30 cmbs, while a Lincoln penny was found at 30-40 cmbs. Near 50 cmbs, cultural materials were more frequent, including a few charcoal flecks, fish scales, bone, shell, and bottle glass. Several large

cobbles were exposed along the west wall and *'ili'ili* were scattered, but more frequent in the west half of Unit 3. A slight sediment change was noted at 50 cmbs. This change appeared to be associated with an *'ili'ili* and cobble pavement (Feature 40) related to the occupation of the island during the first half of the nineteenth century. Charcoal, fish scales, bone, teeth, and window glass sherds were found within this pavement (50-60 cmbs). Coral rubble and charcoal appeared concentrated, but not fully exposed in the southeast corner of the unit at 60 cmbs.

The pavement was left exposed in Unit 3 while the upper 50 cm of fill in Unit 4 was excavated without screening. At 50 cmbs, Unit 4 was hand excavated to expose the pavement (Feature 40). Cultural materials found within the pavement include bone, charcoal, shell, sea urchin fragments, and a coral file fragment. Also found was a *puka* containing a cut or sawn and partially burned root (Feature 35). This root appears to be from a *milo* tree. The lower portion of the stratigraphy in Unit 4 differed from Unit 3. At about 55 cmbs, a dark reddish brown (2.5YR3/4) clay loam to clay was exposed across the eastern 35 cm of Unit 4. This deposit exhibited an abrupt boundary with the pavement (Feature 40) to the west. This layer contains no roots or gravel, and appears to be associated with infilling of the loko rather than island deposition. A pocket of silty clay loam with few gravel and *'ili'ili*, no roots, and no cultural materials were found east of the *puka* containing the root (Feature 35).

The southern expansion of Units 3 and 4 was undertaken following the fill stratigraphy. Whereas the upper fill was not screened (0-40 cmbs), the lower portion of these units (40-60 cmbs) were screened. Cultural materials found associated with the pavement (Feature 40) include charcoal, shell, bone, and bottle glass. At 60 cmbs, the *puka* containing the root (Feature 35) was fully exposed (Figure 11). This feature appeared to be situated within a second feature, a possible hearth defined by a semicircular pattern of cobbles (Feature 41). The pavement extended throughout much of the southern extensions of Units 3 and 4, with the exception of the eastern 30 cm of Unit 4. This corner contained possible pond fill.



Figure 11. *'ili 'ili* and tree root mold found in Test Units 3-4. Heritage Surveys.

Unit 7 was excavated following the fill stratigraphy. The dark reddish brown (2.5YR3/4) clay fill deposit first exposed in Unit 4 east of the pavement was found to extend into the southern extension of Unit 4 and into Unit 7. This fill is thought to be from the infilling of the pond. Another possible pond layer was exposed in the northeastern corner of Unit 7 near the base of excavation (60 cmbs). No cultural materials were found in these lower fills.

The stratigraphic sequence for Units 3, 4, and 7 may be partially correlated with the sequence for Unit N40 E20 (Phase 1): Topsoil, Ball Park Fill, Layers Ib and Ic. The *milo* tree found in Unit N40 E20 occurred in Layer Ic (Klieger 1995). Layers Ib and Ic contained traditional and nontraditional cultural materials associated with the occupation of Moku'ula during the first half of the nineteenth century. Layer Ic deposits were found only along the eastern periphery of Moku'ula. At the eastern extent of Layer Ic in Unit N20 E25, correlating with the presence of a series of large boulders associated with a wooden pier (Feature 11). This boundary was interpreted as the eastern periphery of Moku'ula (Klieger 1995). Possible correlations of the Phase I *loko* stratigraphic sequence was not determined for the clay deposits east of the pavement in Units 4 and 7.

The stratigraphic sequence recovered from Units 3, 4, and 7 indicates that these units correlate primarily with island deposits, with only the easternmost extent being within the *loko*. These data do not provide a correlation with the ground conductivity results for this locale, which suggested a linear feature of low conductivity, such as a basalt wall. Given that the resolution of the conductivity data may not be as fine as anticipated, it is probable that these three units correspond with higher conductivity values. This would correspond well with the general ground conductivity plan view, which suggests that Moku'ula is characterized primarily by moderate to high conductivity and the *loko* and fishponds by lower conductivity.

The *'ili'ili* and cobble pavement dates to the first half of the nineteenth century, correlating in age with the cultural deposits exposed on Moku'ula during Phase 1. As the pavement was left undisturbed, it is unknown if an earlier cultural assemblage may be present below this nineteenth-century occupation.

Unit 5

Unit 5 (N75 E I 0)(Figures 12, 13) was opened as a 1.0 x 0.5 -m unit to look for the northern basalt perimeter wall of the island. This locale corresponds with the middle section of a long, linear, low-conductivity (dark blue) signature. Such low-conductivity signatures were thought to possibly correlate with buried basalt blocks. The location and shape of this signature roughly matches the projected northern boundary of the island on the basis of available historical data examined in Phase I.

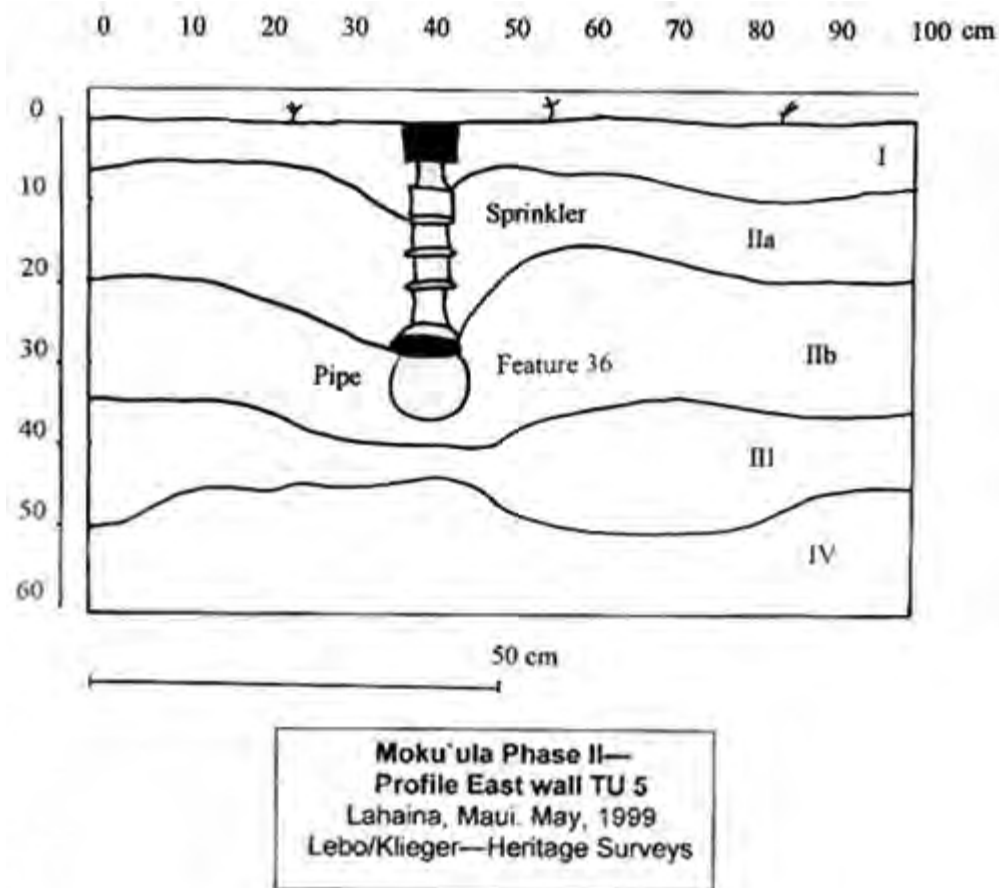


Figure 12. Profile of Test Unit 5—east wall.



Figure 13. Test Unit 5 to west showing iron pipe and pipe trench. Heritage Surveys.

Level 1 (0-10 cmbs) contained primarily topsoil associated with the ballpark infield. Numerous roots and thick grass covered much of the unit. A metal pipe, sprinkler head, and pipe trench were exposed about 7 cmbs. The pipe (Feature 36) is iron and extended in an east-west direction. The topsoil is a dark brown (10YR3/3-3/4) silty clay loam with some sand, no gravel, no *'ili'ili*. No cultural materials were found. The lower few centimeters (7-10

cmbs) contained similar sediment with few gravel. This deposit extended to the base of Level 2 (20 cmbs), and in the center of the pipe trench, it reached 28 cmbs. The base of the pipe was about 35 cmbs. Below the topsoil were fill layers, which extended to the base of the unit (60 cmbs). This fill consisted of dark brown (10YR3/3-3/4) silty clay to clay loams with mottling (2.5YR3/6-4/6 red to dark red; 10YR6/2 light brownish gray; and 10YR5/1 gray). These mottles include pockets of clay loam and sand. No to few roots and gravel characterize much of the fill, with no roots or gravel in the lower fill. The boundaries of the fill layers are distinct and wavy. The base of the unit is gray (10YR5/1) clay. Cultural materials recovered from the fill are small pieces of shell, flecks of charcoal, and a piece of glass. Because of time constraints, Unit 5 was terminated before a buried cultural deposit associated with the early to midnineteenth century occupation of the island or pond sediments were exposed. As such, it unclear from the available data if Unit 5 was excavated on or just north of the island. The stratigraphic sequence of Unit 5 corresponds to Phase I strata: Topsoil, Ball Park Fill, and Layer Id. The anticipated basalt wall was not found in Unit 5. The water pipe corresponds in orientation with the dark blue signature at the northern end of the ground conductivity survey and the in-phase survey. This pipe may account for the signature, given its relative size (about 10 cm in diameter), material (cast iron), and orientation.

Unit 6

Unit 6 (N69 E10)(Figure 14) was opened as a 1.0 x 0.5-m unit to look for cultural deposits just south of a long, linear, low-conductivity (dark blue) signature. Again, the low-conductivity signatures were thought to possibly correlate with buried basalt blocks. On the basis of the previous investigations (Klieger 1995, 1998), the locale selected for Unit 6 also had the potential of revealing evidence of the deposits associated with the royal mausoleum or residential features on the northern section of the island.

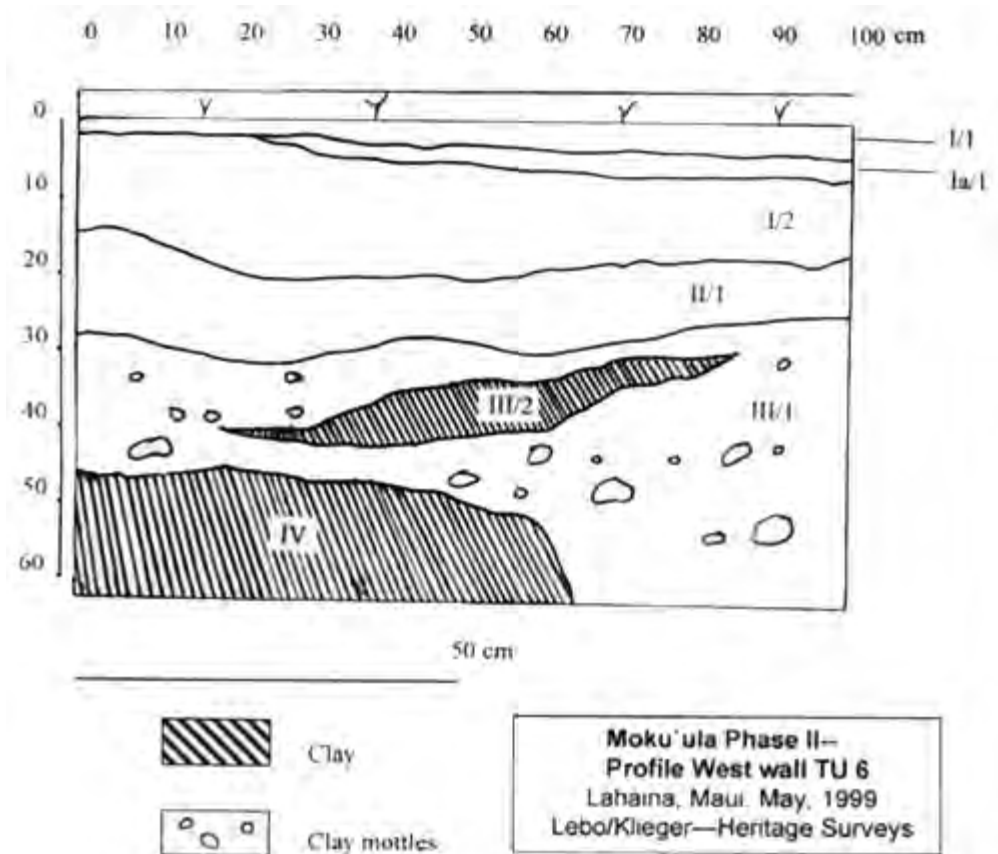


Figure 14. Profile of Test Unit 6—west wall showing clay fill.

The upper 3 cm is a dark reddish brown (5YR3/2) topsoil. Grass, roots are present throughout. Sand applied to the baseball field is mixed with the silty clay topsoil. A lens of dark brown (7.5YR4/3) topsoil and sand (80%) was identified below the topsoil over 3/4 of the unit. Below this are fill layers of dark brown (7.5YR3/2) cinder gravels, coral sands, and dark brown (7.5YR3/4) silty clay and coral sand. The lower of these also contains coral. Both fill layers contain small roots. No *'ili'ili* or cultural materials are present in either. From 28-47 cmbs, the sediment is a mottled dark brown (7.5YR3/4) and dark gray (5YR4/1) clay loam. Few roots, snails, and sand were noted. No cultural materials were found. Within this layer, a dark gray (5YR4/1) clay deposit was present in the center of the unit. It had abrupt boundaries and did not extend to the edges of the unit. It contained few coral, but no cultural materials. At the base of excavation (60cmbs), the southern 2/3rds of the unit consisted of dark gray (5YR4/1) clay.

Excavation of this unit was terminated at 60 cmbs. Three of the stratigraphic layers identified in Unit N60 E20 (Phase 1) are represented in Unit 6: Topsoil, Ball Park Fill, Layer Id. Cultural Layers Ib and Ic are absent. Layers Ib and Ic contained traditional and nontraditional artifacts and features associated with the nineteenth-century occupation of the island. Their absence in Unit 6 is not entirely unexpected, as the Phase I data indicated these layers were horizontally discontinuous. It is unknown, given the present data, if continued excavation of Unit 6 would yield evidence of nineteenth-century cultural activity. The clay base to this unit may be consistent with the rectangular low conductivity feature seen in Figure 3. This may be a pit associated with the nineteenth century tomb.

Radiocarbon Dating

The historical and archaeological data obtained during Phase I indicate that although the fishpond Loko o Mokuhinia is most likely natural, having been in existence for thousands of years, the bulk of the island appears to be man-made and possibly dates to the early nineteenth century (Klieger 1995). On the basis of Phase I data from the sediment cores and excavations in Loko o Mokuhinia, the primary artifact-bearing layers on Moku'ula date after A.D. 1459-1680. A substantial portion of the island was created artificially by dumping pond sediments and possibly other materials around a natural silt bar. An encircling wall of basalt was constructed to retain the island sediments. All indications lead to the conclusion that the royal compound on the Island of Moku'ula was built for Princess Nahi'ena'ena and later her brother Kamehameha III and his family (Klieger 1998:105-106).

Purpose

To further support this interpretation of an early post-contact cultural origin of the Island of Moku'ula, two botanical samples were submitted for radiocarbon dating. These samples of charred trees were selected because, on the basis of their provenience, they were thought to date to clearing activities associated with the early post-contact occupation of Moku'ula. If this proved to be the case, the samples would indicate that the island was extant before the nineteenth century. Obtaining relatively recent radiocarbon dates would also tend to support historical information about the construction of the royal compound after Western contact.

Radiocarbon Samples

The two charred tree root samples submitted to Beta Analytic Inc. were uncovered during excavation of island sediments. They are from two excavation units on the eastern side of the island, possibly near the island perimeter: Beta-134228 from Unit N40 E20 (Phase 1) and Beta-133844 from Units 3-4 (Phase II).

Beta-134228. A stump and roots of a possible *milō* (*7-hespesiapopulnea*, portia tree) tree were uncovered in Layer Ic deposits in Unit N40 E20 (Klieger 1995). A basalt boulder was found adjacent to the *puka* containing one of the roots. The tree stump was described as partially burned and cut, possibly sawn. A sample (Beta-134228) of this *milō* tree recovered between 62-72 cmbs was submitted for radiocarbon dating. Both traditional Hawaiian and nontraditional artifacts were documented for Layer Ic, which has been dated to the nineteenth century (Klieger 1995).

Beta-133844. This sample is from a possible *milō* tree found in Units 3, 4, and 7. It was initially exposed between 50-60 cmbs in Unit 4 in association with an V101i and cobble pavement (Feature 40). Designated Feature 35, this root was found in a large *puka* that extended into the south wall of Units 3 and 4. This partially burned root appeared to be cut and contemporaneous with an early nineteenth-century living surface.

Radiocarbon Dating Results

The two samples used for this report yielded conventional ¹⁴C ages of 230 +/- 50 years (Beta- 34084) and 130 +/- 50 years. Both samples could reflect either late pre-contact or early post-contact features. The presence of nontraditional artifacts in Layer Ic, from which Beta-34084 was obtained (Phase 1), supports an early post-contact/early nineteenth century age for the *milō* tree in Unit N40 E20. The presence of an early nineteenth-century '*ili'ili*

and cobble pavement and residential midden associated with the *milo* tree in Units 3 and 4 (Phase II) also supports an early post-contact age. The assemblage from Units 3 and 4 appear to correlate stratigraphically with Layer Ic.

On the basis of the data from the cultural assemblages and the two radiocarbon samples from *milo* trees, Layer Ic dates to the early post-contact period. It is unclear if the island was created at this time; however, no substantive archaeological data have yet been uncovered of pre-contact construction of the island. This is also supported by the lack of documentary and oral evidence attesting to pre-contact residence on the island (Pi'ilani probably lived at adjacent Hale Piula; see Klieger 1998:45). The earliest occupation of Moku'ula appears to correlate with the use of the island by the royal family during the first half of the nineteenth century, but it is possible that an exposed island "core" existed prior to these times.

Public Outreach

After the EM survey was completed, the project staff instructed volunteers in the basics of archaeological technique and explained the significance of the site to the general public. Staff arranged to have up to five adult community volunteers assisting in the excavations. Students from King Kamehameha III Elementary School and an alternate high school youth program (Figure 15) were taught. A public lecture and book signing was held at a local bookstore in conjunction with Friends of Moku'ula. Several outreach efforts were made to bring local residents to visit the site and to participate in the project. Specific volunteer days were established for public participation.



Figure 15. High school volunteers at Moku'ula. Heritage Surveys.

Reporters talked with staff, and the project was in the Maui Times and announced on National Public Radio. The Moku'ula restoration project was written up in the journal *Site Saver*, a publication of a historic preservation society in Berkeley, California, It also included a review of P. Christiaan Kliieger's *Moku'ula: Maui's Sacred Island*.

Many members of the Native Hawaiian and Lahaina community were contacted prior to and during the survey. Many discussed the project with the authors and some may utilize this information in their educational and other outreach efforts. The authors also provided assistance to the Friends of Moku'ula in preparing grant proposals. At least one travel group visited the site and was given a brief overview of the work we were doing and long-term plans for the site.

Conclusions

Phase II Archaeological Survey has contributed a largely unintrusive snapshot of the sediments and some of the cultural features of Moku'ula. It was justified by the need to supplement the Phase I investigations, and was performed in order to obtain a clearer understanding of the buried cultural deposits associated with the construction or occupation of Moku'ula.

Phase II found EM to be a useful, but limited technique for surveying the site. General island placement, rather than actual basalt perimeter walls,

seems to be indicated in the survey. And it is the placement of the buried island within the park that is the major point of investigation. A more precise location of the island royal tomb has also been supported in this survey. Buried twentieth century metal pipes have been located. These findings are useful for future historic preservation planning.

Seven test units totaling 3.75 square meters were excavated at Moku'ula during this phase; this is compared with approximately 22 square meters excavated during Phase I in 1993. Five features were described in Phase II. Combined excavations in the two phases account for only about 0.5% of the total island area. Phase II excavations and radiocarbon dating in Phase II support the existence of early nineteenth century habitation at Moku'ula, and are not inconsistent with possible major clearing and filling events during that time at the site.

The data obtained in this survey are consistent with the construction of Moku'ula during the early nineteenth century. The residential site was perhaps built up from an island core, perhaps upon a mud/sand bar in the pond. Phase I excavations also showed evidence of a buried soil horizon below the nineteenth century materials in one unit. The presence of *'ili'ili* pavements in two of the units on different sides of the island further support the hypothesis that this presumed nineteenth century living surface probably has good integrity throughout the site. The lack of the discovery of the basalt perimeter wall through EM and excavation procedures during Phase II, however, does not mean that the wall does not exist. It could merely represent the lack of fine EM resolution power, especially between roughly similar materials. Indeed, basaltic rock and basaltic sediment matrices have close conductivity signatures. Clay, coral rubble, and volcanic cinder have signatures that are quite different from basalt, and these differentials were detected by the Phase II EM survey.

Phase II survey work at Moku'ula has helped more closely determined the precise location of the buried island of Kamehameha III. It has further supported the hypothesis that the island was primarily the creation of this king or his immediate family during the early post-contact period. The survey has also shown that the site is more complex than originally thought. With the possibility of discovering new features, Moku'ula has a strong potential for further scientific and historical discovery.

Recommendations

Moku'ula and the Loko o Mokuhinia form part of an extensive complex of great historical, political, and sacred importance. Its significance is recognized at the national, state, county, and local levels, in addition to Native Hawaiian and now other Polynesian groups who value the site for past and contemporary cultural and religious purposes. It is the expressed mission of Friends of Moku'ula to restore the site and construct an informational resource center in conjunction with the site. This center will help educate children, residents, and visitors on Native Hawaiian culture and history. It is especially needed since the traditional culture in Lahaina has been greatly obscured by historical reconstructions whose primary images are of missionary and whaling cultures. A Native Hawaiian facility such as this has long been the wish of many in Maui.

Because of Moku'ula's visibility at each of these governmental and community levels, it is important to proceed cautiously with any activity designed to physically expose the nineteenth-century living surface of Moku'ula and possibly recreate the royal complex at the site. Restoring the loko and small holding ponds will be no easy task, and will most likely require the assistance of federal as well as state and county agencies.

The Phase II investigations presented in this report should provide information useful for planning any future excavation and restoration efforts at the site. Concerns that need to be addressed early in the planning process include the identification of (1) site limits, (2) current and future impacts, and (3) role of archaeological and ethnohistorical research.

Site Limits

The authors recommend acquisition of all the lands and waters of Kalua o Kiha, those areas specifically identified in the application to the National Register (see below). Moku'ula traditionally was defined by its fishpond, the Loko o Mokuhinia, the home of the *akua* Kihawahine. The actual boundaries of the Island of Moku'ula still remain unknown. Insufficient data have been obtained to correlate the nineteenth-century "perimeter" basalt wall with the spatial boundaries of the island. While wall segments were found during Phase I excavations, it is only presumed that such a feature completely encircled the island—in fact, no documents have been found to prove that a wall girdled Moku'ula.

Other pertinent features of the site, such as causeways and holding ponds, have also not been fully identified. The data obtained from historical and archaeological investigations (Phases I and II) are suggestive, but not definitive. In addition, the island as depicted or described in nineteenth-century sources may differ from the archaeological record.

Moku'ula cannot, nor should not, be artificially disassociated from the integrity of its historical context. As in most traditional, land-based societies, the Hawaiian landscape itself encodes the history of the past. Armed with the proper knowledge, walking through such a metaphor-charged landscape becomes a mechanism by which the past may be interpreted. Through place-naming, the landscape becomes encoded with historical and mythical information. The overall arrangement of monuments, by themselves or in relation to natural landmarks, becomes a type of grammar or "deep structure" from which the landscape can be deciphered. The Hawaiian term *wahi pana* perhaps most clearly describes the emotive relationship between the landscape, mythos, and actor. To many contemporary Native Hawaiians, it is the *wahi pana* that is to be restored at Moku'ula.

Modern land tenure concerns have broken the royal complex at Lahaina into many parcels. Full restoration of Moku'ula requires bringing all the historical pieces together. To this aim, the authors recommend that the Friends of Moku'ula should request a lease of all county, state, and private lands that are coextensive with the boundaries of the site. These are lands currently listed on the state and national registers of historic places, viz. Tax Map Keys 2-4-6-07: Parcels 0 1, 02, 3 5, 3 6, 3 8, 41 (Malu'ulu o Lele Park, the parking lot, vacant state lot, and two private parcels) and TMK 2-4-6-002:23 (Kamehameha Iki Park).

Like the earlier investigations (Klieger 1995), Phase II revealed that it is essential for the principal restoration party to acquire the entire site-Kalua o Kiha. Unless the entire site is acquired, complications will continue to arise concerning competing interests, jurisdictional decisions, and planning efforts. Full restoration of the island is dependent on the entire site being acquired, allowing it to be put in its appropriate historical context.

Current and Future Site Impacts

The information gathered during Phase I and supplemented in Phase II indicates that current activities by public and private sectors within and near the site continue to affect its integrity, historical and cultural significance, and potential to yield resources valuable to future generations of Hawaiians and others. The most potentially damaging are underground features such as metal sewer, water, electrical, and sprinkler pipes. The baseball backstop, public restrooms, power substation, and other major structures have impacted historical deposits, although the extent of these impacts remains largely unknown. The construction of the modern *heiau* also raises potential concern about how it should be incorporated into possible restoration efforts.

The removal of many of the features and structures associated with Malu'ulu o Lele Park, several nearby businesses and residences, and the parking lot undoubtedly will further impact the already fragile historical deposits of the site. Designing and implementing a monitoring effort to minimize adverse impacts will be a critical aspect of the site preparation phase prior to full-scale archaeological excavations. Features requiring removal include the asphalt parking lot, the curbing, the basketball court, the public restrooms, utility poles and power boxes, the baseball backstop, and the overburden or fill to about 10-20 cm above the island's surface. A significant amount of overburden could be removed mechanically from the island, as well as over the filled pond. Some features, such as the backstop poles, should be left in situ as their removal may seriously impact site integrity. After the island surface is exposed, a second demolition phase will be needed to remove these structures.

The EM survey data obtained during Phase II, along with the archaeological excavations of Phases I and II will be invaluable in such planning efforts. These data, however, reveal that some impacts will not be knowable before the removal of modern features begins, not only because not all such features have been identified, but because the cultural component is still not well understood.

The EM survey indicates that additional architectural features associated with Moku'ula, the holding ponds, and Loko o Mokuhinia, remain unidentified. Some of these features were recorded in historical descriptions or maps, while many probably were not.

The discovery of features not recorded in historical documents is common in archaeological investigations. Features may exist at the site that are older than the available nineteenth century documents, some of which may be found in oral traditions. The potential of the discovery of such features must be considered in planning the demolition of modern structures and features.

Role of Archaeological Research

Kalua o Kiha, with Moku'ula at its core, is highly significant to many Native

Hawaiians and others. Its matrix of geopolitical and religious references that are among the richest in all Hawai'i. The larger site was the center of *ali'i* residence from the time of Pi'ilani in the fourteenth century to the time of Kauikeaouli, King Kamehameha 111, in the nineteenth century. In the nineteenth century, it became the primary palace complex in the capital of the kingdom. The traditional dynamics of Kihawahine the lizard goddess, her locus of power at Moku'ula, and the genius of the Kamehameha dynasty are intertwined with the foundation of the unified Hawaiian kingdom. Kalua o Kiha in Lahaina provided a great demonstration of continuity from traditional days of the *kapu* system through the tumultuous times of the middle post-Contact period and on to the establishment of the constitutional monarchy. With its restoration, it may continue to serve a similar purpose to educate new generations of Native Hawaiians and others.

The Friends of Moku'ula, Inc., a non-profit corporation, is seeking to acquire Kalua o Kiha as part of its effort to restore the island. Friends of Moku'ula, Inc. is organized to meet three primary goals:

1. Perpetuate Native Hawaiian culture through the promotion of public awareness and activities, including but not limited to the support of historic site restoration.
2. Initiate and maintain activities that enable archaeological studies of significant sites with emphasis on the pre-contact to early post-contact periods, including the reign of Kamehameha III.
3. To operate exclusively for charitable, scientific, literary, religious, and educational purposes.

The Phase III excavations in Kalua o Kiha will center on, but not be limited to Moku'ula. They will involve a core of professional researchers and Native Hawaiian cultural specialists. After the excavation, preservation, and restoration plans have been submitted to and approved by the County CRC and SHPD, the fieldwork will begin. Modern structures will be removed, as appropriate, and the upper limit of the intact cultural deposits will be exposed. Mechanical excavation will be utilized to remove overburden or fill to a depth just above the cultural deposits (ca. 10-20 cm). Archaeological excavations will be conducted at an aerial scale correlating to the island or larger.

We recommend that all previous archaeological units be relocated and re-exposed and that new excavations begin at a known wall segment, such as those found in N20 E1 (Phase I). Excavations will process to uncover the upper limits of the cultural deposits dating to the nineteenth century, primarily the 1830s-1840s living surface. Once this is achieved, decisions may be made about which features should be investigated further through additional excavation and which should be left intact.

Two reports should be produced: (1) the results of the Phase III archaeology, and (2) an additional excavation plan for features that also contains preservation and restoration plans. This latter report will outline recommendations regarding features that may be further investigated, preserved, or restored. For example, in consultation with Friends of Moku'ula, a restoration of a *hale* might be considered.

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Feature List

Feature	type	Unit	cmbs
Feature 35	root mold	TU 4 (profile only)	55-60 cmbs
Feature 36	iron pipe	TU 5	7 cmbs
Feature 40	'ili'ili pavement	TU 3-4	55-60 cmbs
Feature 41	hearth	TU 3-4	50-60 cmbs
Feature 42	iron pipe	TU 2	50-60 cmbs

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A 501(c)3 nonprofit organization that cultivates awareness of the Hawaiian culture through restoration, preservation, education and revitalization of Moku'ula island and Mokuhinia ponds.
