Archaeological Inventory Survey of
18.1-acre parcel at Science City, Haleakala Crater, Papa`anui Ahupua`a,
Makawao District, Maui Island
(TMK: 2-2-07: por. of 8)

Prepared for:

Mr. Charles Fein
KC Environmental, Inc.
Makawao, Maui

Prepared by:

Erik M. Fredericksen
Demaris L. Fredericksen

Xamanek Researches
Pukalani, Hawaii

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Xamanek Researches carried out an archaeological inventory survey in the fall of 2002 on a portion of land known as Science City. The 18.1 acre project area, which lies near the summit of Haleakala, lies in Papa`anui ahupua`a, Makawao District, Maui (TMK: 2-2-07: Portion of 8). The study area contains several existing structures that have been constructed at different times over the years.

A total of six previously unidentified sites were located during the archaeological inventory survey. These sites have been designated SIHP No. 50-50-11-5438 through 5443. In addition, further documentation was obtained for previously identified Sites 2805 through 2808. Finally, a trail remnant was located at the previously recorded Site 4836 and given a feature number (F).

The bulk (80%+) of the features in newly identified Sites 5438-5442 consist of temporary habitation areas or wind shelters. Two features in Site 5440 are petroglyph images (Features F and G), and one is interpreted as a possible burial (Feature D). 5441 contains two small platforms that are thought to have possible ceremonial functions. Site 5443 consists of the remnants of a former radio telescope facility that was built in 1952, and subsequently dismantled because of signal interference.

All of the newly identified sites and Feature F of Site 4836 as well as the previously recorded sites in the Science City project area retain their significance ratings under at least Criterion “d” for their information content under Federal and State historic preservation guidelines. A possible burial Feature D and the petroglyph Features F and G of Site 5440, as well as Site 5441 and Feature F of Site 4836 also remain important for their cultural significance under Criterion “e”. Finally, it is important to note that all of the sites with the exception of Site 5443 that are located in Science City represent a remnant of a Native Hawaiian cultural landscape. Because Haleakala is noted for its ceremonial and traditional importance to the Native Hawaiian people, the entire Science City site complex may well qualify for importance under additional significance criteria.

There are two mitigation actions that are recommended for the project area. Given the possibility that future construction actions may occur in the Science City project area, in-place passive preservation is recommended for the identified sites that are contained in the study area. A comprehensive preservation plan is needed, to help ensure the long-term integrity of the various cultural resources that are present on the subject parcel. In addition, archaeological monitoring is recommended for any future earthmoving actions that may take place in the Science City area.
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INTRODUCTION

Dr. Charley Fein of KC Environmental, Inc. contacted Xamanek Researches during early 2002 about an archaeological survey of the Science City area—near the summit of Haleakala (TMK: 2-2-07; por. 8). Two previous studies had been carried out in portions of this scientific complex, and had identified five archaeological sites. However, there had not been a comprehensive inventory survey of the entire 18.1-acre parcel (Photos 1-4). The results of the overall inventory survey were to be used in the development of a long-range plan for the Science City complex. Given the location of the study area, Erik Fredericksen made a site visit to the project area with Dr. Fein for evaluation purposes. In addition, Dr. Melissa Kirkendall of the State Historic Preservation Division (SHPD) Maui office was consulted regarding appropriate scope of work.

We were asked to submit a proposal for the necessary work, and we were subsequently awarded the contract to carry out the survey. The fieldwork portion of this inventory survey was conducted during the fall of 2002.

We wish to thank members of the staff at Boeing (AEOS Facility), Mr. Charles Kauluwehi Maxwell and Mr. Sheldon Brown of CKM Cultural Surveys, Dr. Melissa Kirkendall of the SHPD Maui office, and Dr. Charlie Fein for their help and support on this interesting project. The following report presents our findings.
Photo 1 – Ariel view of Science City complex—Haleakala Crater—looking north.

Photo 2 – Close-up view of observatories—view to the northwest. 
Photo taken from Pu`u Kolekole.
Photo 3 – AEOS facility from near Pu`u Kolekole—view to the north.

Photo 4 – Faulkes Telescope—view to the southwest.
STUDY AREA

The 18.1-acre project area lies near the summit of Haleakala in Papa`anui ahupua`a, Makawao District, Maui. Papa`anui is a discontinuous ahupua`a that extends from the shore at Makena, and runs upslope to Keonehulu summit (4000 feet AMSL) where it terminates. It then continues from Pu`u Keokea (7500 feet AMSL) to the crater rim, across the crater floor and ends at Pahaku Pahala on the northeastern rim above Paliku (Bushnell and Hammatt, 2000, p. 7). The USGS Makena quadrangle map is not clear as to the makai boundaries between Papa`anui and other ahupua`a. Cordy (1978) suggests that there were only 2 ahupua`a in the Makena area—Ka`eo and Papa`anui, and that other place names refer to `ili of these two.

Natural History

The soils in the project area are classified as Cinder Land (rCl), and consist of areas of bedded magnetic ejecta associated with cinder cones. They are a mixture of cinders, pumice, and ash, and range in color from black, red, yellow to brown. These materials have jagged edges and a glassy appearance and show little or no evidence of soil development (Foote, et al., p. 29; Plate 117).

The project area ranges in elevation from just over 10,000 feet AMSL on Pu`u Kolekole to a low of 9,840 feet AMSL along its southeastern boundary. The high elevation of the project area gives the project area a sub-alpine climate, which influences the environment of the summit area. The following information is drawn from the Environmental Assessment document that was prepared for the AEOS¹ facility (Belt Collins Hawaii, March 1994). Precipitation at the MSSS facility averages 25 inches per year, with the bulk of the rainfall occurring during November through May. Average annual temperatures near the summit range from 42 degrees F in the winter to 50 degrees F in the summer. Daily temperature ranges can be more extreme, with occasional sleet, snow, and hail fall occurring from December to February. Wind patterns are dominated by the northeast trade winds, which typically are most persistent from March to November. Southeasterly or Kona winds occur during the winter months and tend to bring clear weather to the summit. Sustained winds of 50 miles or more per hour can occur every month of the year. The maximum wind speed recorded at the summit is in excess of 125 miles per hour. The strongest winds typically occur during the winter and are associated with North Pacific storm systems that pass over the island chain.

Vegetation found in the project area is sparse—5 to 10% cover. A botanical survey carried out in April of 2000 (Char & Associates) on a 1.5 acre portion of the 18.1-  

¹ AEOS stands for Advanced Electro-Optical System.
acre current project area listed low shrubs of *kupaoa* (*Dubautia menziesii*), and scattered clumps of *Deschampsia nubigena*. The former (endemic member of the daisy family) has stiff, upright branches with yellowish, daisy-like clusters arranged in compact clusters. The later is an endemic, perennial grass which forms rounded tufts, 6 to 12 inches tall with flowering stalks up to 2 feet in height. It is the most commonly found grass at this elevation.

Other plants, fewer in number, are hairy cat’s ear (*Hypochoeris radicata*), another endemic member of the daisy family—*Tetramoloium numile*—a rounded dwarf shrub 3 to 10 inches across with whitish hairs and clusters of white flowers, a single shrub of indigenous *pukiawe* (*Styphelia tameiameiae*), and several clumps of mountain pili (*Trisetum glomeratum*)—an endemic perennial grass. No endangered silversword were noted during this 2000 survey, but were found in earlier surveys (U.S. Air Force 1991), and AEOS Telescope site (Belt Collins and Associates 1994). Three apparently cultivated silversword plants were noted adjacent to the AEOS parking lot during the present inventory survey.

**BACKGROUND INFORMATION**

**Traditional Lore**

Two traditional practices assessments have been created—one for the environmental assessment for the Faulkes Telescope Facility, and one for the current inventory survey project. The former is authored by Ka`ohulani McGuire, and the latter by Charles Kauluwehi Maxwell, Sr. Both comment on the spiritual nature of Haleakala. These should be consulted for a more detailed accounting of the place of Haleakala in mythology and tradition (McGuire and Hammatt, 2001; Maxwell, 2003).

In this background section, information from both of these reports will be drawn upon, as well as other sources.

There is some disagreement as to what is the correct name for the mountain. According of Abraham Fornander, the name Haleakala is a “misnomer”. He explains the ancient name of is Ahelekala. “The ancient name of Maui’s famous crater which means “rays of the sun”, and it was these which the demigod Maui snared and broke off to retard the sun in its daily course so that his mother might be able to dry her kapas.” (Fornander, 1916-20, Vols. IV-VI, pp. 534-36). He goes on to say that the word `alehe is a variant form of `ahele—both of which literally mean “to snare”.

5
Inez Ashdown argues that the name is really “Hale`akala” which refers to the “entire east mountain of Maui” (1971, p.68). This reference seems to have been confirmed to some degree in an interview with Kapi`ioho Naone, who was an informant in the McGuire study. He cared for an elderly Hawaiian woman in his youth. It was said that she had been born in 1852. According to Naone, she too referred to “Haleakala” as the entire East Maui mountains, and to “Halemahina” as the West Maui mountains.

He goes on in the interview:

“...she would refer to Haleakala as the house of the male and, this one over here as Halemahina, the house of the female or the house of the moon...The whole West Maui mountains, she considered the piko ka honua, the navel of the earth, the woman. She would tell me that Maui was lucky because Maui had a male and female—Maui was complete.” [McGuire and Hammatt, 2001, p. 13].

Hawaiian legends pertaining to Haleakala recall that Pele had to flee the Big Island when her sister Namakaokaha`i, the sea goddess, chased her away. During this adventure of exile, Pele stopped for a brief time on Maui, where she dug a pit with her paoa (divining rod) and started a fire. Haleakala is such a huge pit that she found it difficult to keep the fire going to keep warm. Sometime later, her sister once again challenged her—this time to hand-to-hand combat—and during this battle Pele was killed and her body torn to pieces and scattered along the coast of Kahikinui. Large sections of broken lava there are referred to as “Na Iwi o Pele”—the bones of Pele (Ibid.).

References to Pele’s presence and death are also abundant in several place names in Haleakala Crater, such as Pu`u Ka Iwi o Pele, Ka moa o Pele (the chicken of Pele), Pa pua`a o Pele (Pele’s pig pen), and Pu`u o Pele. [Ashdown, 1971, p. 160].

Another deity connected with Haleakala is Poli`ahu—the snow goddess and another rival of Pele. Her younger sister is Lilinoe—goddess of the mists. She is sometimes referred to as the goddess of Haleakala. She was able to check the eruptions that could break forth in old cinder cones on the floor of the crater (McGuire and Hammatt, p. 15). She is still mentioned in chants and songs, and her presence is acknowledged by Hawaiians even today as heavy mists shroud the mountain.

Probably Haleakala is connected to stories of the demi-god Maui, more than any other. The stories of Maui are found in all of Polynesia, where he is best known for his tricks and supernatural powers. In Hawaii, he is best known for snaring the sun, lifting the sky, discovering the secrets of fire, fishing up the islands and so forth. These exploits are recorded in the Kumulipo, where it is told that he was the youngest of 4 sons born to Hinaakeahi (w) and Akalana (k). Maui’s home was said to be a Ka`uiki, in the lee of Haleakala—and the latter is named in several of the stories told of Maui. His grandmother, for instance, lived at Haleakala and maintained an oven near a wiliwili tree where she baked bananas to feel the sun (McGuire and Hammatt, p. 16).

**Precontact Period**
There are 12 traditional district divisions on Maui: Honua`ula, Kahikinui, Kaupo, Kipahulu, Hana, Ko`olau, Hamakua Loa, Hamakua Poko, Ka`anapali, Lahaina, and Kula. The upper slopes of Haleakala Crater were probably exploited for such resources as birds and bird feathers, logs for canoes and other purposes, and stone for adzes and slingstones. Shrubs and herbs used in medicine probably also were sought.

Handy and Handy ((1972, p. 276) comment on ancient Hawaiian land use in the area:

“Maui, despite the high mountains forming the west and east sections, had an even more extensive dry area than Hawai`i. All the country below the west and south slopes of Haleakala, specifically Kula, Honua`ula, Kahikinui, and Kaupo, in old Hawaiian times depended on the sweet potato. The leeward flanks of Haleakala were not as favorable for dry or upland taro culture as were the lower forest zones on the island of Hawai`i. However, some upland taro was grown, up to the altitude of 3000 feet”.

The climate was too extreme to allow for permanent occupation in the high elevations of the crater. Temporary habitation shelters and enclosures probably were used and associated with resource collection activities. Religious ceremonies took place at small ahu scattered around the rim as well.

According to Maxwell (2003, p.10):

“Of course Haleakala is the sacred home of our Sun, and the ancient Path to Calling the Sun as depicted in its ancient name: Ala Hea Ka La. Why is this critical to our survival? The Sun’s energy is the source of all life, and governs our most basic rhythm of day and night. Ancient cultures have venerated its being, and we as a human race follow its course without thought and are insignificant in respect of its power. However, our Native Hawaiian Culture praises its existence, until this very day the sun is praised for its cycle.”

Post-contact

On the morning of November 26, 1778, Captain James Cook awoke to the sight of the northern coast of Maui. “Next morning there lay the land, the island of Maui, with its ‘elevated saddle hill’—the extinct 10,000 foot volcano Haleakala—rising to its summit above the clouds, and descending gently towards the deep ravines and falling waters of that steep rocky coast, where the trade wind hurled other waters into perpetual surf.” (Beaglehole, 1974, p. 638). This was the first documented sighting of the island, but as other explorers began to visit the island, they commented on the volcano that dominated the outline of the island, but did not venture inland to inspect it closer.

The first recorded visit by Europeans was probably in 1828, when 3 men associated with the Lahaina Mission made general observations on the resources found along the way, and produced the first description of the silversword (McGuire and Hammatt, p.30). In 1841, the U.S. Exploring Expedition sent a mapping team to Haleakala—made up of Gerrit P. Judd, Lorrin Andrews and Joseph Drayton. In just 3 days Drayton sketched the first map of the crater. The team also noticed a bullock track
near the summit—suggesting that there was continued usage of a trail across the crater for traversing to East Maui (Ibid.).

**Post-1850s**

There were no Land Commission Awards in the section of Papa`anui Ahupua`a covered by the current inventory survey. Twelve awards are listed for the ahupua`a, but only 7 were awarded, and are all located in the coastal portions.

Haleakala Ranch ran cattle in the crater area in the late 19th century. Armine von Tempski recalls that her father, Louis von Tempski built a stone corral at the foot of Kolekole:

> “Each year when the round-up was over, Dad and half-a-dozen paniolos drove a hundred steers up Haleakala and through the vast pit to a small forest nestling at the eastern end, and herded them for awhile. When the cattle were more or less a home on their new environment, they were drifted up a thread-like trail leading to a lush plateau eighteen hundred feet above the crater floor, were they were left to fatten until the first winter rains fell…” [McGuire and Hammatt, p. 32]

Additional references to cattle grazing are found in Rosendahl (1978). Dr. Howard Powers spent 10 years with Haleakala National Park, starting in the early 1930s. He was interviewed by Margaret Rosendahl (pp. 57-58):

> “The cattle trail zig-zagged up from down at the Paliku area up the face of this thing that they built. The ranch that ran cattle on the outside of the crater up here and in the ranch had pasture rights until 1936. ..So there were still white-faced cattle in the early 30s...They were bringing them out but they did have them running on the outside of the crater rim on this side so they built this trail for bringing the cattle up and down. ..I think that was the origin of the Halemau`u trail. ...There is a new one on the cliff [pointing to the present-day Halemau`u trail].”

In 1894, C.W. Dickey, acting upon the inspiration of his late father, circulated a subscription list on Maui, and secured $850 for the construction of a rest house on the crater rim. This was to house travelers to Haleakala Crater, which was becoming known as an awesome scenic attraction. Prior to its construction, visitors were staying in the caves known as “Little Flea” and “Big Flea” caves. The rest house was called “Craigielea” after a place in Scotland, which the builders knew. Louis von Tempski and David T. Fleming were among the group who donated dollars and labor for the project.

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2 It has been suggested by Dr. Howard Powers that the Halemau`u Trail originated as a cattle trail.
3 Von Temski managed the 60,000 acre ranch at the time.
4 The “new” trail was built during CC times by a few Hawaiian boys (Rosendahl, p. 58).
5 C. W. Dickey is a noted architect, who designed many prominent Maui buildings.
6 Little Flea Cave, aka Spatter Cave (Site 3602) and Big Flea Cave (Site 3601). The latter was 30 feet wide and 20 feet deep, with a 4 to 6 foot ceiling. A portion of the mouth of the cave was walled for additional protection. The former is an irregularly shaped cave 12 feet long and 18 feet wide, with a narrow entrance (Rosendahl, pp. 7-8).
7 This was later identified as the “Old Crater House”.

8
In 1924, $10,000.00 worth of improvements were sponsored by the Maui Chamber of Commerce, after which there were 25 iron berths in the one-room lava rock rest house, provided with blankets. Dishes and cooking utensils offered additional amenities. The Chamber of Commerce turned over the rest house to the National Park Service in 1934. In 1935 the paved highway to the summit was completed, and the continued operation of the rest house was no longer necessary (Rosendahl, p. 59). In 1916, the U.S. Congress had allotted 21,000 acres at the summit of Haleakala, as part of the Hawaii National Park. The park officially opened in 1921 and operated until 1941 when the army began seeking sites for “unspecified defense installations”. After the war, military use of the crater continued outside the park boundaries intermittently up to the present time. The University of Hawaii began operating its geophysical laboratory in 1960, and continues now to operate the MEES Solar Observatory, the LURE Observatory, and the Faulkes Telescope. The U. S. Air Force operates the MSSS (Maui Space Surveillance Site) in the same general area (McGuire and Hammatt, p. 33).

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Photo 5 – A photo of Craigielea rest house, dated 1904 (courtesy Maui Historical Society archives).

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8 The bill was signed by Woodrow Wilson, making this the 12th National Park in the United States. It was the first park to be established under the newly created National Park Service. It was officially established as a separate unit of the park system—Haleakala National Park—on September 13, 1960 (Hunter, 1997).

9 Portions of the roof appear to be missing in this picture.
Several surveys have been undertaken in the Haleakala region, the earliest being Kenneth Emory’s survey reported in 1921. He recorded 58 terraces and platforms, 9 groups of open stone shelters, several hundred ahu, and a section of an ancient paved road within the crater and long the crater rim. Of the terraces and platforms, Emory notes (p. 257):

“During the course of the work I gained the impression that the facts are opposed to the view that the terraces and platforms are either house foundations, fortifications, places for hiding things, or burial sites. The only feature which these mysterious structures seem to have in common is a square or rectangular paved flat surface, from 1 to 6 feet above the ground, from 3 to 20 feet wide and from 4 to 40 feet long. The terrace may have served a different purpose from the platforms, but if a flat surface was the result desired, they may have been used for a single purpose as alters upon which sacrifices were laid. An alter would naturally assume the shape of a platform when erected on level ground, and of a terrace when erected upon a slope. If these platforms are alters and peculiar to the Haleakala region, they would represent alters to a special or local deity, perhaps to Lilinoe, Goddess of Haleakala”.

As a note in Emory’s report, Thomas G. Thrum comments on the many ahu noted in the vicinity of the crater (Ibid., p. 359):

“The various sizes of the numerous ahus mentioned by Mr. Emory need occasion no surprise, considering the various purposes for which they were customarily designed. It was a recognized custom of Hawaiians to erect stone piles—pile is one meaning of the word ahu—as way marks, memorials of parties traveling or resting, division points of survey, and also as guides to the most accessible routes of travel. …That some ahus mark burial places is in accord with the present practice in certain districts of Maui…. Most, if not all, of the ahus of three stones, one upon another, are tributes to the deity of the locality and are designed by travelers to assure safety in their journey.”

Commenting on the ancient roadway and shelters, Thrum goes on (pp. 257-258):

“That the route through the crater by way of Kaupo Gap was the established course, is evidenced by the stone-marked roadway and dam build of Kihapiilani, a king of Maui, ‘who caused the road from Kawaiapapa to Kaholaoaka to be paved with smooth rocks, even to the forests of Oopuloa, in Koolau, Maui’. …

The stone shelters are a necessary protection against the fog, rain, and cold wind frequently experienced at high altitudes. …Some of them may have been used as stations for robbers, the professional olohe, who waylaid travelers in out of the way places, for several well-known localities in the islands are traditionally known a headquarters for
robber bands. So important a route for the trade of Maui is not likely to have been overlooked."

Emory and his party also collected 101 slingstones from the crater—none of which seemed to artificially shaped. He suggests that they may have been used by natives in hunting flocks of plover (1921, p. 257).

Winslow Walker (1931, p. 293) described Keahumanono heiau\textsuperscript{10} on top of Summit I of Haleakala peak, and the south rim of the crater. It is a small, notched rectangle structure 56 x 30 feet. The east side has been built up 18 feet and the southern side 15 feet. Construction is rough basalt—pebbles found on the surface may be the slingstones mentioned by Emory. The L-shape is the common form of the agricultural heiau found in the Kula district and elsewhere on Maui. A house site below to the east probably belonged to the kahu.

In 1963, Lloyd J. Soehren conducted a survey for the Bishop Museum, in which most of the work by Emory was corroborated and the latitude and longitudes of sites noted. He also obtained a radiocarbon date from Holua cave (Site 3604), which returned a calibrated date range (95.4% probability) of AD 660 to 1035.\textsuperscript{11} In 1978, Margaret Rosendahl compiled a “Preliminary Overview of Archaeological Resources at Haleakala National Park” in which she catalogues the previous Bishop Museum findings. Sites were described and identified by the museum’s numbering system. Additional details were added using interviews, and background research. A total of 115 known and numbered sites were discussed, along with several dozen “not formally located or recorded” sites.

In 1991, J.C. Chatters conducted an inventory survey on 7.7 acres for the Maui Space Surveillance Site (MSSS) and identified 4 sites (Sites 2805-2808), consisting of 23 shelters and a wall segment—all interpreted as precontact temporary shelters. [see below]

In 1997, a more complete inventory of archaeological sites within Haleakala Park was compiled with the aid of aerial remote sensing technology (Hunter, 1997). Sites are numbered from 2502 through 2511, 3600-3699, 4393-4399, and 4405-4408. She groups them into site types and frequency of occurrence percentages such as ahu (3.05%), burials (3.65%), cairns (14.63%), caves (11.59%), firepits/fireplaces (3.05%), lithic workshops (4.27%), platforms (10.36%), shelters/enclosures (22.56%), various terraces/platforms (9.21%), and walls (7.93%). The remaining site types that occur in small percentages are bottomless pits, heiau, lava tubes, paved and unpaved trails, and pictographs. She concludes the report with maps showing the locations of all of the sites. Because of the thoroughness of this report, site locations—other than those in the project area—were not attempted in this present archaeological inventory survey.

Some of the notable sites consist of several walled shelters found on White Hill (Pakaoao) [Site 3637] characterized as being “covered with slingstones” and rock cairns

\textsuperscript{10} This is identified as Walker Site #229, State site 50-50-16-3626, and Bishop Museum number NH-41.

\textsuperscript{11} Hunter (1997, 16) questions this date, as the Bishop Museum did not keep the report from Gakushin University, where it was analyzed, and the procedural details are unknown. Also this is the only date from Haleakala thus far, so it stands without corroboration.
(Site 3658) and enclosures (Site 3661) scattered along the Crater Rim; a series of *ahu* and shelters (Site 3609) located along a portion of the Halema‘u‘u Trail that crosses Papa‘anui; several platforms, such as Site 3611, scattered along the paved trail (Kihapi‘ilani Trail—Site 3610) in Papa‘anui; and the Ka‘a‘awa burial pit (Site 3640) located on the crater floor.\(^{12}\)

Another inventory survey was conducted in 2000 by Cultural Surveys Hawaii, on a 1.5-acre parcel upon which the University of Hawaii Faulkes Telescope facility was to be located (Bushnell and Hammatt, April 2000). Two sites were identified. Site 3835 consists of 2 historic fire pits. Site 4836 is a complex of 3 terraces, and enclosure, 2 level areas and a wall segment. [see below]

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\(^{12}\) According to S.M. Kamakau, the Kaaawa Burial Pit was “A pit for the throwing in of dead bodies…in the crater of Haleakala; it is on the top of a certain knoll within a large pit beside a hill, on the right hand side adjoining Waialeale and the stony land and the east corner of the gap who length opens on Keanae.” (Sterling, 1998, p. 265)
Settlement Patterns and Expected Findings

All of the traditional districts originate from either Pu`u o Kakea or Pohaku Palaha, located on Haleakala. Papa`anui ahupua`a is a discontinuous land division in Honua`ula. Traditional alpine resource exploitation, such as bird hunting and feather gathering, harvesting of medicinal plants, and procurement of basalt suitable for adze and slingstone-making activities that might be expected would be manifested in temporary shelters in caves or enclosures. Trails leading up to and through the crater on which people traveled to carry out these activities also would be present, and trail markers in the form of ahu and petroglyphs have been found. Features consisting of leveled areas and terraces have been generally construed as alters, for the receipt of offerings. Worshipers would also have utilized the trails in and around the crater. The Kihapiilani trail, or king’s trail was a long established route from one side of the island to the other. Sections of that trail were identified by Emory in 1921.

In the latter part of the 19th century, cattle were often taken to crater during periods of drought, where the crater offered areas of vegetation were that were green and lush. The old Halemau`u trail was reported to be one of the principal routes into the crater and to these grazing areas. How much impact the cattle had on traditional sites cannot be calculated, however.

In more recent times, pig and goat hunters have either used precontact shelters, or built their own for protection from the cold winds typical around the crater during much of the year. Visitors and workers at the top of the mountain generally tend to stay on the paved roads, or confine themselves to the established trails in and out of the crater. However, there are modern ahu, or trail markers built by visitors dotted along trails throughout the park that need to be distinguished from more ancient ones.

PREVIOUS WORK IN SCIENCE CITY

There have been two archaeological surveys that have been conducted in portions of the project area. The first of these archaeological studies was carried out in 1990 and consisted of a reconnaissance survey (Chatters, 1991). Cultural Surveys Hawaii, Inc. conducted the second study, an archaeological inventory survey, in 1998 (April 2000). The results for each of these projects are summarized below.

The earliest study, which consisted of an archaeological reconnaissance survey, was carried out by Pacific Northwest Laboratory on behalf of the U.S. Air Force for the expansion of the Maui Space Surveillance Site or MSSS (Chatters, 1991). During the

13 Big Flea Cave (Site 3601) was described as having “numerous fragments of stone of the type used for making adzes” outside the entrance by Soehren (1963, p. 121).
course of this walkover, four archaeological sites were identified, primarily along the western side of Kolekole Hill. These features included 23 temporary shelters and a short, low wall. These wind shelters were typically constructed against the existing rock outcrop of the hill. The sites were designated SIHP No. 50-50-11-2805 through 2808. One sling stone was found on the floor of Feature J at Site 2807. In addition, one opihi (Cellana spp.) shell was noted on the surface of the Feature B floor of Site 2808. There was no subsurface investigation carried out, and only Site 2805 was mapped (Ibid.).

The second study was carried out by Cultural Surveys Hawaii, Inc., in conjunction with the planned construction of the Faulkes Telescope facility. This more recent project located two previously unidentified sites—4835 and 4836. Both of these sites were constructed against an exposed rock outcrop. Site 4835 consists of 2 features—both historic rock enclosures filled with burned remains of modern rubbish—obviously historic trash burning pits. The authors suggest that these may have been used initially by the U.S. Army during the war, and later by University of Hawaii workers later on.

Site 4836 consists of 3 terraces, a rock enclosure, 2 leveled areas and a rock wall—all constructed against an exposed rock outcrop. Five of the features are interpreted as temporary shelters, while the 2 leveled areas were of indeterminate usage. Although one test unit did not reveal any precontact cultural materials, their construction is consistent with precontact structures used for temporary shelters in other areas of Haleakala Crater (Bushnell and Hammatt, 2000, pp. 16-19). The University of Hawaii Institute for Astronomy opted to preserve both of the sites.

**Expected Findings**

Based on the work that has been previously carried out in the Haleakala summit area, as well as in Science City, the expected findings in the Science City study area could include temporary habitation shelters, platforms, overhangs, lava tubes, trails, markers, petroglyphs, and/or burials. Given the quantity of previously identified wind shelters in portions of the project area, we anticipated that these types of features would predominate.

**ARCHAEOLOGICAL METHODS**

This archaeological inventory survey was conducted during the fall of 2002. Mark Donham conducted the bulk of the fieldwork and produced the site maps and profiles. He also worked on site descriptions included in Appendix A. Hugh Coflin
carried out lab analysis and was on site intermittently. Erik Fredericksen was the principal investigator and coordinator for this project. He also took Mr. Sheldon Brown of CKM Cultural Surveys to the project area for project inspections. Demaris and Walter Fredericksen were the senior advisors, and Demaris Fredericksen prepared the background information and produced the finished report.

The survey of the project area was conducted in 2 phases—a pedestrian walkover inspection was first undertaken, followed by subsurface investigation of selected features from the previously unidentified sites. The pedestrian survey was carried out using transect lines spaced c. 5 meters apart. Visibility was excellent, due to the high elevation of the study area. Potential areas of interest were marked with flagging tape for subsequent evaluation, recordation, and subsequent testing. Controlled excavation was utilized in order to investigate some of the encountered features.

An additional task was added, per the direction of Dr. Melissa Kirkendall, SHPD staff archaeologist for Maui and Lanai Islands. Four previously identified sites—SIHP No. 50-50-11-2805 through 2808—were located in the project area during a reconnaissance survey in 1990 (Chatters, 1991). Based on discussions with Dr. Kirkendall, it was determined that additional inventory level information was needed for these sites. This work was to consist of mapping and photo recordation. Finally, a probable trail was noted just to the southwest of Site 4836. This feature was mapped and added to this previously identified site.

A total of five excavation units were utilized to sample selected features that were located in some of the previously undocumented sites. In addition, one test unit was used to assess a coral scatter that was located near the remnants of radio-telescope structure at Kolekole Hill. Written notes were kept in the field, and photographs were taken with color film and a digital camera. No material culture remains were transported off-island or from the project area and standard laboratory procedures and methods were utilized.

**ARCHAEOLOGICAL RESULTS**

A total of six previously unrecorded sites (50-50-11-5438 through 5443) were located during the course of the inventory survey, which was conducted during the fall of 2002. These sites consist of wind shelters, two petroglyph images, a possible burial feature, and an historic foundation. Supplemental information was obtained from Sites 2805-2808 per discussions with Dr. Melissa Kirkendall of the SHPD Maui office. In addition, a probable trail segment was recorded at Site 4836. Several isolated pieces of coral were noted in the southeastern portion of the c. 18-acre study area, but not assigned a formal site number, because the coral pieces were not weathered. A possible site—
consisting of several pieces of coral in a boulder—was plotted on the project map, but was determined to lie off the project area. Each of the previously unidentified sites is summarized below.

**Site 5438** [Appendix A1 through A7]

This site is located approximately 68 meters north of the main MSSS observatory building. The site lies around the base of a low basalt escarpment that faces the northern and western faces of a small promontory through which the northeastern project boundary passes. Site 5438 is located about 80 meters southeast of the northeastern corner of the project area. The average elevation of this site is 9880 ft AMSL, and it lies approximately 20 meters in elevation below the crest of the Science City complex. The entire area is covered with a’a cobbles, boulders and cinder with large weathered lava flow outcrop. Observed vegetation consisted of a few clumps of unidentified bunch grass and scattered *kupaoa* (*Dubautia menziesii*.) plants.

This site is located near the northwestern corner of the rectangular project area, and lies down slope (north) of the MSSS Facilities. Overall site dimensions are c. 20 meters NE/SW by 10 meters NW/SE. Site 5438 is composed of two semi-enclosures or wind shelters (Features A and F), and 4 terrace/platforms (Features B through E). The bulk of these structures are composed of a’a cobble and boulder layers/walls that range from 1 to 6 courses in height (up to 90 cm tall). All of these features are interpreted as temporary habitation areas that provided shelter from the wind, which can be quite cold in the evening and early morning hours. The terrace/platforms are on the lee of a small *pu’u* and have low or no walls.

The surface inspection of this site yielded isolated pieces of modern materials such as tin foil, paper, plastic and metal. One test unit was utilized to assess subsurface conditions at this site.

**Test Unit 1**

This test unit was located in Feature A, a partial enclosure. This unit measured 50 cm by 50 cm and was a maximum of 30 cm in depth. Two very loose strata were encountered in this subsurface test.

Layer I (0-23 cmbs) was composed of brown (7.5 YR 4/4) sandy silt that contained up to 20% by volume angular pebbles and cobbles. There were no material culture remains found during the screening process. Layer II (23-30 cmbs) consisted of very loose brown (7.5 YR 4/3) silt. This stratum was very rocky (c. 60% angular pebbles and cobbles) and topped what appeared to a *pahoehoe* flow. This layer did not yield any cultural materials.

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14 The project area occasionally freezes, and frost was noted on the project area on several days during the inventory survey. In addition, the summit area received a light snowfall during the winter of 2001.
**Discussion**

This site is interpreted as temporary habitation area that was mainly used for shelter on an intermittent basis. While there were no indigenous material culture remains located during the surface inspection of this site or during testing, it is nevertheless interpreted as a probable precontact cultural resource that has been utilized in more recent times.

**Site 5439 [Appendix A7 through 19]**

Site 5439 is located between 30 and 80 meters down slope (north) of the main portion of the MSSS complex, and c. 15 meters to the southwest of Site 1. Site 2 is primarily situated along the crest and down the western flank of a sharp ridge that drops down from the summit in a northerly direction. Overall site dimensions are c. 49 meters N/S by 31 meters E/W. The elevation of this site ranges from about 9,930 ft AMSL to c. 9,860 ft AMSL. The southern portion of the relatively large complex lies along the base of the pushed boulder and cinder debris that originated from the grading operations associated with the construction of the MSSS facility. Several large, weathered lava flow sections are surrounded by talus boulders, with areas of loose rubble and cinders on the moderately steep slope. Loose cinder and rubble occur in pockets and over the level areas of the various site features. Several what appear to be electrical cables transit the central portion of the site. The only vegetation noted in the site area consisted of scattered *kupaa* shrubs and isolated bunch grass.

The Site 5439 complex consists of 22 features (A-M). These features include 2 rock wall shelters that incorporate small overhangs referred to as dew shelters in this report (Features A and B), 10 rock wall shelters (Features C through M), and 1 possible shelter remnant (rock pile). Two of the rock wall shelters (Features F and L) are C-shapes, while the remaining ones consist of various shapes. As with Site 5438, these features are interpreted as temporary habitation areas that provided shelter from the elements—especially the wind. The 2 dew shelters (Features A and B) would also have provided some protection from mist and dew. All of the structures are roughly constructed of *a'a* cobbles and boulders that range from 20-80 cm in height (1 to 5 stone courses).

Our surface inspection primarily revealed modern material remains such as plastic, what appeared to be discarded roofing material, metal, paper, and some possible insulation material. However, a weathered coral fragment was found on the floor of Feature A, and a weathered piece of marine shell (*Cypraea* spp.) was located at Feature B. These cultural materials are tentatively interpreted as indigenous rather than modern remains. Two test units were excavated at this site in order to assess subsurface conditions.
Test Unit 1

This test unit was located in Feature A, a partial enclosure. This unit measured 50 cm by 50 cm and was a maximum of 32 cm in depth. Four thin layers were encountered in this subsurface test.

Layer I (0-4cmbs) was composed of loose dark brown (7.5 YR 3/3) sand with black cinder material. There were five small (< 1 cm in diameter) pieces of waterworn coral that were recovered from the 1/8th inch screen from this shallow layer. Layer II (4-15cmbs) was made up of very fine black (7.5 YR 2.5/1) sand with an underlying discontinuous lens—c. 2 cm. thick—of coarser black cinder. This loose layer was sterile.

Layer III (9-18cmbs) consisted of brown (7.5 YR 4/3) sandy silt with angular pebbles (c. 30% by volume). There were no cultural materials present in this sampled portion of the stratum. Layer IV (18-32cmbs) was comprised of red (2.5 YR 4/8) cinder and gravel that overlaid solid rock. This loose layer was sterile in this location.

Test Unit 2

This second test unit was placed in the Feature E enclosure and measured 50 cm by 50 cm and was a maximum of 17cm in depth. Two thin soil layers were located in this subsurface test instance.

Layer I (0-7cmbs) was composed of yellowish red (5 YR 5/6) silty sand with 40% by volume angular gravel. This stratum was sterile in this test location. Layer II (7-17cmbs) consisted of brown (7.5 YR 4/3) sandy silt that contained 30-40% angular rocks by volume. There were no material culture remains found in this loose stratum.

Discussion

There were no portable remains other than a few small pieces of coral found in Layer I of TU 1. The general lack of material culture remains suggests that at least the two tested features do not appear to have been used for extended periods of time. As with Site 5438, Site 5429 is interpreted as a complex of wind shelters that were likely used in precontact as well as post-contact times.

Site 5440 [Appendix A20 through 34]

Site 5440 is located in the northwestern portion of the project area, near the upper portion of a northwest-facing slope. This temporary habitation site lies to the southwest of Site 5439, and just down slope from the graded area of the Haleakala Observatory facility. This part of the study area ranges from between 9,910 ft to 9,950 ft AMSL. The general slope is covered with large sections of weathered lava flow that are surrounded by talus boulders and areas of loose rubble and cinder. The southeastern-most portion of this site lies c. 7 meters northwest of the paved access service road to the Haleakala
Observatory building. The only vegetation observed in the site area consisted of scattered *kupaoa* plants and clumps of bunch grass.

The overall dimensions of Site 5440 are c. 34 meters N/S by 24 meters E/W. This site complex includes 4 wind shelters (Features A-C and E), a possible burial (Feature D), and 2 petroglyph images (Features F and G). The wind shelters are roughly built with *a`a* cobbles and boulders, and include two C-shapes (Features B and E). The walls of these shelters range from 30-120 cm in height. The Feature B C-shape also contains a small dew shelter at its southwestern end. This small sheltered space consists of a lava slab that has been placed over a gap between 2 outcrops of lava. Feature D consists of a low platform that lies at the base of a small overhang. This low platform measures 160 by 100 cm. by 15 cm high and is interpreted as a possible burial. Features F and G are composed of petroglyph images that have been pecked into the faces of 2 boulders. Feature F is composed of an angular human figure and Feature G appears to represent an unfinished turtle image. The former image is well proportioned and in good condition, while the latter one is somewhat vague and not deeply pecked into the surface of the rock face. Two test units were utilized to investigate subsurface conditions at Features A and B of Site 5440.

**Test Unit 1**

This unit measured 50 cm by 50 cm by 21 cm in depth and was placed in the interior of the Feature A wind shelter. A total of three strata were encountered before TU 1 was terminated at bedrock.

Layer I (0-6 cmbs) was made up of brown (7.5YR 4/4) fine, silty sand with fine gravel and cinder (c. 10% by volume). This loose matrix was sterile. Layer II (6-12 cmbs) consisted of fine, black (7.5YR 2.5/1) cinder. This angular material did not yield any cultural materials. Layer III (12-21 cmbs) was composed of yellowish red (5YR 5/6) silt with approximately 60% weathered rock by volume. This sterile matrix overlaid bedrock.

**Test Unit 2**

This second unit was utilized to investigate the interior of the Feature B enclosure. This unit was 50 cm by 50 cm by 55 cm in depth. Two loose strata were present in this test instance.

Layer I (0-50 cmbs) consisted of a loose matrix of brown (7.5YR 4/4) sandy silt and cinder that contained increasing amounts of angular rock with depth (c. 50% by volume). This rocky matrix did not contain any material culture remains. Layer II (28-55 cmbs) was composed of brown (7.5YR 4/3) fine, silty sand with 30% angular pebbles and cobbles. This sterile layer overlaid bedrock.

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15 This feature was not tested per the request of Mr. Charles Kauluwehi Maxwell, Chair, Maui/Lana`i Islands Burial Council.
Discussion

The overall site consists primarily of wind shelters. Site 5440 is tentatively interpreted as a precontact cultural resource that may contain a burial feature. While the two petroglyph images do not appear to be appreciably weathered, their relative age remains somewhat uncertain.

**Site 5441** [Appendix A35 through A37]

Site 5441 lies along the southern project boundary c. 5 meters northeast of southeastern-most ¾” pipe corner marker. The site is located at the base of a c. 9-meter high escarpment that lies just to the north of the boundary. The terrain slopes steeply to the southeast from the base of the escarpment. The general area is covered with large talus boulders and loose rubble. Observed endemic plants included *ohelo’āi* (*Vaccinium reticulatum*) and *kupaoa*. In addition, isolated clumps of unidentified bunch grass were noted.

The overall dimensions of Site 5441 are 4.25 meters in length NE/SW by 1.75 meters width NW/SE. This site consists of two small terrace features that are situated along the base of the escarpment to the southeast of the University of Hawaii Mees Solar Observatory. This site is located in the southeastern portion of the project area, in the near vicinity of the parcel boundary. Both terraces have small oval level areas and minimal stacked rock arrangements on their leading southeastern edges. The features face out to the southeast with a commanding view of the island of Hawaii.

Discussion

These two features are located in an exposed portion of the study area and do not appear to represent temporary wind shelters. While there was no subsurface excavation carried out at this site, it is tentatively interpreted as a possible ceremonial area. This somewhat speculative assessment is based on the orientation of the two features to the Big Island.

**Site 5442** [Appendix A38-39]

This single component site is situated at the southern edge of the Mees Solar Observatory grade at an elevation of about 9,955 ft AMSL. Site 5442 lies c. 6 meters south of the southwestern corner of the observatory building and 3 meters north of the top edge of an approximately c. 9 meter high escarpment that rims the project area in this area. Evidence of previous bulldozing activities is visible in the immediate vicinity of the site. Previous earth moving activities associated with the construction of the nearby observatory appear to have impacted this structure. The southern edge of this feature has apparently been impacted by these former activities. Numerous pushed *a’a* boulders are clustered in close proximity to this site. This location affords a commanding view of the island of Hawaii. Flora present in this portion of the project area includes sparse amounts of *na`ena`e*, nonnative grasses and scattered weeds.
This site consists of a partial rock enclosure that lies at the periphery of a previously graded area to the southeast of the Mees Solar Observatory. The intact portion of this enclosure measures 4.5 meters in length E/W by 3.25 meters in width N/S by a maximum wall height of 0.85 meter. This structure appears to have been partly rebuilt. One coral cobble was noted just outside of this enclosure, along with modern materials such as pieces of concrete, metal and bottle glass. There was no subsurface testing carried out at this site.

Discussion

Site 5442 is located in close proximity to the Mees Solar Observatory and has been partly impacted by former earthmoving activities associated with the construction of the nearby building. This site is interpreted as a wind shelter that appears to have been modified in relatively recent times.

Site 5443 [Appendix A39 through 41]

This site remnant lies on the peak of Pu`u Kolekole, and is known as Reber Circle. Site 5443 consists of a concrete and rock foundation that was part of the former radio telescope facility that was built in 1952 by Grote Reber. This facility apparently did not function well, because of signal interference. The bulk of the structure was dismantled about 18 months after the facility was completed. This site is composed of a concrete and rock foundation that is c. 25 meters in diameter, the outer rim of which is up to 1 meter in width and c. 80 cm in height. Approximately 40% of the structure has been impacted by previous earthmoving activities, and the site is in fair to poor condition.

Previously identified Sites 2805 through 2808

Additional information was gathered for these 4 cultural resources that were located during the 1990-1991 reconnaissance survey (Chatters, 1991). Gathered information from the current inventory survey consisted of mapping and recordation. There was no subsurface testing carried out at any of these sites. Sites 2805, 2806 and 2807 are partially enclosed by chain link fence frames.16 Each of these sites is briefly described below.

Site 2805 [Appendix A41 through A43]

This rock wall shelter is located on the northern rocky slope of the uppermost rise of Pu`u Kolekole and c. 41 meters due north of the Kolekole triangulation station that lies at the summit. The site lies at an elevation of about 9,990 feet AMSL. The area around the site is covered with `a`a talus boulders and cobbles. Observed vegetation in the general site area included scattered kupaoa shrubs and isolated clumps of nonnative grasses. The

16 These materials were placed around the sites to help identify them prior to earthmoving activities associated with the construction of the nearby MSSS facility.
overall dimensions of this site are 3.50 meters N/S by 2.50 meters E/W by up to 1.18 meters in maximum wall height.

Site 2805 consists of a short roughly stacked rock wall section that forms a shallow arch around the western edge of a small level area that measures 2.50 meters in length NE/SW by 1.0 meter in width NW/SE. The feature is set against the base of a low basalt face. The wall is constructed of 3-6 courses of vertically stacked angular *a`a* cobbles and boulders. This site was first interpreted as a wind shelter in the 1990 survey.

**Site 2806 [Appendix A44-A45]**

This site is located within the Science City complex on the northwest facing slope of the uppermost rise of Pu`u Kolekole, and some 48 meters northwest of the Kolekole triangulation station at the summit. The AEOS building lies c. 35 meters to the northwest. The area surrounding the site is covered with large *a`a* boulders that have broken off from a c. 3-meter high vertical basalt face that is upslope of Site 2806.

Site 2806 consists of a rough alignment with minimal stacking of 1-2 courses of angular *a`a* boulders and cobbles. This partial enclosure measures 2.50 meters E/W in length by 2.20 meters N/S in width by 0.30 meter in maximum wall height. One piece of branch coral was noted c. 3 meters to the east of the site. This site is also a wind shelter.

**Site 2807 [Appendix A46 through A55]**

Site 2807 lies approximately 48 meters to the west of the Pu`u Kolekole summit and the triangulation station. This site is situated on the very rocky WNW facing slope directly east of another telescope facility. The site lies at an elevation that ranges from about 9,980 feet AMSL near the crest of Pu`u Kolekole to 9,960 AMSL at the base of the slope. The only vegetation noted in the vicinity of the site consisted of scattered *na`ena`e* shrubs and nonnative bunch grasses. Modern material culture remains noted on the surface included broken bottle glass, metal, plastic and wood.

This site consists of 16 (Features A-P) separate level areas that each has some form of rock modification. The modifications consist of simple rock alignments or roughly stacked low walls. Some of the features resemble terraces with minor modifications along the western or down-slope edge of the level areas. Others features along the base of the slope have been partially encircled by rock alignments. A few of the features have marginal overhangs near the edge of the level areas. Many of the features are within 2 meters of one another. The overall dimensions of this site are c. 48 meters N/S in length by 20 meters E/W in width. A sling stone that was noted in Feature J during the earlier reconnaissance survey was not relocated. This site is interpreted as a complex of wind shelters. This site is tentatively interpreted as a precontact temporary wind shelter complex, portions of which may well have been utilized in post-contact times.

**Site 2808 [Appendix A55 through A58]**
Site 2808 (Features A-C) is located near the base of the western slope of the prominent rocky hill that lies directly to the west of the Mees Solar Observatory. This site lies at about 9,960 feet AMSL. The surrounding terrain consists of an exposed and weathered a’a hill that is covered with talus boulders and rubble. Vegetation noted in the area consisted of scattered na’ena’e and kupaoa shrubs.

This site is comprised of three small level areas that have apparently been cleared of loose rock. Each of these has some type of rock modification in the form of walls or simple clear piles apparently designed to create a place to rest out of the wind. Overall site dimensions are c. 13 meters NE/SW by 7 meters NW/SE. Given the location of this site, it is also interpreted as a wind shelter complex that was possibly first utilized in precontact times.

**Site 4836 [Appendix A59-60]**

The previously documented portion of Site 4836 consists of 5 features (A-E) that are interpreted as wind shelters. These features, along with Site 4835 lie around the base of a small pu`u. An additional feature, a probable trail segment remnant, was noted adjacent to the previously identified Site 4836. Given its proximity to the site, this trail has been designated Feature F.

Feature F consists of a pathway that has been purposefully cleared of rock. Numbers of large cobbles and small boulders averaging 50-60 cm across are roughly aligned along the southern edge of the pathway for much of its length. This feature runs in an east/west direction along the southern edge of Site 4836. The path becomes apparent c. 4 meters to the south of Feature C of Site 4836. The eastern end of the path appears to have been impacted by the construction of an abandoned paved access road. Feature F is c. 22 meters in length E/W by an average of 1.10 meters in width N/S. This feature is in generally good condition, although its eastern and western ends were likely altered by previous earthmoving activities.

**Waterworn coral in the southeastern project area**

A few pieces of isolated coral were located near the southeastern corner of the project area on the surfaces of rocks and boulders in the vicinity of some `ua`u, or Hawaiian dark-rumped petrel, burrows. This coral was waterworn and did not appear to have been exposed to the elements for an extended period of time. It is interesting to note that this coral was similar to that found in a surface scatter to the southeast of the radio telescope facility, which is near the summit of Pu`u Kolekole.

The scatter of waterworn coral near the old radio telescope site measures c. 4 by 5 meters and is located just past the disturbance zone associated with the construction of the facility. One test unit was excavated in this location in order to assess the scatter of waterworn coral.

**Test Unit 1**
This test unit was utilized to assess subsurface conditions at this deposit of waterworn coral. Overall dimensions of this coral concentration are about 5 meters N/S by 4 meters E/W. Test Unit 1 was 50 cm by 50 cm by 12 cm in maximum depth. Layer I (0-11 cmbs) contained approximately 150 pieces of waterworn coral, along with a few pieces of “beach” glass and water rounded marine shells. This deposit capped a dark brown (7.5 YR 3/3) sandy silt and cinder layer with 80% by volume weathered bedrock. Bedrock was encountered between 8 and 11 cmbs.

Photo 6 – Test Unit 1 in coral concentration.

Discussion

The presence of “beach” glass and a few waterworn marine shells in TU 1 as well as on the surface of the scatter indicates that this material was transported to its present location in the past few decades. This material may be associated with former construction activities that took place in the general Science City area.¹⁷

Waterworn coral in boulder

A possible site was located c. 10 meters to the southeast of the project area, near Crater Rim Drive. This partly upright and elongated boulder (c. 90 cm in height) is

¹⁷ Pulverized coral and marine shellfish remains are discernable in some of the older concrete structures that are contained in Science City. It is assumed that the water worn coral was collected at the shoreline and transported to the summit to be used as filler in concrete.
uniquely shaped, and contains a cavity part way down its north facing side (Photo 4). It is interesting to note that this cavity was partly filled with waterworn coral at the time of our survey. Inspection of this coral suggested that it had not been in the cavity for a long period of time. This feature lies within 6 meters of the edge of the existing pavement, and the general area appears to have been impacted by the previous construction of the road. The function of this feature remains somewhat unclear. While inventory level work was not carried out because this feature lies off the study area, its location has been noted on the project map for informational purposes.

Photo 7 – Coral pieces in cavity of upright boulder—near Crater Rim Drive—view to the southwest
## Table 1

### Summary of Test Unit Results

<table>
<thead>
<tr>
<th>Site Fea.#</th>
<th>TU #</th>
<th>Unit Dimensions--LxWxD&lt;sup&gt;18&lt;/sup&gt;</th>
<th>Stratigraphy</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>5438 FA</td>
<td>1</td>
<td>50x50x30 cm.</td>
<td>Layer I (0-23cmbs) compact brown (7.5 YR 4/4) sandy silt with 10-20% angular gravel. Layer II (23-30cmbs) brown (7.5 YR 4/3) silt with 60% weathered basalt gravel pebbles and cobbles. Caps solid rock.</td>
<td>Sterile</td>
</tr>
<tr>
<td>5439 FA</td>
<td>1</td>
<td>50x50x32 cm.</td>
<td>Layer I (0-4cmbs) loose dark brown (7.5 YR 3/3) sand with black cinder material. Layer II (4-15cmbs) very fine black (7.5 YR 2.5/1) sand with an underlying discontinuous lens of black cinder c. 2 cm. thick. Layer III (9-18cmbs) brown (7.5 YR 4/3) sandy silt and angular pebbles increases to c. 30% by volume. Layer IV (18-32cmbs) red (2.5 YR 4/8) cinder and gravel.</td>
<td>Layer I: few gravel-sized pieces of waterworn coral. Remainder of unit sterile. Layer IV caps lava flow.</td>
</tr>
<tr>
<td>FE</td>
<td>2</td>
<td>50x50x17cm.</td>
<td>Layer I (0-7cmbs) yellowish red (5 YR 5/6) silty sand with 40% angular gravel Layer II (7-17cmbs) brown (7.5 YR 4/3) sandy silt with 30-40% angular rock inclusion.</td>
<td>Sterile Excavation halted due to rockiness.</td>
</tr>
<tr>
<td>5440 FA</td>
<td>1</td>
<td>50x50x21cm.</td>
<td>Layer I (0-6cmbs) brown (7.5 YR 4/4) fine silty sand with fine gravel and cinder (10% by volume). Layer II (6-12cmbs) fine black (7.5 YR 2.5/1) cinder. Layer III (12-21cmbs) yellowish red (5 YR 5/6) silt with 60% weathered rock.</td>
<td>Sterile Excavation halted at solid rock.</td>
</tr>
<tr>
<td>FB</td>
<td>2</td>
<td>50x50x55cm.</td>
<td>Layer I (0-50cmbs) loose matrix of brown (7.5 YR 4/4) sandy silt and cinder with angular rock inclusion increasing with depth (up to 50% by volume). The contact with Layer II slopes down to the northwest. Layer II (28-55cmbs) brown (7.5 YR 4/3) fine, silty sand with c. 30% angular pebbles and cobbles over solid rock.</td>
<td>Sterile</td>
</tr>
<tr>
<td>coral</td>
<td>1</td>
<td>50x50x8cm.</td>
<td>Layer I (0-8cmbs) approximately 150 pieces of waterworn coral caps a dark brown (7.5 YR 3/3) sandy silt and cinder deposit with 80% weathered rock over solid rock.</td>
<td>Sterile</td>
</tr>
</tbody>
</table>

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<sup>18</sup> L = length, W = width and D = depth in cm.
While the summit area has been substantially impacted by the construction of the various telescope facilities, a number of previously unidentified cultural resources were located during the archaeological inventory survey of the Science City parcel. Five new sites with 29 features were identified and designated SIHP No. 50-50-11-5438 through 5442. The bulk (80%+) of the these features consist of temporary habitation areas or wind shelters, 2 features are petroglyph images, 1 is interpreted as a possible burial, and 2 small platforms are thought to have possible ceremonial functions. One more site—Site 5443—was recorded and consists of the so-called Reber Circle—the former location of a telescope that was built in 1952. In addition, a trail remnant was located in close proximity to Site 4836. More complete documentation was obtained on Sites 2805 through 2808 per discussions with Dr. Melissa Kirkendall of the SHPD Maui office. Subsurface investigation was carried out at representative features in the project area. The general lack of material culture remains suggests that the study area was utilized for short-term shelter purposes, rather than extended periods of temporary habitation use. While there was no charcoal located during testing in the project area, the newly identified sites are nevertheless tentatively interpreted as indigenous cultural resources, some of which may have been modified and/or used in more recent times.
### Table 2
Site Function and Estimated Age

<table>
<thead>
<tr>
<th>SIHP Site Number</th>
<th>Features</th>
<th>Description</th>
<th>Function</th>
<th>Age</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>5438</strong> A</td>
<td>Wind shelter</td>
<td>Temporary habitation</td>
<td>Precontact-post-contact</td>
<td>Partial rock wall enclosure in lee of vertical escarpment</td>
<td></td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>Terrace/Wind shelter</td>
<td>Temporary habitation</td>
<td>Precontact-post-contact</td>
<td>Crude terrace built at leeward base of vertical escarpment</td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>Terrace-like Wind shelter</td>
<td>Temporary habitation</td>
<td>Precontact-post-contact</td>
<td>Small terrace-like level area w/ low escarpment along NE edge</td>
</tr>
<tr>
<td></td>
<td>D</td>
<td>Terrace-like Wind shelter</td>
<td>Temporary habitation</td>
<td>Precontact-post-contact</td>
<td>Small terrace-like level area w/ crude stacking along northern edge</td>
</tr>
<tr>
<td></td>
<td>E</td>
<td>Terrace-like Wind shelter</td>
<td>Temporary habitation</td>
<td>Precontact-post-contact</td>
<td>Small terrace-like level area w/ vertical escarpment at SE edge</td>
</tr>
<tr>
<td></td>
<td>F</td>
<td>Rock pile</td>
<td>Undetermined/ Possible clear pile</td>
<td>Precontact-post-contact</td>
<td>Rock pile with associated level area</td>
</tr>
<tr>
<td><strong>5439</strong> A</td>
<td>Rock Shelter</td>
<td>Temporary habitation</td>
<td>Precontact-post-contact</td>
<td>Marginal shelter restricted overhang</td>
<td></td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>Rock shelter</td>
<td>Temporary habitation</td>
<td>Precontact-post-contact</td>
<td>Marginal shelter restricted overhang</td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>Wind shelter</td>
<td>Temporary habitation</td>
<td>Precontact—post-contact</td>
<td>Low rock wall built on windward side of level area</td>
</tr>
<tr>
<td></td>
<td>D</td>
<td>Wind shelter</td>
<td>Temporary habitation</td>
<td>Precontact-post-contact</td>
<td>Crude rock arrangement around level area</td>
</tr>
<tr>
<td></td>
<td>E</td>
<td>Wind shelter C-shape</td>
<td>Temporary habitation</td>
<td>Precontact-post-contact</td>
<td>Low rock wall wrapping windward side of level area</td>
</tr>
<tr>
<td></td>
<td>F</td>
<td>Wind shelter C-shape</td>
<td>Temporary habitation</td>
<td>Precontact-post-contact</td>
<td>Low rock wall wrapping windward side of level area</td>
</tr>
<tr>
<td></td>
<td>G</td>
<td>Rock pile</td>
<td>Undetermined</td>
<td>Precontact-post-contact</td>
<td>Rock pile in crevice between boulders</td>
</tr>
<tr>
<td></td>
<td>H</td>
<td>Wind shelter C-shape</td>
<td>Temporary habitation</td>
<td>Precontact-post-contact</td>
<td>Small level area with stacking along windward edge</td>
</tr>
<tr>
<td></td>
<td>I</td>
<td>Wind shelter C-shape</td>
<td>Temporary habitation</td>
<td>Precontact-post-contact</td>
<td>Small level area in lee of boulders, crude stacking on windward edge</td>
</tr>
<tr>
<td></td>
<td>J</td>
<td>Wind shelter</td>
<td>Temporary habitation</td>
<td>Precontact-post-contact</td>
<td>Small level area in lee of boulders w/ crude stacking in crevice</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Type</th>
<th>Use</th>
<th>Time period</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>K</td>
<td>Wind shelter</td>
<td>Temporary habitation</td>
<td>Precontact-post-contact</td>
<td>Level area in lee of boulders w/ crude stacking and alignment.</td>
</tr>
<tr>
<td>L</td>
<td>Wind shelter C-shape</td>
<td>Temporary habitation</td>
<td>Precontact-post-contact</td>
<td>Small level area w/ crude wall along windward edge</td>
</tr>
<tr>
<td>M</td>
<td>Wind shelter C-shape</td>
<td>Temporary habitation</td>
<td>Precontact-post-contact</td>
<td>Small level area w/ crude wall along windward edge</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5440</td>
<td>A</td>
<td>Wind shelter Enclosure</td>
<td>Temporary habitation</td>
<td>Precontact-post-contact</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>Wind shelter C-shape</td>
<td>Temporary habitation</td>
<td>Precontact-post-contact</td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>Wind shelter natural terrace</td>
<td>Temporary habitation</td>
<td>Precontact-post-contact</td>
</tr>
<tr>
<td></td>
<td>D</td>
<td>Platform</td>
<td>Potential burial</td>
<td>Precontact-post-contact</td>
</tr>
<tr>
<td></td>
<td>E</td>
<td>Wind shelter C-shape</td>
<td>Temporary habitation</td>
<td>Precontact-post-contact</td>
</tr>
<tr>
<td></td>
<td>F</td>
<td>Petroglyph</td>
<td>Rock art/ceremonial</td>
<td>Precontact-post-contact</td>
</tr>
<tr>
<td></td>
<td>G</td>
<td>Petroglyph</td>
<td>Rock art/ceremonial</td>
<td>Precontact-post-contact</td>
</tr>
<tr>
<td>5441</td>
<td>A</td>
<td>Terrace</td>
<td>Temporary habitation?</td>
<td>Precontact-post-contact</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>Terrace</td>
<td>Temporary habitation?</td>
<td>Precontact-post-contact</td>
</tr>
<tr>
<td>5442</td>
<td>Single</td>
<td>Rock wall partial enclosure</td>
<td>Temporary habitation</td>
<td>Precontact-post-contact</td>
</tr>
<tr>
<td>5443</td>
<td>Single</td>
<td>Foundation</td>
<td>Former radio telescope foundation</td>
<td>1952</td>
</tr>
<tr>
<td>2805</td>
<td>Single</td>
<td>Wind shelter</td>
<td>Temporary habitation</td>
<td>Precontact-post-contact</td>
</tr>
<tr>
<td>2806</td>
<td>Single</td>
<td>Wind shelter</td>
<td>Temporary habitation</td>
<td>Precontact-post-contact</td>
</tr>
<tr>
<td>2807</td>
<td>A</td>
<td>Wind shelter</td>
<td>Temporary habitation</td>
<td>Precontact-post-contact</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>Wind shelter</td>
<td>Temporary habitation</td>
<td>Precontact-post-contact</td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>Wind shelter (C-shape)</td>
<td>Temporary habitation</td>
<td>Precontact-post-contact</td>
</tr>
<tr>
<td></td>
<td>D</td>
<td>Wind shelter (C-shape)</td>
<td>Temporary habitation</td>
<td>Precontact-post-contact</td>
</tr>
<tr>
<td>2807</td>
<td>E</td>
<td>Wind shelter</td>
<td>Temporary habitation</td>
<td>Precontact-post-contact</td>
</tr>
<tr>
<td></td>
<td>F</td>
<td>Wind shelter</td>
<td>Temporary habitation</td>
<td>Precontact-post-contact</td>
</tr>
<tr>
<td></td>
<td>G</td>
<td>Wind shelter</td>
<td>Temporary habitation</td>
<td>Precontact-post-contact</td>
</tr>
<tr>
<td></td>
<td>H</td>
<td>Wind shelter</td>
<td>Temporary habitation</td>
<td>Precontact-post-contact</td>
</tr>
<tr>
<td></td>
<td>I</td>
<td>Wind shelter</td>
<td>Temporary habitation</td>
<td>Precontact-post-contact</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>J</td>
<td>Wind shelter</td>
<td>Temporary habitation</td>
<td>Precontact-post-contact</td>
<td>Crude rock wall partially encloses small level area</td>
</tr>
<tr>
<td>K</td>
<td>Wind shelter</td>
<td>Temporary habitation</td>
<td>Precontact-post-contact</td>
<td>Crude rock wall built along wind edge of a cleared level area</td>
</tr>
<tr>
<td>L</td>
<td>Wind shelter/terrace</td>
<td>Temporary habitation</td>
<td>Precontact-post-contact</td>
<td>Natural terrace in lee of slope cleared of rock</td>
</tr>
<tr>
<td>M</td>
<td>Wind shelter</td>
<td>Temporary habitation</td>
<td>Precontact-post-contact</td>
<td>Level area on slope with boulder alignment</td>
</tr>
<tr>
<td>N</td>
<td>Wind shelter</td>
<td>Temporary habitation</td>
<td>Precontact-post-contact</td>
<td>Level area in lee of modified outcrop</td>
</tr>
<tr>
<td>O</td>
<td>Wind shelter</td>
<td>Temporary habitation</td>
<td>Precontact-post-contact</td>
<td>Level area in lee of boulder w/ crude stacking on perimeter</td>
</tr>
<tr>
<td>P</td>
<td>Wind shelter</td>
<td>Temporary habitation</td>
<td>Precontact-post-contact</td>
<td>Level area w/ altered crude stacking on perimeter</td>
</tr>
<tr>
<td></td>
<td>Wind Shelter</td>
<td>Temporary habitation</td>
<td>Precontact-post-contact</td>
<td>Level area w/ rubble on windward edge</td>
</tr>
<tr>
<td>B</td>
<td>Wind shelter</td>
<td>Temporary habitation</td>
<td>Precontact-post-contact</td>
<td>Level area w/ stacked rock on windward edge</td>
</tr>
<tr>
<td>C</td>
<td>Wind shelter</td>
<td>Temporary habitation</td>
<td>Precontact-post-contact</td>
<td>Level area w/ boulders on windward edge</td>
</tr>
<tr>
<td>F</td>
<td>Path</td>
<td>Pedestrian traffic</td>
<td>Precontact-post-contact</td>
<td>Pathway w/ boulder alignment at edge</td>
</tr>
</tbody>
</table>

### Site Significance Evaluations

The following significance evaluations are based on the Rules Governing Procedures for Historic Preservation Review (DLNR 1996; Chapter 275). According to these rules, a site must possess integrity of location, design, setting, materials, workmanship, feeling and association and shall meet one or more of the following criteria:

**Criterion “a”**—Be associated with events that have made an important contribution to the broad patterns of our history;

**Criterion “b”**—Be associated with the lives of persons important in our past;

**Criterion “c”**—Embody the distinctive characteristics of a type, period, or method of construction; represent the work of a master; or possess high artistic value;

**Criterion “d”**—Have yielded, or is likely to yield, important information for research on prehistory or history;
**Criterion “e”**—Have an important traditional cultural value to the native Hawaiian people or to another ethnic group of the state due to associations with traditional cultural practices once carried out, or still carried out, at the property or due to associations with traditional beliefs, events or oral accounts.

Sites can be considered no longer significant when they qualify only under Criterion “d” and sufficient information has been collected from them during inventory survey level investigation.

All of the sites mentioned in this report qualify for significance because of their information content under Criterion “d” of State and Federal historic preservation guidelines. In addition, the possible burial (Feature D) and the 2 petroglyph images (Features F and G) of Site 5440, as well as Site 5441 and the Site 4836 trail segment (Feature F) also qualify for their cultural significance under Criterion “e”. Finally, it is important to note that the various sites located in Science City are a remnant of a Native Hawaiian cultural landscape. Because Haleakala is noted for its ceremonial and traditional importance to the Native Hawaiian people, the entire Science City complex of sites may well qualify for importance under significance Criteria “a” and “e”.

### Mitigation Recommendations

All of the newly recorded sites and Feature F of Site 4836 as well as the previously identified Sites 2805-2808, and Site 4836 in the Science City project area retain their significance ratings under at least Criterion “d” for their information content under Federal and State historic preservation guidelines. As previously noted, the possible burial Feature D and the petroglyph Features F and G of Site 5440, as well as Site 5441 and Feature F of Site 4836 also remain important for their cultural significance under Criterion “e”. Finally, it is noteworthy that the various sites located in Science City, with the exception of Site 5443, represent a remnant of a Native Hawaiian cultural landscape.

Given the significance of the Haleakala summit area, the following mitigation measures are recommended. Passive in-place preservation is recommended for all of the sites discussed in this inventory survey report, with the possible exception of Site 5443. A comprehensive preservation plan for the various sites located in the 18.1-acre Science City project will help ensure that none of these cultural resources are inadvertently impacted by future activities in the complex. Based on discussions with Dr. Melissa Kirkendall, SHPD Maui/Lana`i staff archaeologist, and members of the Hawaiian community, archaeological monitoring is recommended during any future construction activities in the vicinity of any of the above sites, to help avoid inadvertent impacts. In the event that Site 5443 cannot be preserved, limited data recovery is recommended.
## Table 3

### Proposed Mitigation Treatment for Archaeological Sites

<table>
<thead>
<tr>
<th>SIHP-SIHP Site 50-50-11-</th>
<th>Significance Criterion</th>
<th>Site Type/Function (No. of Features)</th>
<th>Proposed Mitigation Treatment (Comments)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5438</td>
<td>d</td>
<td>Semi-enclosure, 4 terrace features and 1 possible rock pile (6)</td>
<td>Passive Preservation</td>
</tr>
<tr>
<td>5439</td>
<td>d</td>
<td>Two rock shelters, 11 rock wall shelters or C-shapes (13)</td>
<td>Passive Preservation</td>
</tr>
<tr>
<td>5440</td>
<td>d, e</td>
<td>Two rock wall enclosures, 1 terrace-like feature, 1 small platform-like feature (possible burial), 1 rock wall shelter or C-shape and 2 petroglyph boulders (7)</td>
<td>Passive Preservation</td>
</tr>
<tr>
<td>5441</td>
<td>d, e</td>
<td>Two terrace features (2)</td>
<td>Passive Preservation</td>
</tr>
<tr>
<td>5442</td>
<td>d</td>
<td>Semi-enclosure (1)</td>
<td>Passive Preservation</td>
</tr>
<tr>
<td>5443</td>
<td>a, d</td>
<td>Radio telescope facility remnant</td>
<td>Passive Preservation or data recovery</td>
</tr>
<tr>
<td>2805</td>
<td>d</td>
<td>Rock wall shelter (1)</td>
<td>Passive Preservation</td>
</tr>
<tr>
<td>2806</td>
<td>d</td>
<td>Rock wall shelter (1)</td>
<td>Passive Preservation</td>
</tr>
<tr>
<td>2807</td>
<td>d</td>
<td>Rock wall shelters and prepared level areas w/ modification or alignments (16)</td>
<td>Passive Preservation</td>
</tr>
<tr>
<td>2808</td>
<td>d</td>
<td>Prepared level areas w/ modified outcrops or clearing piles (3)</td>
<td>Passive Preservation</td>
</tr>
<tr>
<td>4836</td>
<td>d, e</td>
<td>Prepared level areas w/ modified outcrops and low walls, possible trail (6)</td>
<td>Passive Preservation</td>
</tr>
</tbody>
</table>

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20SIHP = State Inventory of Historic Places

2Criterion: a = associated with events that have made an important contribution to our island’s history; b = associated with the lives of persons important in our past; c = embodies the distinctive characteristics of a type, period, or method of construction; represents the work of a master; or possesses high artistic value; d = has yielded or is likely to yield information important for research on pre- or post-contact history; e = has an important traditional cultural value to the native Hawaiian people or another ethnic group in Hawaii.
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Site Type: Complex
Environmental Setting: Site 5438 is located approximately 68 meters north of the Maui Space Surveillance Site (MSSS) facility. This site is situated around the base of a low basalt escarpment that wraps the northern and western faces of a small promontory through which the northeastern project boundary passes. The site is c. 80 meters southeast of the northern-most corner of the study area. The site lies at an average elevation of 9,880’ AMSL, approximately 20 meters lower in elevation than the crest of the leveled portion of the MSSS facility. The general area is covered with a’a cobbles and cinder with large, weathered lava flow sections visible. The only plants observed were sparsely scattered kupaoa shrubs and some non-native clump grasses.

Dimensions: 20.0 meters NE/SW by 10.0 meters NW/SE
Function: Temporary shelter.
Subsurface Potential: Fair
Integrity: Unaltered
Condition: Good
Tested: Yes; Feature A, TU 1 was sterile.
Estimated age: Precontact—post-contact
Portable remains: None

Comments: Site 5438 consists of 1 small walled semi-enclosure, Feature A, 4 small terrace features and a rock pile. The walls of Feature A create a wind shelter on the northern most point of the landform, while Features B-E lie in the lee of the promontory. These latter features consist of leveled areas cleared of loose rock or built up with a retaining wall as in the Feature B terrace.
Figure A1 – Plan view of Site 5438.
Photo A1—Site 5438—Feature A enclosure, built against the rocky slope—view to the southwest.

Feature A

Type: Rock wall semi-enclosure
Dimensions: 2.80 meters in length N/S by 1.80 meters wide E/W and 1.15 meters maximum wall height
Function: Shelter/temporary habitation.
Subsurface Potential: Fair
Integrity: Unaltered
Condition: Good
Tested: Yes; TU 1 was sterile
Estimated Age: Precontact—post-contact
Portable Remains: None

Comments: Feature A consists of two short roughly stacked wall sections that extend outward off the base of a low basalt escarpment. The walls curve inward slightly, enclosing an area of about 4 square meters. The southern end of the enclosure abuts a 2.2-meter high vertical basalt rock face. The northern end of the feature has a 1.10 meter wide opening with the wall sections tapering down in height to that point. The walls are constructed of angular boulders and cobbles averaging 35 cm across, stacked 2-4 courses
in height and 1-3 courses in width. This feature effectively blocks wind flow from the predominant northeasterly direction. Feature A sits directly outside the project boundary. A small cairn-like stacking of cobbles is c. 15.5 meters to the northeast. Feature B lies c. 5 meters to the southwest.

![South wall profile of TU 1.](image)

**Feature B**

**Type:** Terrace  
**Dimensions:** 2.20 meters E/W by 1.60 meters N/S and 1.20 meters maximum wall height  
**Function:** Shelter/temporary habitation  
**Subsurface Potential:** Fair  
**Integrity:** Unaltered  
**Condition:** Good  
**Tested:** No  
**Estimated Age:** Precontact—post-contact  
**Portable Remains:** None  

**Comments:** This feature consists of a small terrace with a level area of approximately 3.25 square meters. This terrace is built at the base of a vertical basalt face of the promontory, which borders the southeastern edge of the feature. The landform effectively blocks the predominant wind flow from the northeast. The northwestern side of the terrace is supported by a stacked rock retaining wall. The wall fills a crevice at the northern corner of the feature where 5 courses of angular lava boulders averaging 35 cm in diameter reach a maximum height of 1.20 meters. The retaining wall wraps around the remaining western side, becoming a single course high on intact flow rock. A portion of the southern end of the terrace is covered by rubble. Some of this material was apparently filled in behind the stacking of rock to create the level area. Two purposefully placed slab-like rocks averaging 30 cm across are present on the northern end of the terraced area. The surface of the level area is dusted with fine cinders and scattered with angular cobbles and pebbles. Bedrock is visible in places.
Feature C

Type: Terrace
Dimensions: 2.60 meters NE/SW by 1.20 meters NW/SE and 0.40 meter maximum height
Function: Shelter/temporary habitation
Subsurface Potential: Fair
Integrity: Unaltered
Condition: Good
Tested: No
Estimated Age: Precontact—post-contact
Portable Remains: None

Comments: Feature C is a small level terraced area that abuts the low escarpment on the western side of the promontory. This bulk of this landform creates an effective windbreak. A low rock retaining wall is built upon larger talus boulders. The rocks include angular boulders and cobbles averaging 35 cm in diameter. These rocks appear to have been cleared off the level area and placed at the feature’s edge. The surface of this terrace is level and covered with smaller angular rocks and cinder. Feature B lies 1.5 meters to the north. Features D and E are located directly to the west and southwest, respectively.
Feature D

Type: Terrace
Dimensions: 2.10 meters NW/SE by 1.00 meter NE/SW and 0.40 meter maximum height
Function: Shelter/temporary habitation.
Subsurface Potential: Fair
Integrity: Unaltered
Condition: Good
Tested: No
Estimated Age: Precontact—post-contact
Portable Remains: None

Comments: Feature D consists of a small level area with 1-2 courses of angular lava boulders placed on solid flow rock along its northern edge. Two large talus boulders border the western edge of the level area. The level area is covered with angular pebbles and cinder. Large talus boulders border the eastern edge of the feature. Features C and E are located above to the east and southeast, respectively.
Feature E

Type: Terrace-leveled area  
Dimensions: 1.60 meters NE/SW by 1.20 meters NW/SE and 0.25 meter maximum height  
Function: Shelter/temporary habitation  
Subsurface Potential: Fair  
Integrity: Unaltered  
Condition: Good  
Tested: No  
Estimated Age: Precontact—post-contact  
Portable Remains: None

Comments: Feature E consists of a small, leveled area. This feature abuts the base of a vertical basalt face at its northeastern edge. The landform effectively blocks predominant wind flow. A few angular boulders and smaller rubble slope down off the north and west sides of the feature with a rough alignment of 3 boulders averaging 45 cm across creating the south border of the level area. The rubble appears to have been cleared off the level area to create a rest place out of the wind. Features C and D are directly adjacent to the northeast and north, respectively, and Feature F lies 4 meters to the south.

Feature F

Type: Rock pile  
Dimensions: 2.20 meters N/S by 1.00 meter E/W and 0.80 meter maximum height  
Function: Undetermined, possible shelter remnant/clear pile  
Subsurface Potential: Fair  
Integrity: Unaltered  
Condition: poor  
Tested: No  
Estimated Age: Precontact-early post contact  
Portable Remains: None

Comments: Feature F is a linear possibly stacked pile of a`a cobbles and boulders. The base of the western side of the promontory lies 1 meter to the east. This feature is poorly constructed with the addition of 1-2 courses of angular boulders to a natural rock concentration. There is no level area associated with the stacking.

Site 50-50-11-5439

Site Type: Complex  
Environmental Setting: Site 5439 is located between 30 and 79 meters north of the eastern end of the main MSSS building at an elevation ranging from 9,860-9,930 feet AMSL. The southern end of this relatively large site lies at the base of a bulldozed and
pushed boulder and rubble slope that lies directly below the crest of the MSSS facility. The site area consists of weathered lava flow sections with scattered talus boulders on a moderately steep slope. Loose cinder and rubble occur in pockets and over the level portions of the features. The site is situated primarily on the crest of and down the western slope of a sharp ridge that drops down from the summit in a northerly direction. The same ridge crest extends down slope to the promontory and Site 5439. The only vegetation noted in the site area consisted of scattered *kupaoa* shrubs.

**Dimensions:** 49.0 meters N/S by 31.0 meters E/W  
**Function:** Temporary habitation  
**Subsurface Potential:** Fair  
**Integrity:** Unaltered  
**Condition:** Good  
**Tested:** Yes; Feature A, T.U. 1 and Feature E, T.U. 2  
**Estimated age:** Precontact  
**Portable remains:** Marine shell fragment in Feature B, coral fragment in Feature A.

**Comments:** Site 5439 consists of 2 small rock shelters and 11 roughly constructed rock wall shelters of various sizes. Most of these wall shelters are built to block wind from the predominant northeasterly or easterly direction. All of these features utilize large naturally occurring lava boulders in their construction. Level areas, presumably for shelter, are present within or on the leeward side of the curved or C-shaped rock walls of the features.
Figure A3 - Plan view of Site 5439.
Figure A4 – Northeast face profile of Feature A, Site 5439—showing TU 1.

Figure A5 – Northeast face profile of Feature E—showing TU 2.
Figure A6 – Profiles of TU 1 and TU 2—Site 5439.

Feature A

Type: Rock shelter
Dimensions: 2.30 meters in width by 2.20 meters in depth and 0.75 meter maximum ceiling height
Function: Temporary habitation
Subsurface Potential: good
Integrity: Unaltered
Condition: Good
Tested: Yes; 1 tiny waterworn coral piece
Estimated Age: Precontact—post-contact
Portable Remains: 3 gravel sized waterworn coral pieces
Comments: Feature A is a small rock shelter only large enough for a single person to occupy. The shelter is open to the north and is set down into the western side of the ridge crest. Directly outside and paralleling the drip line of the shelter is a minor modification of an existing outcrop. Minimal stacking of 1-2 courses of angular a`a boulders and cobbles are stacked on this outcrop, creating a 50 cm high wall element which blocks wind from the north. The interior is level in the forward section of the shelter with loose black sand sloping down in the back portion. Feature B—another small rock shelter—lies directly adjacent and down slope to the northwest.

![Photo A4 – Feature A—Site 5439—small rock shelter, looking south.](image)

Feature B

Type: Rock shelter  
Dimensions: 1.0 meter NE/SW in width by 1.20 meters in depth NW/SE and 0.80 meter maximum ceiling height  
Function: Temporary habitation  
Subsurface Potential: Fair  
Integrity: Unaltered  
Condition: Good  
Tested: No  
Estimated Age: Precontact-early post contact  
Portable Remains: None

Comments: Feature B consists of a small rock shelter that is large enough for a single person. The interior is relatively level with a loose black sand deposit. Small niches
occur at either side of the chamber mouth where bird bone and a single marine shell fragment were observed. This shelter is open to the northwest and lies on the leeward side of the ridge.

Photo A5 – Two rockshelters at Site 5439—Feature B in foreground, Feature A above, marked by orange flagging tape.
Feature C

**Type:** Rock wall shelter  
**Dimensions:** 2.50 meters N/S length by 2.40 meters E/W width and 0.80 meter maximum wall height  
**Function:** Temporary habitation  
**Subsurface Potential:** Fair  
**Integrity:** Unaltered  
**Condition:** Good  
**Tested:** No  
**Estimated Age:** Precontact—post-contact  
**Portable Remains:** None

**Comments:** Feature C is situated on the crest of the ridge and consists of a short, roughly stacked rock wall section that wraps around the eastern side of an apparently intentionally leveled area. The wall is constructed of `a`a cobbles and boulders 2-4 courses high and 1-2 courses wide, and tapers down to a single course in height at its northern end. The level area has an oval shape in plan view and is approximately 2.8 square meters in area. It is bordered along the south and west sides by naturally occurring `a`a boulders that create a low enclosure. The feature is open across its width on the northern end. Feature D is 2.4 meters to the north on the opposite side of a low wire fence line that runs in an east-west direction across the southern end of the site.
Photo A6 – Feature C wall in foreground—Site 5439.

Feature D

Type: Rock wall shelter
Dimensions: 4.0 meters N/S in length by 2.20 meter E/W in width and 0.65 meter maximum height
Function: Temporary habitation
Subsurface Potential: Fair
Integrity: Unaltered
Condition: Good
Tested: No
Estimated Age: Precontact—post-contact
Portable Remains: None

Comments: Feature D consists of a roughly rectangular level area of approximately 4 square meters that has apparently been intentionally cleared of rock. A basalt outcrop 65 cm in height forms the eastern edge of the level area.  A`a cobbles and boulders are sparsely stacked 1-2 courses upon existing boulders and outcrops along the north, west and south edges of the level area. This feature sits on the crest of the ridge 2.4 meters north of Feature C, opposite a low wire fence line that runs east/west across the southern end of the site.

Feature E

Type: Rock wall shelter
Dimensions: 4.40 meters NE/SW by 5.0 meters NW/SE and 1.10 meters maximum wall height
Function: Temporary habitation
Subsurface Potential: Fair
Integrity: Unaltered
Condition: Good
Tested: Yes, Sterile
Estimated Age: Precontact—post-contact
Portable Remains: None

Comments: Feature E consists of a roughly stacked C-shaped rock wall that wraps the eastern side of a small level area of about 4 square meters that is relatively clear of rock. The wall is constructed of a`a boulders and cobbles that are stacked 2-5 courses in height and 1-2 courses in width. The wall is nearly vertical on the leeward side facing the level area and has a sloping appearance on its exterior. The wall terminates at large naturally occurring a`a boulders at the northern and southern ends of the feature. Adjoining the small rectangular level area adjoins the southeastern side of the main feature component along the edge of its exterior wall. This wall encloses an area of approximately 6.5 square meters, which is divided across its width by a rock alignment of 4 small angular boulders.
Feature F

Type: Rock wall shelter
Dimensions: 3.20 meters in length NE/SW
Function: Temporary habitation
Subsurface Potential: Fair
Integrity: Unaltered
Condition: Good
Tested: No
Estimated Age: Precontact—post-contact
Portable Remains: None

Comments: Feature F consists of a roughly stacked, low C–shaped rock wall that wraps around all but the southwest side of a level area of approximately 5 meters square. The leveled area is relatively clear of rock. The wall is constructed of small a`a boulders and cobbles stacked 1-5 courses in height and 1-2 courses in width. The wall tapers down to a single course at either end. Portions of the wall are stacked upon existing boulders or outcrops. Three large boulders are at the open or southwest side of the level area. Feature G lies 2.5 meters to the south.

Feature G

Type: Rock pile
Dimensions: 0.80 meters N/S length by 0.50 meter in width E/W and 1.0 meter maximum height
Function: Undetermined, possible rock wall shelter remnant
Subsurface Potential: Poor
Integrity: Unaltered
Condition: Good
Tested: No
Estimated Age: Precontact—post-contact
Portable Remains: None

Comments: Feature G consists of a vertical stacking of 3-5 courses of a`a small boulders and cobbles placed between naturally occurring boulders. No level area associated with the stacking was observed. Feature F, a C-shape, lies 2.4 meters to the north.

Feature H

Type: Rock wall shelter
Dimensions: 3.0 meters N/S length by 2.20 meters E/W width and 0.80 meter maximum wall height
Function: Temporary habitation
Subsurface Potential: Fair
Integrity: Unaltered
Condition: Good
Tested: No
**Estimated Age:** Precontact—post-contact  
**Portable Remains:** None

**Comments:** Feature H consists of a short, C-shaped stacking of cobbles and boulders that partially encloses the northeastern side of a small level area of approximately 4.5 square meters. This leveled area has apparently been cleared of loose rock. The wall section is 2.5 meters in length and is constructed of 1-4 courses of angular small boulders and cobbles. The wall abuts a large, naturally occurring boulder at the southeastern corner of the feature. Basalt outcrops form the southern and western edges of the feature. Feature E is located c. 4.5 meters to the west.

**Feature I**

- **Type:** Rock wall shelter  
- **Dimensions:** 2.20 meters N/S by 2.40 meters E/W and 0.40 meter maximum height  
- **Function:** Temporary habitation  
- **Subsurface Potential:** Fair  
- **Integrity:** Unaltered  
- **Condition:** Good  
- **Tested:** No  
- **Estimated Age:** Precontact—early post-contact  
- **Portable Remains:** None

**Comments:** This feature consists of a circular level area 1.8 meters in diameter that has been cleared of rocks. Along the northeastern or windward edge of the level area is a 1.4 meter long linear, C-shaped rock wall constructed of 1-2 courses of small a`a cobbles and boulders. The western and northwestern edges of this feature are defined by an arching alignment of 6 a`a boulders averaging 60 cm across. These rocks may have simply been moved off to the side while clearing the level area. The southern edge of the level area abuts a basalt outcrop. Feature J is located 1.0 meter to the southwest.

**Feature J**

- **Type:** Rock wall shelter  
- **Dimensions:** 2.50 meters NE/SW length by 1.40 meters in width and 1.10 meters maximum wall height  
- **Function:** Temporary habitation  
- **Subsurface Potential:** Fair  
- **Integrity:** Unaltered  
- **Condition:** Good  
- **Tested:** No  
- **Estimated Age:** Precontact—post-contact  
- **Portable Remains:** None

**Comments:** Feature J consists of a 1.4 meter long C-shaped, rock wall section that closes a 0.6 meter wide gap between two large a`a boulders at the northeastern end of a small, 1.6 square meter level area. The wall is roughly constructed of small a`a boulders and
cobbles stacked 3-5 courses high and 2-3 courses wide. Feature I is directly adjacent to the northeast.

Feature K

Type: Modified outcrop, shelter
Dimensions: 3.9 meters length E/W by 3.0 meters width N/S and 1.0 meter maximum height
Function: Wind shelter
Subsurface Potential: Fair
Integrity: Unaltered
Condition: Good
Tested: No
Estimated Age: Precontact—post-contact
Portable Remains: None

Comments: Feature K consists of a level, roughly square area that measures 1.5 meters square that has apparently been cleared of rock. A short roughly constructed wall, 1.2 meters long by 0.75 meter wide by 1.0 meter high, is stacked between two large boulders on the northeast side of the level area. A rough alignment of boulders with minimal stacking extends 2 meters to the west off of the boulder at the northeast corner and forms the north edge of the feature, completing a C-shaped wall. This feature is at the western edge of this site and 11 meters west of Feature I.

Feature L

Type: Rock wall shelter.
Dimensions: 2.50 meters length NW/SE by 1.50 meters width NE/SW and 0.60 meter maximum height.
Function: Wind shelter
Subsurface Potential: Fair
Integrity: Unaltered
Condition: Good
Tested: No
Estimated Age: Precontact—early post-contact
Portable Remains: None

Comments: Feature L consists of a short roughly stacked rock wall that forms a shallow C-shape around the northeastern side of a small, leveled area. This area measures 1.5 meters in length by 1.0 meter in width. The wall is constructed of angular a`a cobbles and boulders that are stacked 1-3 courses high on and around naturally occurring talus boulders. The wall includes an apparently natural upright slab boulder 60 cm in height. This feature lies 3 meters down slope and northwest of the larger Feature F C-shape.
Appendix A

Feature M

Type: Rock wall shelter
Dimensions: 2.50 meters length NW/SE by 1.45 meters width NE/SW and 0.90 meter maximum height
Function: Wind shelter
Subsurface Potential: Fair
Integrity: Unaltered
Condition: Good
Tested: No
Estimated Age: Precontact—early post-contact
Portable Remains: None

Comments: Feature M consists of a short, roughly C-shaped rock wall that partly encloses the northeastern side of a small level area measuring 1.50 meters in length by 1.0 meter in width. The wall is roughly constructed of a`a boulders and cobbles averaging 35 cm. across stacked 2-3 courses high and 1-2 courses in width. The wall is built on a natural lava flow section. An apparently natural vertical slab of a`a lies at the southwestern end of the feature and is incorporated in the wall.

Photo A7 – Site 5439—Feature L—stacked wall in natural formation.
Site Type: Complex
Environmental Setting: Site 5440 is located in the northwestern portion of the project area, in an area starting at the top of the northwest-facing slope, ranging in elevation between 9,950 to 9,910 feet AMSL. The slope is covered with large sections of weathered lava that are surrounded by talus boulders and areas of loose rubble and cinder. The southeastern-most feature of this site is 7.0 meters northwest of the paved service road that accesses the western side of the main AEOS observatory building. The site extends down the very rocky slope to the west for approximately 20 meters. The only vegetation observed in the site area consisted of some scattered kupaoa plants.

Dimensions: 34.0 meters N/S by 24.0 meters E/W
Function: Temporary habitation, wind shelters
Subsurface Potential: Fair
Integrity: Unaltered
Condition: Good
Tested: Feature A TU 1 and Feature B TU 2, both sterile
Estimated age: Precontact—early post-contact
Portable remains: weathered marine shell fragment, weathered bird bone fragment

Comments: Site 5440 consists of 3 stacked rock wall features, a natural modified terrace-like feature and a small platform rock arrangement. There are two petroglyph images—Features F and G—that occur on separate boulders within the site area. These features are spread out along the upper edge of the slope and 20 meters down slope. Loose cinder and angular pebbles cover the interior surface areas of Features A-E.
Figure A8 – Plan view of Site 5440.
Figure A9 – Plan view of Feature A—Site 5440.

Figure A10 – South-southwest profile of Feature A.
Feature A

Type: Rock wall enclosure
Dimensions: 5.60 meters length ENE/WSW by 3.0 meters width NNE/SSW and 1.20 meters maximum wall height
Function: Temporary habitation
Subsurface Potential: Fair
Integrity: Unaltered
Condition: Good
Tested: Yes; TU 1 was sterile.
Estimated Age: Precontact—early post-contact
Portable Remains: None

Comments: Feature A is a rock wall enclosure that lies at the upper edge of the slope. This feature has a distinctive figure eight shape in plan view. The interior of the enclosure is divided across its width into two circular rooms by a large boulder and minimal stacking of cobbles. This partition is about 30 cm in height and each level area averages 2 meters in diameter. The walls of the enclosure are roughly constructed of stacked `a`a boulders and cobbles averaging 40 cm across. The wall is 3-7 rock courses in height and 1-2 courses in width. Large apparently naturally occurring boulders have been utilized in the base in places. No entryway was apparent. The interior floor is level and cleared of loose rock. A fine black cinder deposit covers the floor of the feature.
Feature B lies down slope c. 17 meters to the west, while Features C and D are c. 18 meters down slope to the north. The two petroglyph images—Feature F and G—are c. 8 and 14 meters to the northeast, respectively.

<table>
<thead>
<tr>
<th>Photo A9 – Feature A—TU 1—Site 5440.</th>
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**Feature B**

**Type:** C-shape, partial enclosure.  
**Dimensions:** 3.70 meters length NW/SE by 3.80 meters width NE/SW and 0.90 meter maximum height  
**Function:** Temporary habitation, wind shelter  
**Subsurface Potential:** Fair  
**Integrity:** Unaltered  
**Condition:** Good  
**Tested:** Yes; TU 2 was sterile  
**Estimated Age:** Precontact—early post-contact  
**Portable Remains:** None  

**Comments:** Feature B consists of a roughly stacked, C-shaped rock wall that wraps around the northeast side of a small circular level area that has been cleared of rock. The wall is constructed of `a`a cobbles and boulders averaging 35 cm across stacked 3-5 courses high and 1-2 courses wide. The wall abuts a pair of large lava boulders at the
southeast and northwest corners of the feature, creating an enclosed area of about 2 meters square. A slight overhang exists beneath the boulders at the southwest end of the feature. The boulders are separated by a cleft that is 50 cm wide. A slab boulder, 40 cm wide by 70 cm long, has been placed over this gap, creating a small roofed area. The floor of this feature is covered with fine black cinder.

Figure A11 – Plan view of Feature B—Site 5440.
Feature C

Type: Level area with modification.
Dimensions: 6.90 meters length N/S by 2.30 meters width E/W and 0.50 meter maximum height
Function: Wind shelter/temporary habitation
Subsurface Potential: Fair
Integrity: Unaltered
Condition: Good
Tested: No
Estimated Age: Precontact—early post-contact
Portable Remains: 1 marine shell fragment.

Comments: Feature C consists of a natural terrace with a relatively large level area that measures 6.5 meters in length N/S by 2.0 meters in width E/W. The natural terrace is created by a near vertical, 4-meter high lava flow section. A level ledge exists along the terrace’s upper edge. This level area has been cleared of loose rock. A linear arrangement of 1-2 courses of small angular boulders divides the level area in the midsection across its width. Another rough, linear low pile of small boulders runs across the width of the northern end of the feature. These rocks were likely cleared from the feature’s level area. Feature D is at the base of the c. 4-meter high vertical basalt face directly below the midsection of this feature.

Photo A10 – Site 5440—Feature C, natural terrace with modified rock alignments at center.
Photo A11 – Site 5440—Feature F petroglyph.
Figure A12 – Plan view of Features C and D—Site 5440.
### Feature D

**Type:** Platform-like rock arrangement  
**Dimensions:** 1.60 meters length N/S by 1.0 meter in width E/W and 0.30 meter maximum height  
**Function:** Undetermined, potential burial feature  
**Subsurface Potential:** Fair  
**Integrity:** Unaltered  
**Condition:** Good  
**Tested:** No  
**Estimated Age:** Precontact-early post contact  
**Portable Remains:** None  

**Comments:** Feature D is a small rectangular platform-like feature consisting of an L-shape boulder alignment, bordering a cluster of sorted angular cobbles on the west and south sides. Three boulders averaging 50 cm across are tightly aligned along the western edge with smaller rocks aligned in a less formal fashion along the southern edge. The cobbles in the interior, which average 20 cm, are laid in a level cluster of undetermined depth. The eastern edge of the feature abuts the base of a 4-meter high basalt face, and Feature C is located at the top of this face.

### Feature E

**Type:** Rock wall shelter  
**Dimensions:** 3.60 meters length N/S by 1.80 meters width E/W and 0.90 meter maximum height.  
**Function:** Wind shelter  
**Subsurface Potential:** Fair  
**Integrity:** Unaltered  
**Condition:** Good  
**Tested:** No  
**Estimated Age:** Precontact-early post contact  
**Portable Remains:** None  

**Comments:** Feature E consists of a roughly stacked low, C-shaped rock wall built upon two natural a`a boulders which wrap the eastern edge of a small level area. The level area measures 1.6 meters in length N/S by 1.0 meter in width E/W. The wall is constructed of 1-2 courses of angular small boulders and cobbles averaging 35 cm across. The feature, although crude, effectively blocks the prevailing wind flow. Several boulders are scattered across the level area and may have collapsed from the wall. A large kupaoa bush currently occupies the interior of the shelter.
Photo A12 – Feature E—C-shape structure—Site 5440. View to the northeast. Feature A in background below dome.

Photo A13 – Feature E—looking north.
Feature F

Type: Petroglyph
Dimensions: 19 cm. in height by 13 cm in width
Function: Possible ceremonial/rock art
Subsurface Potential: Fair
Integrity: Unaltered
Condition: Good
Tested: No
Estimated Age: Modern?
Portable Remains: None

Comments: This is a single petroglyph image that has been pecked into the top side of a basalt boulder measuring 1.0 meter in width and 1.25 meters in length. The image is of a human figure portrayed in a simple stick figure style. The arms and legs are extended.
straight out from the body perpendicular with the torso. The elbows bend upward at ninety degrees. The legs bend downward at the knee at ninety degrees. The image is rendered on the very nearly horizontal top surface of the boulder 30 cm above the surrounding ground surface. The image shows little signs of erosion and may be a relatively recent addition to the site. The petroglyph is located 8 meters north of the enclosure Feature A. Feature G, another petroglyph, lies c. 5 meters to the northeast.

Figure A14 - Drawing of Feature E petroglyph—Site 5440.

Feature G

**Type:** Petroglyph  
**Dimensions:** 21 cm in height by 18 cm in width  
**Function:** Possible ceremonial/rock art
Subsurface Potential: Fair
Integrity: Unaltered
Condition: Good
Tested: No
Estimated Age: Precontact-early post contact
Portable Remains: None

Comments: This petroglyph image appears to represent a figure with an oval shaped body, somewhat diminutive limbs and a boxy shaped head element. The initial impression is that of a turtle rendered in a simple contour line fashion. This image has been pecked onto the slightly over-vertical face of a basalt boulder measuring 1.1 meters in length NW/SE by 90 cm in width NE/SW and 1 meter in height. The image faces toward the southwest with the bottom of the image being meters 80 cm above the ground surface. Feature A enclosure is 14 meters to the southwest. Feature G—another petroglyph—is 5 meters to the southwest.

Figure A15 – Drawing of Feature G petroglyph—Site 5440.
Photo A14 – Site 5440—Feature G petroglyph.

Figure A16 – Profiles of TU 1 and TU 2.
**Site Type:** Complex  

**Environmental Setting:** Site 5441 lies at c. 9940 feet AMSL along the southern project boundary, c. 5 meters northeast of southeasternmost corner marked which is marked by a ¾” pipe. The site lies at the base of a c. 9-meter high escarpment which rims the project in this area. The terrain slopes steeply to the southeast from the escarpment base. The area is covered with large talus boulders and loose rubble. Plants include *kupaoa*, *ohelo’ai* shrubs, and bunch grass in isolated clumps.  

**Dimensions:** 4.25 meters length NE/SW by 1.75 meters width NW/SE  

**Function:** Possible ceremonial  

**Subsurface Potential:** Fair  

**Integrity:** Unaltered  

**Condition:** Good  

**Tested:** No  

**Estimated age:** Precontact  

**Portable remains:** None  

**Comments:** Site 5441 consists of two small terrace features situated at the base of the escarpment. Both have small oval level areas averaging 1.75 by 1.75 meters and minimally stacked rock arrangements on their leading southeastern edges. The features face out to the southeast with a commanding view of the island of Hawaii. A series of electrical wires run along the base of the escarpment near these features.

![Figure A17 – Plan view of Site 5441.](image-url)
Feature A

Type: Terrace
Dimensions: 1.60 meters length NE/SW by 1.25 meters width NW/SE and 0.30 meter maximum height
Function: Undetermined
Subsurface Potential: Fair
Integrity: Unaltered
Condition: Good
Tested: No
Estimated Age: Precontact-early post contact
Portable Remains: None

Comments: Feature A is a prepared small oval shaped level area of 1.4 meters square that has been cleared of loose rock. Curving around the southeast edge of the feature is a crude retaining wall made up of 1-2 courses of angular small boulders and cobbles averaging 25 cm across. This small wall section is 1.25 meters in length and is built between apparently naturally deposited talus boulders at the leading corners of the feature. Talus boulders border the back or northwestern edge of the feature, 75 cm from the base of the escarpment. Feature B is directly adjacent 1 meter to the northeast.

Feature B

Type: Terrace
Dimensions: 1.50 meters length E/W by 1.50 meters width N/S and 0.35 meter maximum height.
Function: Undetermined.
Subsurface Potential: Fair
Integrity: Unaltered
Condition: Good
Tested: No
Estimated Age: Precontact-early post contact
Portable Remains: None

Comments: Feature B is a small oval shaped level area of 1.5 meters square that has had apparently been cleared of loose rock. A small crude retaining wall curves around the south southeastern or down-slope edge. This wall is 1.5 meters in length and is constructed of small angular boulders and cobbles stacked 2-3 courses in height and averages 25 cm across. It is built upon and between natural talus boulders. Talus boulders border the back or northwestern edge of the feature, 1.5 meters from the base of the escarpment. The surface of the level area has loose cinder and angular pebbles. Currently of few boulder have fallen onto the terrace area. Feature A is adjacent, c. 1 meter to the southwest.
Photo A15 – Site 5441—Features A and B—small terraces at base of escarpment—view to the southwest.
Site 50-50-11-5442

Site Type: Single component, Rock wall partial enclosure.
Environmental Setting: Site 5442 is situated at the southern edge of the Science City grade at an elevation of 9955 feet AMSL. It is 6 meters south of the southwestern corner of the Mees solar observatory building and 3 meters north of the top edge of a 3 meter high escarpment which rims the Science City grade area. The areas directly to the northeast and west of the feature have been graded and the south edge of the feature. These have evidently been impacted by that activity also. Numerous pushed a`a boulders are clustered in the general vicinity. The location affords a commanding view of the island of Hawaii. The flora at the site consists of sparse kupaoa and patchy grass.

![Plan view of Site 5442.](image)

Figure A18 – Plan view of Site 5442.

Dimensions: 4.50 meters length E/W by 3.25 meters width N/S and 0.85 meter maximum wall height
Function: Temporary habitation
Subsurface Potential: Fair
Integrity: Altered, Mechanical grading of area. Mechanical scars on some of the rocks.
Condition: Fair
Tested: No
Estimated Age: Precontact-post-contact
Portable Remains: 1 waterworn coral cobble (possible aggregate), numerous concrete chunks, metal wire.

Comments: Site 5442 consists of a small rock wall, partial enclosure. A small oval shaped level area of 1.50 square meters is defined by a low roughly stacked rock wall that measures c. 3 meters in length E/W that arcs around its southern edge. The wall is constructed of a`a boulders that average 35 cm across. These rocks are stacked 1-5 courses high and 1-2 courses wide. The wall abuts a large boulder 1.25 meters in width. This boulder lies at the western end of the feature and a smaller boulder is located at the eastern end. The boulder at the western end has mechanical scars upon it. The northern edge of the feature is formed by a linear cluster of a`a boulders and cobbles which may be the remnants of a wall section. Numerous concrete chunks are scattered in this area also. Immediately to the east is a linear cluster of a`a boulders and cobbles with no apparent stacking. This may be a remnant of a former feature of this site that was impacted during earthmoving activities associated with the construction of the nearby Mees Solar Observatory. Some of these rocks display mechanical scars and several concrete chunks were noted mixed in with the rock in this area.

Site 50-50-11-5443 [T6]

Type: Radio telescope facility foundation  
Dimensions: Rim is up to 1 meter in width by 0.8 meter in height, by 25 meters in diameter  
Function: Foundation—astronomy

Subsurface potential: Poor  
Integrity: Structure dismantled in the mid-1950s  
Condition: Poor—altered by bulldozing activities  
Tested: No  
Estimated age: 1952  
Portable Remains: Metal and bottle glass fragments, unassociated infrastructure buildings in area  
Comments: This site, known as Reber Circle, consists of a circular concrete ring, which once served as the base for the former radio telescope facility that was constructed on the summit of Pu`u Kolekole in 1952. The area has been extensively altered by previous bulldozing activities associated with later construction in the Science City area.
Photo A16 – Portion of Reber Circle—Site 5443—looking east.

Photo A17 – Close-up of circular concrete perimeter and interior fill (Site 5443).
Figure A19 - Plan view of Site 5443.
Site Type: Single component, rock wall shelter.

Environmental Setting: This site is located on the north facing steep rocky slope of the uppermost rise of Puu Kolekole, 41 meters due north of the Kolekole triangulation station at the summit. The site is at an elevation of c. 9990 feet AMSL. The area surrounding the site is covered with a`a talus boulders and cobbles. The only vegetation observed around the site area was sparsely scattered kupaoa.

Dimensions: 3.50 meters N/S by 2.50 meters E/W and 1.18 meters maximum wall height

Function: Temporary habitation

Subsurface Potential: Fair

Integrity: unaltered

Condition: Good

Tested: No

Estimated age: Precontact

Portable remains: none

Comments: Site 2805 consists of a short crudely stacked rock wall section that forms a shallow arch around the western edge of a small level area 2.5 meters in length NE/SW by 1 meter wide NW/SE. The feature is set against the base of a low basalt face to which the south end of the wall abuts. The wall, which is constructed of 3-6 courses of vertically stacked angular a’a cobbles and boulders arches out and back toward the rock face leaving a 1 meter wide opening at the northeastern end of the level area. The natural rock face forms the southeastern border. A restricted small alcove exists at the base of the rock face within the feature’s interior. It is 1.5 meters in width, 1.5 meters in depth and has a restricted ceiling height averaging 40 cm. A small level area exists along the exterior side of the wall at the south end of the feature. This is 1.25 meters in length by 35 cm in width. It also abuts the rock face. The interior is nearly devoid of rocks and has a cinder and black sand deposit showing on the surface.
Figure A20 – Plan view of Site 2805.
Site 50-50-11-2806

(previously identified)

**Site Type:** Single component, rock wall shelter.

**Environmental Setting:** This site is located within Science City on the moderately sloped northwest side of Pu‘u Kolekole, c. 48 meters northwest of the Kolekole
triangulation station at the summit. The AEOS building lies 35 meters to the northwest. The area surrounding the site is covered with large a`a boulders that have fallen off a c. 3 meter high vertical basalt face of the intact flow. **Dimensions:** 2.50 meters E/W length by 2.20 meters N/S width and 0.30 meter maximum wall height  **Function:** Temporary habitation  **Subsurface Potential:** Fair  **Integrity:** Potentially altered  **Condition:** Fair  **Tested:** No  **Estimated age:** Precontact  **Portable remains:** 1 piece of branch coral is 3 meters east of the feature.  **Comments:** Site 2806 consists of a rock alignment around the entrance to a small rock shelter, with minimal stacking of 1-2 courses of a`a boulders and cobbles. This forms an arch around the north and east sides of a small level area measuring 1.5 meters square. The wall is 2.2 meters in length and abuts a vertical 3 meter high basalt escarpment at the eastern end of the feature where a few of the rocks are precariously balanced. A narrow possible entrance exists between that boulder and the escarpment face. The south edge of the level area abuts the base of the escarpment. The interior of the shelter has a deposit of cinder and black sand with a few small boulders on the surface.
Site Type: Complex, rock wall shelters.

Environmental Setting: Site 2807 is located 48.0 meters west of the summit of Puu Kolekole at the triangulation station. This site is situated on the very rocky WNW facing slope directly east of the gamma ray telescope facility. The site is at an elevation ranging from 9994 feet AMSL at the crest of Puu Kolekole, to 9960 AMSL at the base of the slope. The only vegetation observed was sparsely scattered *kupaoa* shrubs.

Dimensions: 48.0 meters N/S length by 20.0 meters E/W width

Function: Temporary habitation

Subsurface Potential: Fair

Integrity: Altered (Feature P only)

Condition: Fair

Tested: No

Estimated age: Precontact-Post-contact

Portable remains: 1 small non-native, sub-angular basalt cobble (6 meters SW of Feature M). The sling stone from the earlier 1991 reconnaissance could not be relocated.

Photo A19 – Feature A—Site 2807—small overhang with wall to the left.
Figure A22 - Plan view of Site 2807.
Comments: Site 2807 consists of 16 separate prepared level areas each with some form of rock modification. Either simple rock alignments or roughly stacked low walls are associated with level areas, which appear to have been purposefully cleared of loose rock. This creates an area where one might shelter from the wind. Some of the features are terrace-like with minor modification along the western or down-slope edge of the level area. Others at the base of the slope have been partially encircled by rock alignments with two having upright a`a slabs placed along the windward side or northern side of the level area. A few of the features have marginal overhangs at the edge of the level areas. Many of the features are within 2 meters of each other.

Feature A

Type: Shelter
Dimensions: 2.0 meters N/S length by 1.40 meters E/W width and 0.95 meter maximum wall height
Function: Temporary habitation/wind shelter
Subsurface Potential: Fair
Integrity: Unaltered
Condition: Good
Tested: No
Estimated Age: Precontact-early post contact
Portable Remains: None

Comments: Feature A consists of a small leveled area measuring 1.6 meters N/S by 1.2 meters E/W with a short wall section along the northern edge. The 1.8 meter long wall is constructed of crudely stacked small a`a boulders averaging 35 cm across that have been placed on an outcrop. It averages 1-2 courses in height and a single course in width. A large boulder sits at the eastern edge of the level area beneath which is a small overhang measuring 1.6 meters in width by 80 cm deep and 60 cm in maximum ceiling height. This overhang is only large enough for one person to crawl into and lay horizontally to the entrance. Loose cinders and black sand deposit covers the surface of the level area. Feature B is 50 cm to the north.

Feature B

Type: Shelter
Dimensions: 2.0 meters E/W length by 1.50 meters N/S width and 0.30 meter maximum height
Function: Wind shelter
Subsurface Potential: Fair
Integrity: Unaltered
Condition: Good
Tested: No
Estimated Age: Precontact-early post contact
Portable Remains: None
Comments: Feature B consists of a small level area that has apparently been purposefully cleared of loose rock. A small crude pile of small a`a boulders, stacked 1-2 courses high, sits at the northwestern corner of the feature abutting a 1-meter high outcrop. The outcrop wraps the northeastern end of the level area. A rough alignment of 3 small a`a boulders forms the south edge of the feature. Feature C is 2.2 meters to the north.

Feature C

Type: Shelter
Dimensions: 3.40 meters NE/SW length by 2.20 meters NW/SE and 0.50 meter maximum height
Function: Wind shelter
Subsurface Potential: Fair
Integrity: Unaltered
Condition: Good
Tested: No
Estimated Age: Precontact-early post contact
Portable Remains: None

Comments: Feature C consists of a small level area cleared of loose rock. Two a`a slabs averaging 55 cm across have been placed in an upright position along the northwestern corner of the feature. The eastern end of the level area is defined by a low outcrop, which effectively blocks the dominant wind flow across the feature. A crude linear rubble pile, 1.8 meters in length and 1-2 courses high, extends off the outcrop and forms the southern border of the feature. Feature D is 2.4 meters to the north. Feature G is 3.8 meters upslope to the east.

Feature D

Type: Shelter
Dimensions: 3.60 meters NE/SW length by 2.20 meters NW/SE width and 0.80 meter maximum height
Function: Wind shelter
Subsurface Potential: Fair
Integrity: Unaltered
Condition: Good
Tested: No
Estimated Age: Precontact-early post contact
Portable Remains: None

Comments: Feature D consists of a roughly oval shaped level area of approximately 3.75 meters square that has been cleared of rock. This is bordered on the north and west sides by a C-shaped boulder alignment with minimal stacking. The alignment is constructed of 1-2 courses of a`a boulders averaging 40 cm across. An a`a boulder slab has been placed in an upright position in the center on the northern side of the feature. Cinder and sand cover the interior floor of the feature along with a few angular cobbles.
Feature E

Type: Shelter
Dimensions: 1.60 meters E/W in length by 1.60 meters N/S in width and 1.0 meter maximum height
Function: Wind shelter
Subsurface Potential: Fair
Integrity: Unaltered
Condition: Good
Tested: No
Estimated Age: Precontact-early post contact
Portable Remains: Pepsi soda bottle ca. 1960

Comments: Feature E consists of a small, irregularly shaped, relatively level area measuring 2 meters N/S by 2 meters E/W. Small piles of a‘a boulders and cobbles are at the southwest corner and the northern edge of the feature. These were possibly created while clearing the level area of loose rock. The area sheltered from the wind is created by the natural lava flow rock, which borders the northeast and southeast sides of the feature.
Feature F

Type: Shelter
Dimensions: 3.70 meters in length NE/SW by 1.60 meters NW/SE in width and 1.40 meters maximum wall height
Function: Wind shelter
Subsurface Potential: Fair
Integrity: Unaltered
Condition: Good
Tested: No
Estimated Age: Precontact-early post contact
Portable Remains: None

Comments: This small oval-shaped level area measures 1.6 meters N/S by 1.2 meters E/W and has a roughly piled rubble alignment along its north and west sides. An upright a`a slab is at the features southern end. The eastern edge of the feature abuts the steep slope. Extending off the western side of the feature is a roughly stacked short wall measuring 2 meters in length E/W by 1.4 meters maximum height. Angular boulders averaging 30 cm across have been placed into a crevice in the natural a`a formation of the slope. The function of this additional wall section is undetermined.

Feature G

Type: Shelter
Dimensions: 4.0 meters length N/S by 1.60 meters width E/W and 0.70 meter maximum wall height
Function: Wind shelter
Subsurface Potential: Fair
Integrity: Unaltered
Condition: Good
Tested: No
Estimated Age: Precontact-early post contact
Portable Remains: None

Comments: This is a small rectangular shaped level area measuring 3.1 meters N/S by 1.7 meters E/W. A short vertically stacked rock wall 3-4 courses high and 1 meter in length is built into a crevice between boulders at the southern end of the feature. A series of angular cobbles have been placed in an alignment along the upper edge of the crevice. Minor overhangs, 20 cm deep, exist beneath the natural rock of the slope bordering the eastern edge of the feature. The surface of the level area is covered with cinder, black sand and angular pebbles. Feature H is directly adjacent up-slope to the east.

Feature H

Type: Shelter
Dimensions: 2.70 meters length N/S by 1.50 meters E/W and 0.40 meter maximum height
Function: Wind shelter
Subsurface Potential: Fair
Integrity: Unaltered
Condition: Good
Tested: No
Estimated Age: Precontact-early post contact
Portable Remains: None

Comments: Feature H is a small level area on the slope that has been cleared of loose rock. A natural flow rock on the slope creates a wind block on the eastern edge of the feature. A small probable clearing pile is at the southeast corner of the level area. Feature G is directly adjacent down-slope to the west.

Feature I

Type: Shelter
Dimensions: 2.10 meters length N/S by 1.60 meters E/W and 0.80 meter maximum height
Function: Wind shelter
Subsurface Potential: Fair
Integrity: Unaltered
Condition: Good
Tested: No
Estimated Age: Precontact-early post contact
Portable Remains: 1 piece of 1” metal pipe, electrical wiring and a piece of angle iron.

Comments: Feature I consists of a small oval shaped level area on the slope bordered on the east side by natural flow rock on the slope. At the north end of the feature, 1-2 courses of small angular boulders have been added to naturally occurring boulders.

Feature J

Type: Rock wall enclosure, shelter
Dimensions: 3.10 meters length N/S by 1.90 meters width E/W and 0.90 meter maximum height
Function: Wind shelter
Subsurface Potential: Fair
Integrity: Unaltered
Condition: Good
Tested: No
Estimated Age: Precontact-early post contact
Portable Remains: None

Comments: Here is a small irregular shaped rock wall enclosure. Angular small boulders and cobbles are stacked, 1-4 courses high in short sections between 4 naturally occurring large boulders. The highest point on the wall is along the eastern or windward side of the feature. The eastern side of the feature has a simple boulder alignment. The
enclosure is open at the southern end. This feature sits at the crest of the slope on a small finger ridge directly adjacent to Feature K 1.5 meters to the east.

Feature K

**Type:** Shelter  
**Dimensions:** 4.25 meters length N/S by 1.80 meters width E/W and 1.0 meter maximum height  
**Function:** Wind shelter  
**Subsurface Potential:** Fair  
**Integrity:** Unaltered  
**Condition:** Good  
**Tested:** No  
**Estimated Age:** Precontact-early post contact  
**Portable Remains:** None  

**Comments:** Feature K consists of a stacked rock wall that runs along the eastern edge of a small level area 2 meters square. The wall is 4.25 meters in length N/S and is constructed of small angular boulders and cobbles stacked 2-4 courses in height and 1-2 courses in width. The stacking occurs in short sections between naturally occurring, large boulders. This feature sits on the crest of the slope and Feature J lies 1.5 meters to the west.

Feature L

**Type:** Shelter  
**Dimensions:** 1.50 meters length N/S by 1.80 meters width E/W and 0.50 meter maximum height  
**Function:** Wind shelter  
**Subsurface Potential:** Fair  
**Integrity:** Altered; wire wrapped around one of the rocks.  
**Condition:** Good  
**Tested:** No  
**Estimated Age:** Precontact-early post contact  
**Portable Remains:** Metal wire  

**Comments:** Feature L is a small oval shaped level area just below the crest of the slope, with a natural windbreak consisting of a vertical basalt outcrop along its eastern edge. A pile of small boulders and cobbles lies at the northern end of the level area with a possible rock alignment of small boulders along the down-slope or western edge of the level area. Some metal wire is wrapped around one of these boulders. Feature M is 50 cm to the west, directly down-slope.
Feature M

Type: Shelter  
Dimensions: 2.50 meters length N/S by 1.90 meters width E/W and 0.30 meter maximum height  
Function: Wind shelter  
Subsurface Potential: Fair  
Integrity: Altered; metal wire wrapped around a boulder  
Condition: Good  
Tested: No  
Estimated Age: Precontact-early post contact  
Portable Remains: Metal wire, bottle finish ca.1930s

Comments: Feature M consists of a roughly rectangular shaped small level area measuring 2 meters N/S by 0.75 meter E/W. A simple alignment of boulders averaging 30 cm runs along the western edge of the level area with some metal wire wrapped around one of the boulders. A small overhang 50 cm high and 60 cm deep is at the eastern edge of the feature. Feature L is directly above on the slope, 50 cm to the east.

Feature N

Type: Shelter  
Dimensions: 2.10 meters in length N/S by 1.20 meters wide E/W and 0.60 meter maximum height  
Function: Wind shelter  
Subsurface Potential: Fair  
Integrity: Unaltered  
Condition: Good  
Tested: No  
Estimated Age: Precontact-early post contact  
Portable Remains: None

Comments: Feature N consists of a small roughly rectangular level area between large boulders at the base of the slope. An alignment of 5 boulders averaging 40 cm across is along the northern end. A single slab-like boulder has been placed in a gap in the large boulders at the northwestern corner. A stacked wall section branches off the northwest corner of the feature and goes north for 1.25 meters. One to 3 courses of rocks are stacked on an outcrop. The function for this addition is undetermined. Feature O is directly adjacent to the southwest.

Feature O

Type: Shelter  
Dimensions: 3.70 meters in length N/S by 3.10 meters in width E/W and 1.0 meter maximum height  
Function: Wind shelter  
Subsurface Potential: Fair
Integrity: Unaltered
Condition: Good
Tested: No
Estimated Age: Precontact-early post contact
Portable Remains: None

Comments: Feature O consists of a relatively large level area bordered on the north, west and south sides by broken rock alignments. Two roughly stacked short wall sections are built between and upon large naturally occurring boulders at the southwest corner of the feature.

Feature P

Type: Shelter
Dimensions: 2.20 meters in length N/S by 1.90 meters in width E/W and 0.30 meter maximum height
Function: Wind shelter
Subsurface Potential: Fair
Integrity: Altered
Condition: Fair
Tested: No
Estimated Age: Precontact-early post contact
Portable Remains: None

Comments: Feature P consists of a small level area at the base of a low escarpment. A cluster of rocks is present at the western edge of the level area. Some have been displaced and reused as weights to anchor a plywood and metal base for a piece of scientific equipment no longer in use. It is clear that this feature was of a type common at this site where rocks have been cleared off of a level area and placed to the side.

Site 50-50-11-2808 (previously identified)
Features A-C

Site Type: Complex
Environmental Setting: Site 2808 is located at the base of the western slope of the prominent rocky hill that is directly to the west of the Mees observatory. The site is at an average elevation of 9960 feet AMSL. The surrounding terrain is that of an exposed weathering a`a hill with talus boulders and rubble covering most of the surface area. The only vegetation observed was sparsely scattered kupaoa.
Dimensions: 13.0 meters NE/SW by 7.0 meters NW/SE
Function: Temporary habitation, wind shelters
Subsurface Potential: Fair
Integrity: Unaltered
Condition: Good
Tested: No
Estimated age: Precontact-early post contact
**Portable remains:** 1 *opih* shell

**Comments:** Site 2808 is comprised of three small level areas that have apparently been cleared of loose rock. Each has some type of rock modification in the form of walls or simple clearing piles apparently designed to create a place to rest out of the wind.

**Feature A**

**Type:** Shelter  
**Dimensions:** 3.25 meters in length N/S by 2.25 in width E/W and 0.60 meter maximum height.  
**Function:** Wind shelter  
**Subsurface Potential:** Fair  
**Integrity:** Unaltered  
**Condition:** Good  
**Tested:** No  
**Estimated Age:** Precontact-early post contact  
**Portable Remains:** 1 *opih* shell is located c. 5 meters to the south.

**Comments:** This is a level area, measuring 2.5 meters N/S by 1.5 meters E/W, which has been cleared of loose rock. A rough linear rubble pile arcs around the northern end of the western side. This material, consisting of angular small boulders and cobbles averaging 25 cm across, was likely simply cleared from the level area. A 2-meter high vertical basalt face borders the eastern side of the feature. The surface of the level area currently has numerous small boulders on it, which may have collapsed from what might have originally been a more formal wall. Cinder and angular basalt pebbles cover most of the level area. Feature B is 4 meters to the west.
Figure A23 – Plan view of Site 2808.
Feature B

Type: Shelter  
Dimensions: 2.40 meters in length NW/SE by 2.0 meters in width NE/SW and 1.25 meters maximum height  
Function: Wind shelter  
Subsurface Potential: Fair  
Integrity: Unaltered  
Condition: Good  
Tested: No  
Estimated Age: Precontact-early post contact  
Portable Remains: None

Comments: Feature B is a small, prepared level area that has been cleared of loose rock. A stacked rock wall was built along the northeastern edge of the level area. Here 4-5 courses of angular small boulders have been placed upon weathering a`a. The interior height of the wall is 1.25 meters. The exterior height is 35 cm giving it the appearance of a retaining wall. The south end of the wall abuts a large boulder at the south end of the level area. Another large boulder is at southeast corner and divides this feature from Feature C.

Feature C

Type: Shelter  
Dimensions: 2.0 meters in length N/S by 2.50 meters in width E/W and 0.50 meter maximum height.  
Function: Wind shelter  
Subsurface Potential: Fair  
Integrity: Unaltered  
Condition: Good  
Tested: No  
Estimated Age: Precontact-early post contact  
Portable Remains: None

Comments: Feature C consists of a level area 2 meters square that abuts large boulders on its northeast and southeast sides. These boulders are 1.8 meters high and create an effective windbreak. A 2.6-meter long crudely stacked low wall abuts the northeastern boulder and arcs around the western side of the level area leaving the southern end of the feature open. The wall is constructed of small angular boulders averaging 30 cm across stacked 1-2 courses in height and width. The level area is completely clear of larger rock with cinder, black sand and angular pebbles covering the ground surface. Feature B is 2 meters to the northeast.
Figure A24 – Plan view of Sites 4835 and 4836.
Site 50-50-11-4836
(Previously recorded)
Feature F

Type: Pathway \(^{22}\) remnant

**Dimensions:** 22.0 meters in length E/W by 1.10 meters in width N/S

Function: Pedestrian traffic

Subsurface potential: Poor

Integrity: Altered; feature was likely impacted by the construction of a since abandoned paved road to the east of site.

Condition: Good-fair

Tested: No

Estimated age: Precontact-post-contact

Portable Remains: 12oz tin can w/ church key opener

Comments: Feature F consists of a linear pathway that has been cleared of rock. Numerous boulders averaging 50-60 cm in diameter are roughly aligned along the southern edge of the pathway. These were likely cleared and placed to the side to create the pathway. It runs east/west along the southern edge of Site 4836. The path becomes apparent c. 4 meters to the south of Site 4836 (Feature C) that sits at the southeast corner of the prominent basalt knoll. The path continues to the west, passing directly adjacent to the south end of Feature B, and then passes between the knoll (4 meters north) and a large basalt outcrop. From that point the path descends down a moderate slope for an additional 11 meters, where it is impacted by a broad graded area to the south of the new telescope facility. The eastern end of the path also becomes undistinguishable in an area impacted by the construction of a since abandoned paved road.

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\(^{22}\) This feature was not recorded in Bushnell and Hammatt, 2000. This feature was recorded per the request of Dr. Melissa Kirkendahl and Mr. Charles Kauluwehi Maxwell.