
DRAFT ENVIRONMENTAL IMPACT STATEMENT

Volume 2

Thirty Meter Telescope Project

Island of Hawai'i

Proposing Agency:
University of Hawai'i at Hilo

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This Environmental Document was Prepared Pursuant to Hawai'i Revised Statutes, Chapter 343,
Environmental Impact Statement Law and Chapter 200 of Title 11, Hawai'i Administrative
Rules, Department of Health, Environmental Impact Statement Rules

May 23, 2009

EXHIBIT A-148

APPENDIX D

INITIAL DRAFT CULTURAL IMPACT ASSESSMENT

Thirty Meter Telescope Project

Mauna Kea Science Reserve and Hale Pōhaku,
Ka'ōhe Ahupua'a, Hāmākua District, Hawai'i Island

TMK: [3] 4-4-015:001 por.; 009 por., 012 por.

May 2009

Summary

Introduction

The Project requires compliance with the State of Hawai‘i environmental review process [Hawai‘i Revised Statutes (HRS) Chapter 343], which requires consideration of a proposed project’s effect on cultural practices and resources. At the request of Parsons Brinckerhoff, Cultural Surveys Hawai‘i (CSH) has conducted research of the existing literature documents and performed initial cultural consultation efforts, as part of the CIA process. The CIA process is intended to support the Project’s environmental review and may also serve to support the Project’s historic preservation review under HRS Chapter 6E-8 and Hawai‘i Administrative Rules (HAR) Chapter 13-275. The CIA process is ongoing, and the following is a summary of the initial findings thus far.

Project Location

The proposed TMT Observatory Project area is located within Area E of the Astronomy Precinct of the Mauna Kea Science Reserve. Approximately 3.5 miles south of the proposed TMT Observatory Project site, are the Hale Pōhaku Mid-Level Support Facilities, two discrete parcels located in the Hale Pōhaku area, at approximately 2,800 m (9,200 ft.) elevation on the southern slope of Maunakea. The Project areas are depicted on the U.S. Geological Survey 7.5-Minute Series Topographic Map, Mauna Kea Quadrangle (1993) (Figure 1).

Land Jurisdiction

State of Hawai‘i

Agencies

State of Hawai‘i Department of Health, Office of Environmental Quality Control (DOH/OEQC), and State Historic Preservation Division (SHPD), Department of Land and Natural Resources (DLNR)

Project Description

The proposed TMT Observatory Project involves the construction of a thirty meter diameter telescope and associated infrastructure on an approximately 5-acre site within Area E of the Astronomy Precinct. Minimally, land disturbing activities would include grading of the TMT Observatory Project site and access road and excavations associated with building construction and installation of subsurface utilities. The proposed Mid-Level Support Facilities include construction staging areas and development of housing for TMT Observatory Project staff and contractors. The proposed Project also involves upgrades to the existing Hawai‘i Electric Light Company (HELCO) power substation at Hale Pōhaku. Minimally, land disturbing activities would include grading of the construction staging areas, and excavations associated with

construction of workers dormitories and associated structures, installation of subsurface utilities, and substation upgrades.

Project Acreage

The footprint of the proposed TMT Observatory Project ground disturbance measures approximately 5 acres. The footprint of the proposed Mid-Level Support Facilities measures approximately 3.2 acres.

Area of Potential Effect (APE)

The APE for the TMT Observatory Project considered in the initial research and consultations includes the entire approximately 36-acre Area E of the Astronomy Precinct, even though the TMT Observatory site encompasses 5-acre area. The APE for the TMT Mid-Level Support Facilities includes the entire approximately 3.2 acres. The APE also includes the rest of the island of Hawai‘i and other Hawaiian Islands and places in Polynesia (e.g., Kahiki, or Tahiti), associated with Maunakea in the larger context of Hawaiian beliefs (e.g., mo‘olelo or legends, oral histories and wahi pana or storied places), resources and practices.

Consultation Effort

Hawaiian organizations, agencies and community members were contacted by CSH to identify potentially knowledgeable individuals with cultural expertise and/or knowledge of the Project area and the vicinity. The agencies consulted include the State Historic Preservation Division (SHPD), the Office of Hawaiian Affairs (OHA), and the Hawai‘i Island Burial Council (HIBC), in addition to community groups such as Mauna Kea Anaina Hou, Royal Order of Kamehameha ‘E kahi, Mamalahoa, Hilo Chapter and Hale o Lono. This effort is ongoing and is being made by letter, e-mail, telephone, and in person contact. In the majority of cases, letters are mailed along with a map and an aerial photograph of the Project area.

Note on Spelling of Maunakea

For this preliminary CIA, both spelling variations of the name Maunakea are used. The two word format - Mauna Kea - is used to address official entities such as the “Mauna Kea Science Reserve” and when quoting content from other sources such as books or past published interviews that include the name of the mountain as two words. All other uses of the mountain will be written as one word, Maunakea. See Section 3.2 on Place Names for further details on the spelling of Maunakea.

Results of Background Research

Background research conducted for this Project yields the following results:

1. Maunakea is a sacred cultural landscape; symbolic of Wākea (the ‘Sky Father’ to all Hawaiians), home of Poli‘ahu, the goddess of snow and foe of Pele (the fire goddess), and of many other resident deities and supernatural entities (e.g., Līlīnoe, Kūkahau‘ula and Mo‘oinanea) and the piko (umbilical cord) of the island-child, Hawai‘i which

connects the land to the heavens (Maly and Maly 2005:v); home of Waiau, the highest permanent lake in the Hawaiian Islands; location of the highest and most extensive basalt quarry in all of Polynesia and perhaps the entire world; and numerous trails, ahu (stone markers), religious shrines and cinder cone pu‘u (hills), based on extensive historical and oral-historical documentation.

2. Maunakea is rich in mo‘olelo, mele (chants, songs), and ‘ōlelo no‘eau (proverbs, poetical sayings) associated with akua (God, male and female deities, spirits) and storied places (wahi pana). Poli‘ahu, the snow goddess and Pele, the volcano goddess engaged in legendary battles to control Maunakea. Pele also had legendary battles with the pig demi-god Kamapua‘a on the summit of Maunakea. Numerous stories of Wākea and Papa, Poli‘ahu, Līlīnoe, Kūkahau‘ula and Mo‘oinanea, to name a few, are written into the landscape.
3. The TMT Observatory Project area is located below the summit cone, Pu‘u Kūkahau‘ula, at approximately 13,700 feet elevation. The Hale Pōhaku Project area is located at approximately 9,160 feet in elevation. Maunakea, the tallest mountain in the Hawaiian Islands at 13,796 feet elevation, is also the tallest mountain on earth as measured from the ocean floor to the summit, a distance of some 29,500 feet (thus, exceeding by approximately 1,000 feet the non-volcanic Mount Everest).
4. Vegetation is almost non-existent in the summit region of Maunakea; the tree-line is located nearly a mile in elevation below the summit (at approximately 9,000 feet elevation); the highest major vegetation zone, known as the Alpine Scrub Zone, generally ends at approximately 11,300 feet elevation. Plants in the so-called Alpine Stone Desert Zone of the summit region are mostly limited to small lichens and mosses. More plant life is present in the Hale Pōhaku Project area characterized by scrub vegetation including a number of natives such as mamane (*Sophora chrysophylla*), pukiawe (*Leptecophylla tameiameia*) and the endangered endemic, ahinahina, also known as Maunakea silversword (*Argyroxiphium sandwicense*) as well as introduced exotics such as mullein (*Verbascum thapsus*) and various grasses.
5. Maunakea translates literally as white (kea) mountain (mauna), so named for its breathtaking snow-capped summit. However, according to Nā Maka o ka ‘Āina (2008) and according to other authorities on Hawaiian culture (e.g., Kepā Maly, Pualani Kanahele), Maunakea has numerous other meanings and translations. It is a short version of Mauna a Wākea, a name that connects it to the sky father, Wākea; this would be one of its kaona (hidden or more subtle meanings).
6. Hale Pōhaku literally “stone house,” refers to the two stone cabins constructed by the Civilian Conservation Corps in 1936 and 1939 at an elevation of 9,220 feet on the southern slope of Maunakea. L.W. Bryan, who served as the Territorial Forestry Office and oversaw the construction of the “stone houses,” also named them Hale Pōhaku.
7. Pu‘u Poli‘ahu is named for Poli‘ahu, “the woman who wears the snow mantle of Mauna Kea”; Poli‘ahu, which is also the name of a land division on Maunakea, is translated as “garment [for the] bosom (referring to the snow)” by Pukui et al. (1974) and as “Snow goddess of Mauna Kea. Lit. Bosom goddess” by Pukui and Elbert (1986). Maly & Maly include a citation by W.D. Alexander regarding the naming of Pu‘u Poli‘ahu. As the peak

was nameless, Alexander called it “Poliahu” since it had “a poetical name, being that of the demigoddess with snow mantle who haunts Mauna Kea” (Maly and Maly 2005:200).

8. Waiau, the permanent lake located within Pu‘u Waiau near the summit of Maunakea at approximately 13,020 feet elevation, translates as “swirling water,” and is associated with the snow goddess Poli‘ahu and is guarded by the supernatural water spirit (mo‘o) known as Mo‘oinanea. Queen Emma went to the top of Maunakea to bathe in the waters of Waiau. The ceremony was to cleanse in Lake Waiau at the piko (navel or center) of the island. The water caught at Lake Waiau is considered pure water of the gods much like the water caught in the piko of the kalo (taro) leaf and is thought of as being pure, therefore it is used medicinally (Nā Maka o ka ‘Āina 2008).
9. The Mauna Kea Adze Quarry, also known as Ke-ana-kāko‘i, “the adze-making cave” (Pukui et al 1974:103), is located on the southern slopes of the mountain, at elevations up to 12,400 feet. The site was listed on the National Register of Historic Places in 1969, and the Hawai‘i State Register of Historic Places in 1981.
10. The ahupua‘a of Ka‘ohe was government land on which four native claims were made following the Māhele in 1848. Only one kuleana claim was awarded in the entire ahupua‘a. The single awarded claim indicates coffee, arrowroot, banana, and taro were all cultivated in the lands of Ka‘ohe. Ka‘ohe was also known as a habitat for uwa‘u, or ‘ua‘u (dark-rumped petrel) seabirds that reside in rocky, dry, elevated areas (Foster 1893).
11. While historic accounts and mo‘olelo tell of the presence of burials on Maunakea (Maly and Maly 2005), archaeological evidence until recently, was relatively limited concerning confirmed human burials in the summit region. Prior to 2005, archaeological authorities on Maunakea, including Pat McCoy, had documented only one confirmed burial site (with multiple burials) and four possible burial sites in the summit region (McCoy 1991). All of these sites are located on Pu‘u Mākanaka to the northeast of the subject Project area. In progress work by McCoy and Nees however, has documented 28 sites designated as burials and possible burials (McCoy et al 2008).
12. Several extensive cultural studies have been previously carried out for Maunakea (McEldowney 1982; Kanahele and Kanahele 1997; Maly 1998; Langlas et al. 1999; Maly 1999; PHRI 1999; Maly and Maly 2005). The most comprehensive study by Maly and Maly (2005) builds on archival and oral-historical research conducted by the authors beginning in 1996 (to 2005) and presents a wide range of information on natural and cultural beliefs, resources and practices associated with Maunakea. Among the many critical findings of Maly and Maly’s (2005) cumulative research is the emphasis on Maunakea as a sacred landscape and native lore associated with traditional knowledge of the heavens - documenting 270 Hawaiian names for stars.
13. Past studies identify Traditional Cultural Properties (TCP) on Maunakea. Three places that have been identified by SHPD as TCPs and documented in a study done by PHRI (1999) are: (1) Kūkahau‘ula, the summit (Site 21438), (2) Līlinoe (Site 21439) and (3) Lake Waiau (Site 21440). Other traditional places may also qualify (Figure 6). Maly (1998:29) has suggested the entire Maunakea summit region down to the 6,000 foot elevation contour be designated a Traditional Cultural Property (Figure 16).

14. Archival and oral-historical evidence confirms that Maunakea has long been, and continues to be, a place where significant cultural practices are carried out: where, the piko of newborn children is taken to Pu‘u Kūkahau‘ula and Lake Waiau to ensure long life and safety; the remains of individuals with generational ties to Maunakea are taken to pu‘u and the summit plateau for interment (Maly and Maly 2005:vi); shrines and stone markers are erected and; ceremonial and other activities related to birth, death, healing, navigation and more, occur.

Results of Initial Community Consultations

CSH attempted to contact 58 community members (government agency or community organization representatives, or individuals such as residents, cultural and lineal descendants, and cultural practitioners) for the purposes of this preliminary CIA. Out of the contacted community members 30 people responded via written comments or verbally over the phone. Of the 30 persons who responded, 13 kūpuna (elders) and/or kama‘āina (native born) agreed to be interviewed for more in-depth contributions to the CIA process. Community consultation with a few respondents is ongoing. The results of these initial cultural consultations indicate that there are major concerns (and several ancillary ones) regarding potential adverse impacts on cultural and natural resources and associated beliefs and practices as a result of the proposed development of the Thirty Meter Telescope, construction of the staging area for the TMT Observatory Project and the HELCO electrical transformer needed to supply electrical power to the TMT Observatory Project:

1. All of the community consultants interviewed for this study stress that Maunakea is a sacred landscape and that any future development activities on the mountain proceed with greater awareness of, and the utmost respect for Hawaiian culture, Hawaiians’ spiritual connection to the mountain, and the sanctity of Maunakea.
2. Nine of the community elders interviewed, and three of the respondents who provided brief commentary, explicitly stated their opposition to the proposed actions on Maunakea which is traditionally, and continues to be, one of the most sacred locations in all of Polynesia, not to mention Hawai‘i Nei. These participants voiced sadness, frustration or negative feelings about the cumulative impacts of past and present developments on Maunakea. In the words of one participant, referring to the telescopes on the summit of Maunakea, “When is enough, enough?” Specific mana‘o (thoughts, ideas), concerns and recommendations from those that oppose the proposed TMT Observatory Project and Hale Pōhaku Mid-Level Support Facilities Project are:
 - a. Three participants called for astronomy facilities to be removed and Maunakea be repaired to its original condition. Two of these participants recommended that the proponents of the TMT Observatory Project make an effort to better reach out to the community about the findings of the Mauna Kea Science Reserve and scientific intent of the proposed TMT Observatory Project through public education events.
 - b. One participant stated that there should be no further development until issues are rectified with the Hawaiian people.
 - c. One participant called for the proposed TMT Observatory Project to be installed in Chile rather than in Hawai‘i.

- d. A number of these participants stressed the importance of astronomy to Hawaiians, particularly discussing voyaging traditions.
 - e. Several interview participants and respondents expressed concern about the disturbance of burials and associated cultural artifacts, markers and shrines (ahu) and in pu‘u as result of construction of the proposed TMT Observatory Project and support facilities.
 - f. Five participants discussed environmental concerns, particularly about Lake Waiau and the mountain aquifer, as well as other impacts to environmental services. These participants assert that Maunakea - the principal aquifer and watershed for Hawai‘i Island - is being contaminated by human use (i.e., sewage and toxic chemicals leaching from astronomy facilities). Participants also mention the threatened endemic Maunakea Wekiu Bug (*Nysius wekiuicola*) and cleaning up trash left by visitors to Maunakea.
 - g. One participant noted that the entire Mauna Kea Science Reserve has been identified by SHPD as an historic district; suggesting that a Cultural Reserve be created and that the following landscape features qualify as TCPs: the Mauna Kea Adze Quarry Complex; the cluster of 3 pu‘u of Kūkahau‘ula that make up the summit region of Maunakea; Lake Waiau; and Līlinoe, referring to the pu‘u southeast of the summit and within the Science Reserve
 - h. Three participants questioned legal aspects of the lease agreement between the University of Hawai‘i and the state and legitimacy of the Mauna Kea Science Reserve to operate on ceded and/or occupied lands.
 - i. Two participants questioned the benefits to the local economy and education promised by past and proposed telescope projects on Maunakea.
3. Three participants interviewed and one respondent who provided brief commentary, are in favor of the development of the TMT Observatory Project and its associated facilities on Maunakea. These participants recommend Project proponents proceed with care and respect to the sacredness of Maunakea and advised mitigation measures and/or alternatives to the current proposed design and location of the TMT Observatory Project and support facilities. In the words of one participant, “The future of Maunakea...can serve as an educational center and a place for man to view the stars and the universe but it has to remain a sacred and holy place. It’s like stepping into a sanctuary, a very sacred place of peace, a place that one can learn the things beyond what man knows now.”
- Mana‘o, concerns and recommendations from these participants are:
- a. One participant believes the TMT Observatory Project should be built on a recycled site. He states that if an outdated telescope site on Maunakea is identified, the site should be recycled for TMT Observatory Project usage to avoid unnecessary intrusions that detracts from the beauty and majesty of Maunakea.
 - b. One participant calls for a process to be put in place that respects community and allows projects such as TMT Observatory Project telescope to continue.
 - c. One participant recommends the removal of all other telescopes and that only one telescope be utilized and shared by interested parties.

- d. All three of these participants state that if the TMT Observatory Project proceeds, it should be developed to blend in with the natural setting and not detract from the natural beauty and sacredness of Maunakea.
4. Interviewees discussed salient features of the cultural landscape, resources and associated uses of Maunakea including, mo'olelo about Wākea and Papa, Poli'ahu, Līlīnoe, Kūkahau'ula and Mo'oinanea; the summit as an area where families take the piko of their babies to bury, and where the bones or ashes of deceased family members are placed, burials and burial complexes; shrines and stone markers; navigation traditions and astronomy; the adze quarry, ancient and historic trails; the healing and purifying waters of Lake Waiau and snow and ice collected for medicinal and ceremonial purposes; bird hunting; and other past and present cultural practices (see Sections 7 and 8).
5. SHPD, responding in a memo sent on May 4, 2009, states that, "As you may have discerned from the most recent Mauna Kea Comprehensive Management Plan (MCMP) for the UH Management Area (January 2009) and the public hearings for that plan that Mauna Kea is a very sensitive subject that truly needs and deserves more time to consider all the cultural impacts to this iconic symbol of all cultural connections including but not limited to the genealogical connections, and the spiritual connections to all of the deities in the Hawaiian cosmos and to the kanaka maoli world view." Additionally, SHPD recognizes Maunakea's place in Hawaiian navigation as "the first sighting for voyaging canoes to arrive safely to our islands in the middle of the Pacific [and] a significant part of the Pacific Rim mythological connections to all the Pacific Rim." SHPD recommends:
 - a. An assessment of buildings no longer functional be done before building new structures or "perhaps no more development on this sacred mountain";
 - b. access for cultural practitioners be clearly addressed and defined;
 - c. the entire summit of Maunakea be treated as one traditional cultural landscape and not as a piecemeal analysis of just the Science Reserve; and that
 - d. more community outreach occur for all cultural impacts on the summit and the proposed area to properly assessed - see list of contacts in the MCMP.
6. OHA, responding in a letter dated January 9, 2009 (Appendix B), acknowledges the different perspectives on Maunakea as a spiritual, sacred place, home to "wao akua" (dwelling, place of the gods) and the place where the presence of numerous ahu and iwi kūpuna provide silent testimony that generations of Hawaiians have worshipped and buried loved ones "at the highest point possible to rest in peace." The "life sustaining waters known as Kanekawaiola...contribute to a healthy natural environment, which in turn allow man to thrive." The letter describes the 40-year debate surrounding the development of Maunakea and recommends that the current proposed TMT Observatory Project study be viewed in context of this long history to "consider the overall impacts of development on Mauna Kea." OHA suggests several parties for consultation and is currently reviewing the Hale Pōhaku Mid-Level Support Facilities Project area information to determine whether they will provide additional comments.

Ongoing Community Consultations

The consultations, including additional interviews with the community members will continue to be on-going in soliciting input representative of the community. The initial consultations resulted in a limited number of only 13 interviews with kūpuna and/or kama‘āina. Thus, and also as indicated by some respondents during the initial consultations, outreach to other parties will continue in the on-going consultations and interviews conducted, in order to gather input representative of the community. The results of these consultations and interviews, and recommendations reflecting community input, will be documented in a final CIA report and the Final EIS.

Attachment: Draft Initial CIA report prepared by CSH

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Section 1 Introduction

1.1 Project Background

Cultural Survey Hawai‘i, Inc. (CSH) conducted this Cultural Impact Assessment (CIA) for the proposed construction and operation of the Thirty Meter Telescope Observatory Project (TMT), an optical-infrared telescope on an estimated 5 acres of presently undeveloped land of the 525-acre Astronomy Precinct of the Science Reserve near the top of Maunakea. Approximately 3.5 miles south of the proposed TMT Observatory Project site, are the Hale Pōhaku Mid-Level Support Facilities, two discreet parcels located in the Hale Pōhaku area, at approximately 2,800 m (9,200 ft.) elevation on the southern slope of Maunakea. The Project would be located in Ka‘ohe Ahupua‘a, Hāmākua District, on the island of Hawai‘i, on a portion of TMK: (3) 4-4-015: 009 and 012 (Figures 1 through 3).

The proposed TMT Observatory Project would be located within the western portion of the area known as the northern plateau within the Astronomy Precinct. More specifically, the area being considered is the general vicinity of the 36-acre area designed Area E in the Mauna Kea Science Reserve Master Plan (UH 2000). Area E ranges in elevation from 13,100 to 13,300 feet and is located approximately half a mile northwest of the nine existing optical-infrared telescopes located near the summit at elevations of 13,600 to 13,775 feet. The entire Mauna Kea Science Reserve is designated part of the State of Hawai‘i Conservation District, resource subzone. Ancillary facilities include an access road from the end of the current access road near the summit to the new telescope site would need to be developed.

When the TMT Observatory Project’s CIA consultation was initiated on November 24, 2008, communication with Project proponents indicated that the proposed Thirty Meter Telescope CIA consisted mainly of the actual construction of the TMT Observatory Project within the 36-acre area known as Area E in the Mauna Kea Science Reserve Master Plan. In February 2009, CSH was informed that the TMT Observatory Project will also include a construction staging area located at the 9,000 foot level Hale Pōhaku site, approximately 3.5 miles south of the proposed TMT Observatory Project site. Additionally, included in the proposed TMT Observatory Project description is a new electrical transformer to be installed at the Hawaiian Electric Light Company (HELCO) site located at the Hale Pōhaku site. For this reason, CSH sent out a second round of community consultation letters in February 2009 to include the additional information regarding the construction staging area and the electrical transformer in order to provide community consultants the opportunity to provide further comments and concerns.

The footprint of the proposed ground disturbance for the TMT Observatory Project measures approximately 5 acres. However, the precise 5-acre Project area is not yet determined, so the entire approximately 36-acre Area E of the Astronomy Precinct is included in the Project area. The Area of Potential Effect (APE) for this TMT Observatory includes the 36-acre area of the possible construction footprint as well as the approximately 6-acre footprint of the proposed Mid-Level Support Facilities. For the purposes of this CIA, the APE considers the Project area/s within the larger cultural context of the the *ahupua‘a* of Ka‘ohe; Hawai‘i Island and, other islands of Hawai‘i and Polynesia—lands, or *wahi pana* (legendary or storied places) culturally associated with Maunakea through legends, oral history accounts (*mo‘olelo*) chants, songs (*mele*)

and poetical sayings, proverbs (*‘ōlelo no ‘eau*). This assessment further includes consideration of the *cumulative* effects of the proposed Project on traditional Hawaiian practices and resources in and around the Project area.

On May 11, 2009, an updated map of the Hale Pōhaku Mid-Level Support Facilities was provided by project proponents for this assessment and has been inserted in Appendix E. It is important to note that this updated map of the Hale Pōhaku Mid-Level Support Facilities was not used in the community consultation efforts for this assessment.

1.2 Document Purpose

The Project requires compliance with the State of Hawai‘i environmental review process [Hawai‘i Revised Statutes (HRS) Chapter 343], which requires consideration of a proposed Project’s effect on cultural practices. CSH is conducting this CIA at the request of PB, Inc. Through document research and ongoing cultural consultation efforts this *preliminary* draft report provides information pertinent to the assessment of the proposed Project’s impacts to cultural practices and resources (per the *Office of Environmental Quality Control’s Guidelines for Assessing Cultural Impacts*) as well as consideration of eligibility for inclusion on the State Register of Historic Places, including Traditional Cultural Properties (TCPs) of ongoing cultural significance, according to Hawai‘i State Historic Preservation Statute (Chapter 6E) guidelines for significance criteria (HAR §13-275-6) under Criterion E which states to be significant an historic property shall:

Have an important value to the Native Hawaiian people or to another ethnic group of the state due to associations with cultural practices once carried out, or still carried out, at the property or due to associations with traditional beliefs, events or oral accounts—these associations being important to the group’s history and cultural identity.

The document is intended to support the Project’s environmental review and may also serve to support the Project’s historic preservation review under HRS Chapter 6E-8 and Hawai‘i Administrative Rules Chapter 13-275.

1.3 Scope of Work

The scope of work for this CIA includes:

1. Examination of cultural and historical resources, including Land Commission documents, historic maps, and previous research reports, with the specific purpose of identifying traditional Hawaiian activities including gathering of plant, animal, and other resources as may be indicated in the historic record.
2. A review of previous archaeological work at and near the subject parcel that may be relevant to reconstructions of traditional land use activities; and to the identification and description of cultural resources, practices, and beliefs associated with the parcel.

3. Consultation and interviews with knowledgeable parties regarding traditional cultural practices at or near the parcel; present uses of the parcel; and/or other (non-Hawaiian) practices, uses, or traditions associated with the parcel.
4. Preparation of a report summarizing the results of these research activities.

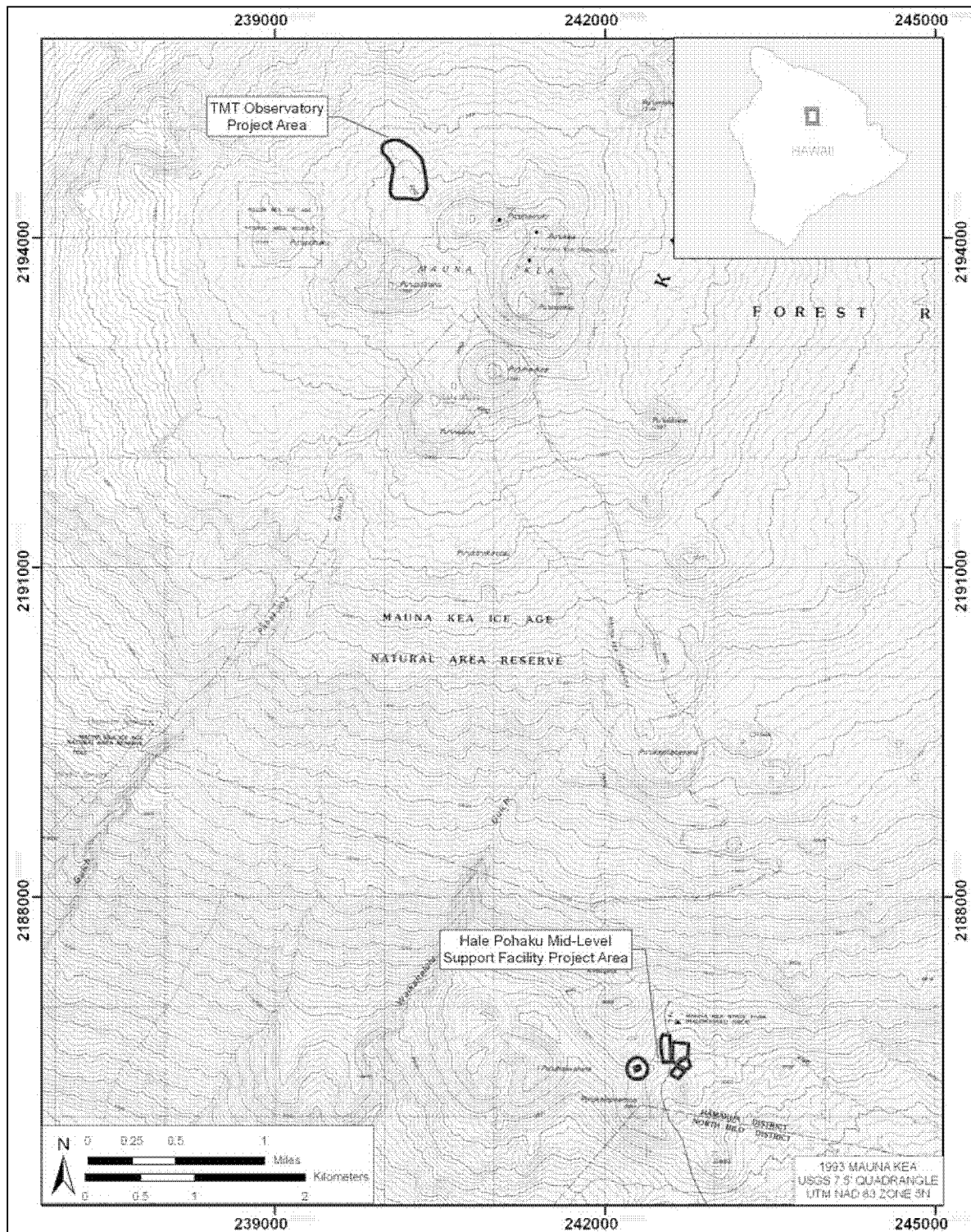


Figure 1. U.S. Geological Survey 7.5-Minute Series Topographic Map, Mauna Kea Quadrangle (1993), showing the location of the Project areas

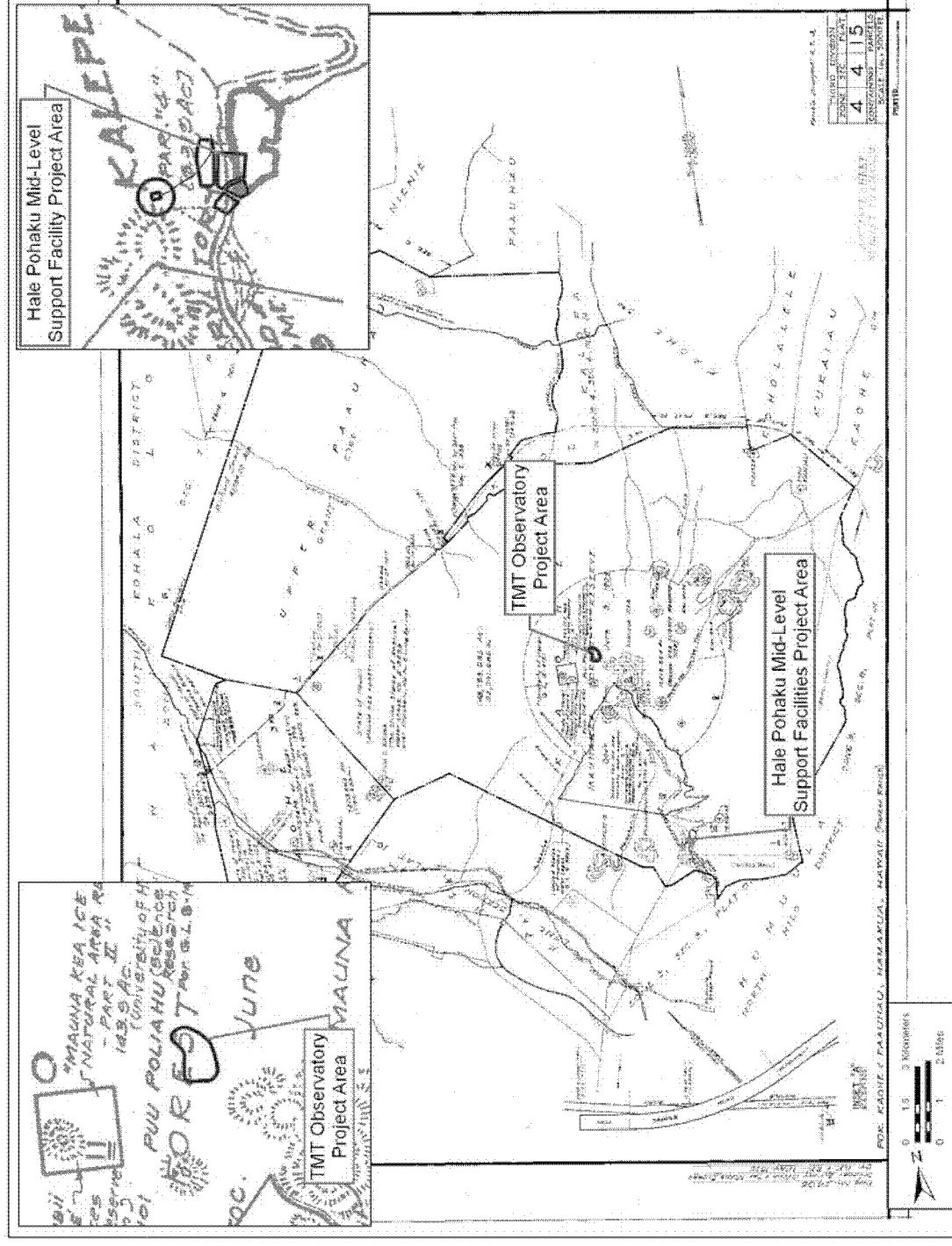


Figure 2. Portion of Tax Map Key (TMK) 4-4-015, showing the location of the Project areas

CIA for the TMT Observatory and Hale Pōhaku Support Facilities Project

TIMK: [3] 4-4-015:001 por., 009 por., 012 por.

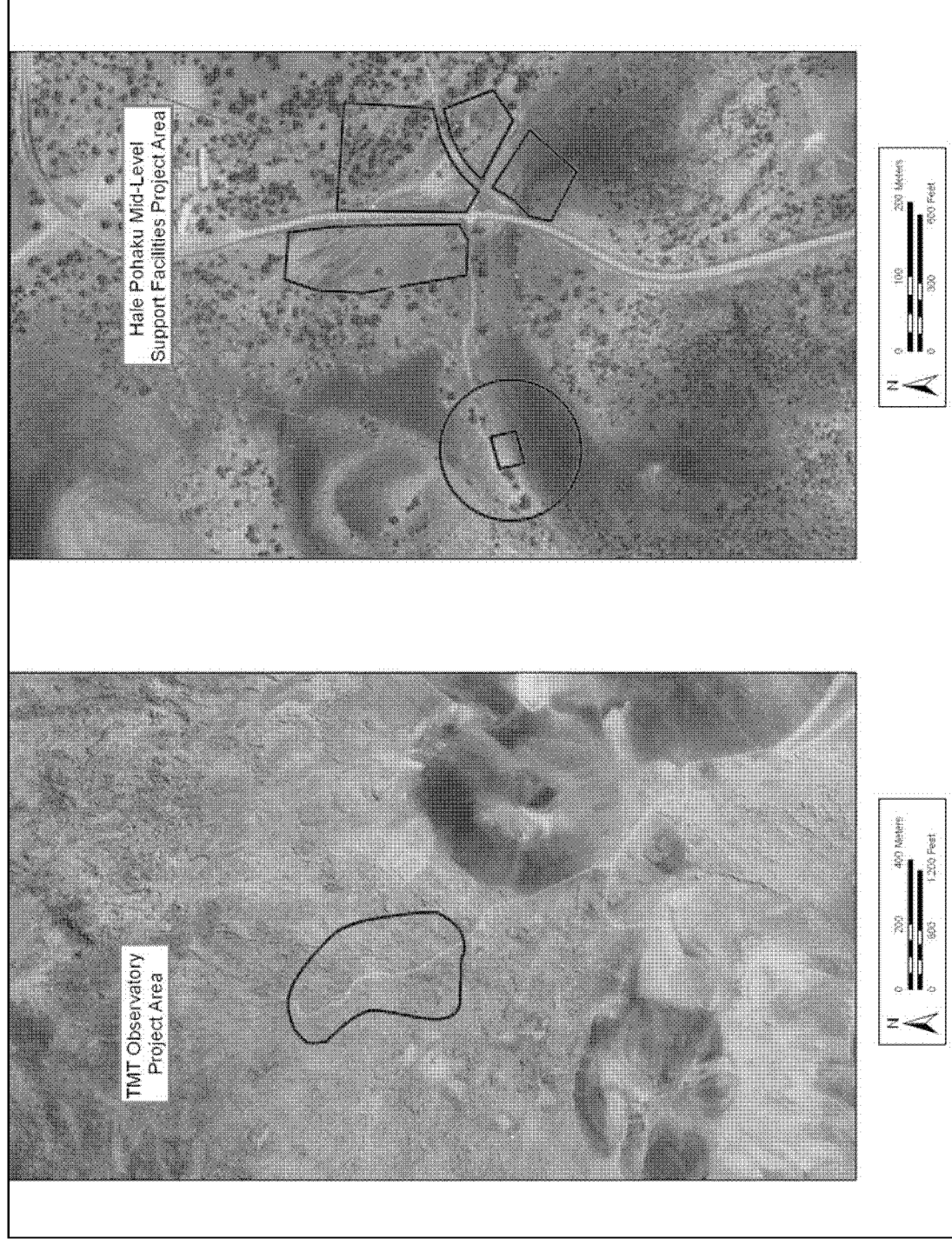


Figure 3. Aerial photograph (source: U.S.D.A. 2000), showing the location of the Project areas

CIA for the TMT Observatory and Hale Pōhaku Support Facilities Project

TMK: [3]4-4-015:001 por., 009 por., 012 por.

1.4 Environmental Setting for the TMT Observatory Project Area

1.4.1 Natural Environment

The information in this subsection is based on the following primary sources: Macdonald et al. (1983), Juvik and Juvik (1998) and Ziegler (2002).

The TMT Observatory Project area is located on a ridge line north of the summit cone, Pu'u Kūkahau'ula, at approximately 13,700 feet elevation. Maunakea, the tallest mountain in the Hawaiian Islands at 13,796 feet elevation, is also the tallest mountain on earth as measured from the ocean floor to the summit, a distance of some 29,500 feet (thus, exceeding by approximately 1,000 feet the non-volcanic Mount Everest). This massive "shield volcano," one of five making up the island of Hawai'i (the others are Maunaloa, Kīlauea, Kohala and Hualālai), has formed through the action of the Pacific Plate moving over a more or less stable "hot spot" located deep within the earth that generates magma (molten rock). The oldest exposed basalts (cooled magma) from Maunakea have been dated to approximately 250,000 years ago, and the mountain is in its dormant Postshield Stage (highly unlikely to erupt but possible). No historic (i.e., prior to the late 1700s) eruptions have been reported for Maunakea, which last erupted approximately 4,500 years ago.

Unlike mountain-top regions in other parts of Hawai'i Island and the rest of the Hawaiian Islands, the summit of Maunakea is actually very arid, receiving less than 15 inches of rainfall, and appropriately classified as an "alpine desert." Most of precipitation is in the form of freezing fog and snow. This aridity is due to a meteorological phenomenon known as the "inversion layer," in which a layer of relatively warm air between approximately 5,000 and 7,000 feet elevation impedes the upward rising of relatively cooler, moisture-laden air.

Light snows are common in the "winter months" at the summit, and frost is a nightly occurrence year-round. The monthly average temperature ranges from 25 to 60 degrees Fahrenheit with winter storms often depositing up to several feet of snow in the higher elevations. Maunakea was glaciated (i.e., covered with snow and ice-pack that did not melt during the summer) in the Late Pleistocene, and the primary geological activity shaping the summit terrain is glaciation. Several main glacial features present on the summit region include glacial striations on bedrock outcrop, the sculpted configuration of cinder cones, and the formation of Lake Waiau and Pōhakuloa Gulch as a result of glacial melt-water. The summit region's ground surface is generally characterized by rubbly ground moraine deposits and Hawaiite 'a'ā flows of Late Pleistocene origin (Figure 4), partially mantled by cinder, coarse ash, and spindle bombs (McCoy 1982: A-29). The lowest temperature ever recorded in historic times in the Hawaiian Islands (9°F) was atop Maunakea. Permafrost is still present a few meters below the present ground surface in the summit region.

Vegetation is almost non-existent in the summit region of Maunakea; the tree-line is located nearly a mile in elevation below the summit (at approximately 9,000 feet elevation); the highest major vegetation zone, known as the Alpine Scrub Zone, generally ends at approximately 11,300 feet elevation. Plants in the so-called Alpine Stone Desert Zone of the summit region are mostly limited to small lichens and mosses. However, due to daily convection currents (warm winds moving upslope), the summit experiences a special type of local ecosystem known as the High-

Altitude Aeolian Ecosystem in which insects and other small arthropods (and sometimes small birds) are driven up to the summit, whose low temperatures immediately kill or immobilize them. The endemic Maunakea Wēkiu Bug (*Nysius wekiuicola*), which has lost the ability to fly, has developed a remarkable specialization (extremely low body temperature that withstands below-freezing conditions) that allows it to feed on immobilized or dead insects and arthropods driven up by the wind. According to Ziegler (2002:209), there are other similar creatures in this most forbidding environment, including a non-described species of black rock centipede only 1 cm long.

As discussed in more detail below, it is important to understand that Native Hawaiians were utilizing this Alpine Stone Desert Zone in pre-Contact times, as evidenced by the extraordinary (State and National Register of Historic Places site) Mauna Kea Adze Quarry, one of the largest traditional adze quarries in the world, located up to 12,400 feet elevation, a little over two miles south of the TMT Observatory Project area; and as indicated by many dozens of shrines at or above 13,000 feet elevation. The basalt available between approximately 11,000 and 12,400 feet elevation on Maunakea is generally perceived by expert stone workers to be the highest quality material available in the Hawaiian Islands. Several old trails exist in and around the TMT Observatory Project area that testify to the long-term utilization of the Alpine Stone Desert by the Native Hawaiians.

1.4.2 Built Environment

The TMT Observatory Project area is located at the end of an existing 4-wheel-drive road that was originally built in the 1960s to develop the general summit area for a number of astronomical observatories. Today, there are 13 main observatories and associated facilities located in the general vicinity of the TMT Observatory Project area.

1.5 Environmental Setting for Hale Pōhaku Mid-Level Support Facilities

1.5.1 Natural Environment

The environmental setting of the Hale Pōhaku area has been well described by McCoy (1990:237-92; 1991:4-9) and the reader is referred to his work for a thorough study and references. A brief overview is presented in this study, based on Dr. McCoy's work. The current Hale Pōhaku Mid-Level Support Facilities Project area is located on a gently sloping saddle area surrounded by prominent cinder cones, including Pu'u Kalepeamoa, Pu'u Ha'iwahine, and Kilohana. Pu'u Kalepeamoa is understood as an older hawaii-ite cone which contains a large number of cored bombs many of which are formed of angular mafic blocks with dunnite and gabbro inclusions (McCoy 1991:6). Pu'u Kalepeamoa is understood as the likely source for much of the raw material worked at the Pu'u Kalepeamoa site complex (see Section 5.3 and Table 4). The surrounding geology includes cinder cones, lava flows and air fall deposits termed Laupahoehoe Volcanics understood as probably less than 40,000 years old.

Elevations within the Hale Pōhaku Mid-Level Support Facilities Project area range from approximately 2,780-2,805 m (9,120-9,200 ft.) above mean sea level. The Hale Pōhaku Mid-Level Support Facilities Project area receives an average of approximately 650 mm (26 in.) of

annual rainfall (Giambelluca et al. 1986). Sediments within the Hale Pōhaku Mid-Level Support Facilities Project area are listed as Huikau Extremely Stony Loamy Sand (rHLD) and Cinder Land (rCL) (Figure 4). Soils of the Huikau Series are described as “somewhat excessively drained loamy sands that formed in volcanic ash, pumice, and cinders” (Sato et al. 1973). Cinder Land is described as “bedded cinders, pumice, and ash...The particles have jagged edges and a glassy appearance and show little or no evidence of soil development” (Sato et al. 1973).

The Hale Pōhaku Mid-Level Support Facilities Project area lies close to the timberline and the vegetation is generally a subalpine xerophytic scrub of both native and non-native, introduced plants such as *pūkiawe* (*Styphelia tameiameia*), *noho-ānu* (*Geranium cuneatum*), *‘ōhelo* (*Vaccinium reticulatum*), *na‘ena‘e* (*Raillardia ciliolata*), *kalamoho* fern (*Pellaea ternifolia*), *‘āheaha* (*Chenopodium oahuensis*), *pilo* (*Coprosma montana*), *māmane* (*Sophora chrysophylla*) and the endangered endemic, *ahinahina*, also known as Maunakea silversword (*Argyroxiphium sandwicense*), as well as introduced exotics such as mullein (*Verbascum thapsus*) and a variety of native and exotic grasses. It seems probable that prior to human utilization of this area, and the presence of feral goats and sheep, that the *māmane* vegetation was more extensive and diverse (McCoy 1990:91). The work of McCoy (1990) has also emphasized the “non-subsistence” nature of this alpine environment, and it is understood that virtually all food to support temporary habitation in the area would have been imported from lower elevations.

1.5.2 Built Environment

The eastern portion of the Hale Pōhaku Mid-Level Support Facilities Project area is adjacent to the Mauna Kea Access Road and includes components of the Hale Pōhaku Mid-Level Astronomy Facilities. Development in the Hale Pōhaku area includes the Onizuka Center for International Astronomy, the Visitor Information Station (a.k.a. Ranger Station), and construction laborer residences. The construction laborer residences are located within the current Hale Pōhaku Mid-Level Support Facilities Project area and include two dormitory structures and four cabins. The western portion of the Hale Pōhaku Mid-Level Support Facilities Project area consists of the existing HELCO power substation within a fenced enclosure. The vicinity of the Hale Pōhaku Mid-Level Support Facilities Project area is generally undeveloped, with the exception of jeep roads.

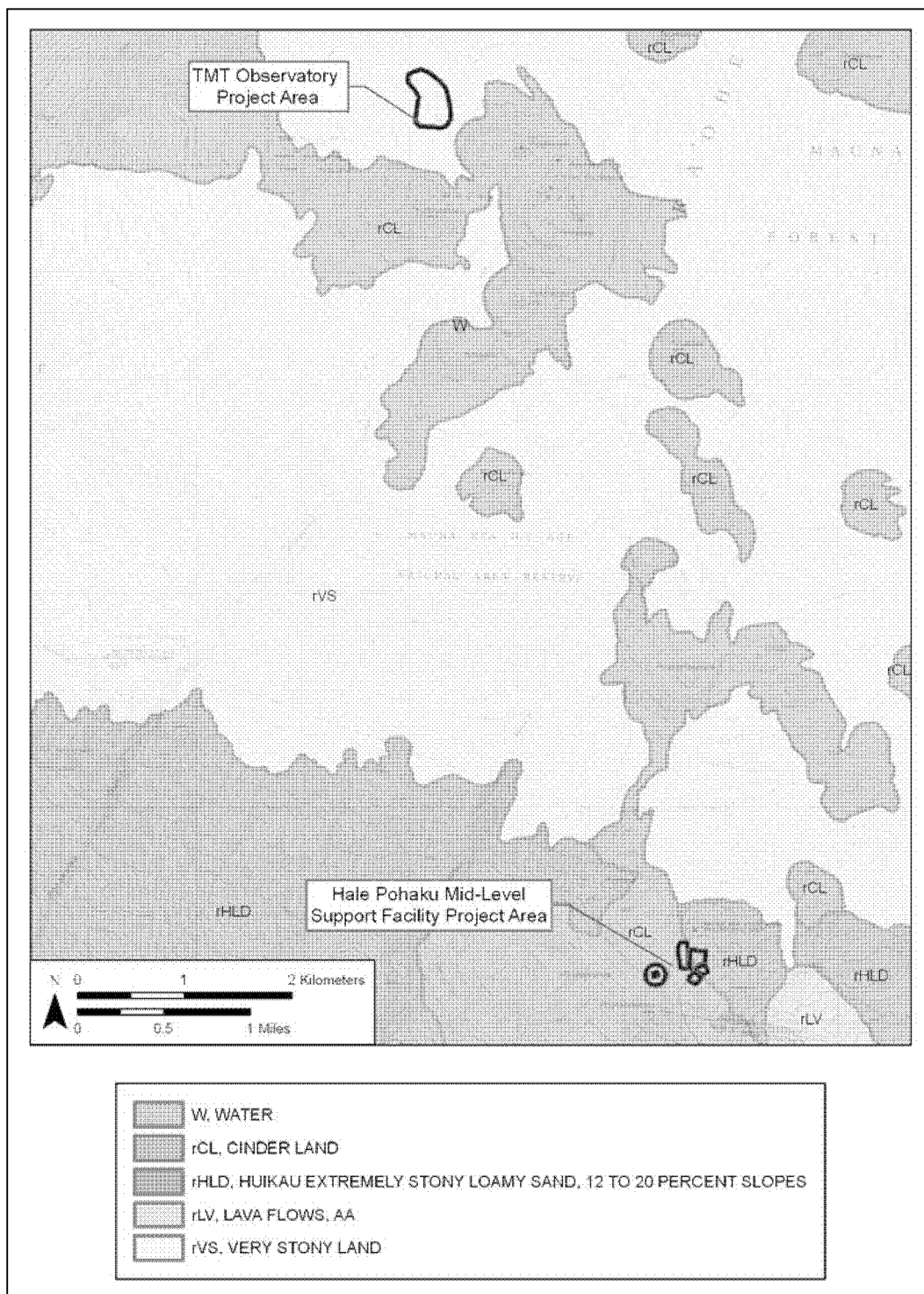


Figure 4. U.S. Geological Survey Topographic Map, Mauna Kea Quadrangle (1993) with overlay of the Soil Survey of the Island of Hawai'i (Sato et al. 1972), showing sediment types within the Project areas

Section 2 Methods

Historical documents, maps and existing archaeological information pertaining to the sites in the vicinity of this Project were researched at the CSH library. Information on Land Commission Awards was accessed through Waihona ‘Āina Corporation’s Māhele Data Base (www.waihona.com). The State Historic Preservation Division, Office of Hawaiian Affairs, Hawai‘i Island Burial Council, and community and cultural organizations in Hawai‘i were contacted in order to identify potentially knowledgeable individuals with cultural expertise and/or knowledge of the Project area and the surrounding vicinity. The names of potential community contacts were also provided by colleagues at CSH and from the authors’ familiarity with people who live in or around the Project area. The cultural specialists conducting research on this assessment employed snowball sampling methods, an informed consent process and semi-structured interviews according to standard ethnographic methods (as suggested by Bernard 2005). Some of the prospective community contacts were not available to be interviewed as part of this Project (see Section 6.1.1). A discussion of the consultation process can be found in Section 6 on Community Consultations. Please refer to Table 6, Section 6 for a complete list of individuals and organizations contacted.

Section 3 Traditional Background

3.1 Overview

This section focuses on the traditional background of Maunakea. For the purposes of this background section, the subject Project area is defined as the entire summit area of the mountain, including its many culturally-significant landscape features and natural resources (Figure 5). Because Maunakea is such a prominent landform, and because Hawaiian traditions recognize its connections with many other places, more distant associations with other parts of Hawai‘i Island and with other islands are also documented and assessed.

This section includes important examples and excerpts from previous studies of the cultural significance of Maunakea to Hawaiians including Kanahale and Kanahale (1997) and Maly (1997, 1999, 2005); numerous examples and observations are also included from an excellent website maintained by Nā Maka o ka ‘Āina (2008).

Maunakea is a sacred cultural landscape to Native Hawaiians. It is symbolic of Wākea (the ‘Sky Father’ to Hawaiians), home of Poli‘ahu, the goddess of snow and foe of Pele (the fire goddess), and of many other resident deities and supernatural entities (e.g., Līlīnoe, Kūkahau‘ula and Mo‘oinanea); home of Waiau, the highest permanent lake in the Hawaiian Islands; location of the highest and most extensive basalt quarry in all of Polynesia and perhaps the entire world; and numerous trails, *ahu* (stone markers), religious shrines and cinder-cone *pu‘u* (hills) (Figure 6).



Figure 5. The summit region of Maunakea showing some of its main cinder-cone *pu‘u* and an astronomical observatory, top center of the image (source: Ziegler 2002)

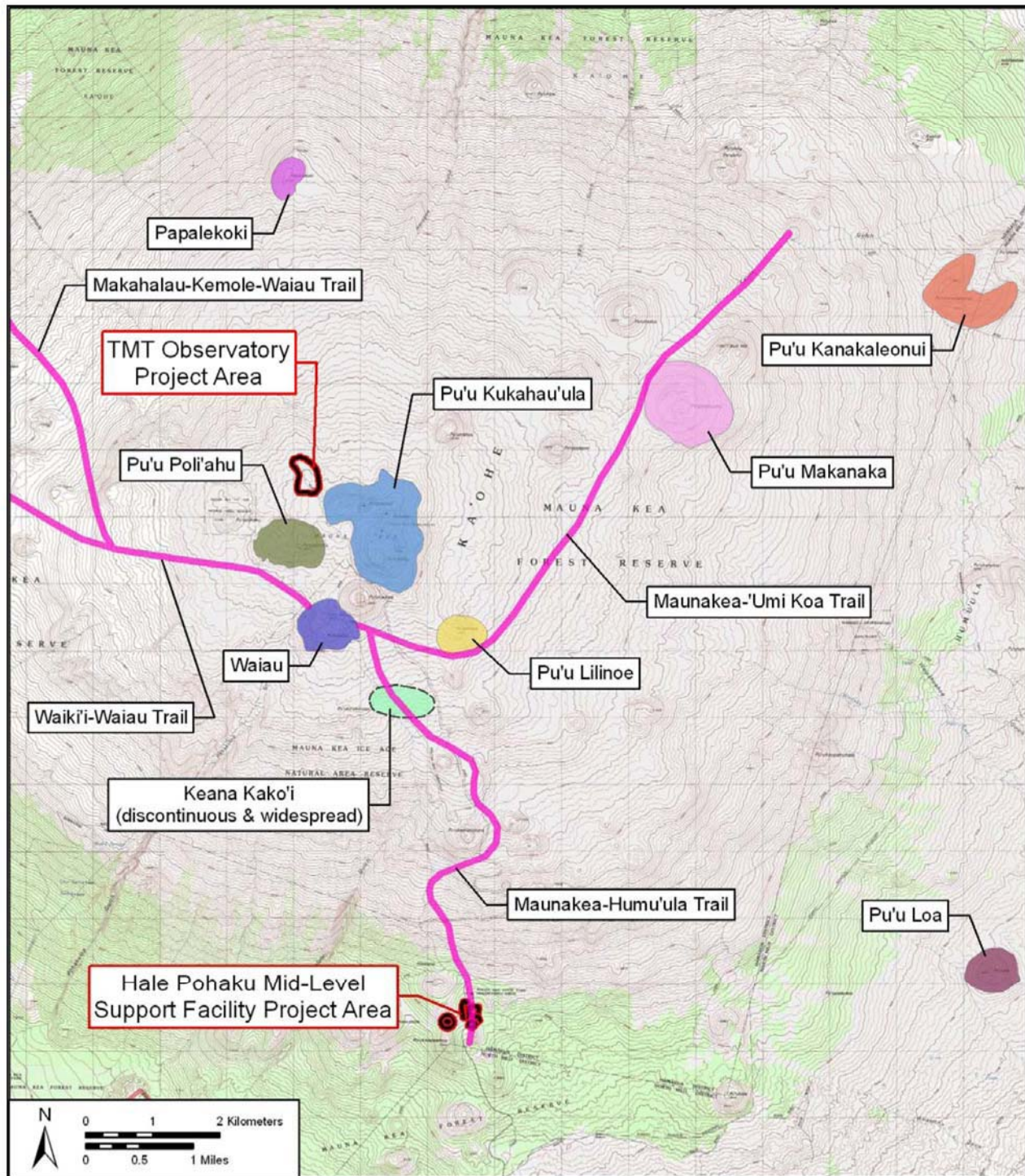


Figure 6. Culturally significant landscape sites and features in the vicinity of the Project area

3.2 Place Names

Translations presented without attribution in this subsection are from Pukui et al. (1974). Spelling and diacriticals also follow Pukui et al.’s (1974) usage.

3.2.1 Mauna Kea or Maunakea: Why is Maunakea spelled as one word?

In Pukui’s (1974) “Place Names of Hawaii” Mauna Kea is listed as two words “Mauna” and “Kea” and is literally translated as “white mountain (often the mountain is snowcapped)” (Pukui et al 1974:148). A recent 2008 article in the Office of Hawaiian Affairs newspaper “Ka Wai Ola” presents a good argument for spelling Mauna Kea as one word—Maunakea. The article is presented in full below:

By Larry Kimura

Hawaiian names, both personal and place names, are usually made up of several root words combined together to represent the person or place. Hawaiian tradition is to write these root words together as a single word, for example, Kamehameha not Ka Mehameha, Kalākaua not Ka Lā Kaua, Waikīkī not Wai Kīkī, Keauhou not Ke Au Hou. The Hawaiian tradition is different from the English one, as in English the parts of a place name are sometimes written separately, e.g., Mount Vernon, New York, Red River Valley. It is also common in English to write “native” names as separate words: Sitting Bull, Crazy Horse, Red Cloud.

The Hawaiian tradition is based in the Hawaiian grammar of the oral language that marks separate words differently from names. In the case of the two mountains on Hawai‘i Island that scientist from outside Hawai‘i have come to dominate, Maunakea and Maunaloa, American English spelling traditions have been imposed on earlier Hawaiian spelling traditions. The earlier Hawaiian spelling traditions can be seen in places with the same name where American scientist have not had as much of an influence, e.g., Maunaloa on Moloka‘i, Maunakea Street in Honolulu, and the Maunakea family name. Older Hawaiian writings also include examples of Maunakea and Maunaloa written as one word when referring to the mountains on Hawai‘i.

Larry Kimura is an assistant professor at Ka Haka ‘Ula O Ke‘elikōlani College of Hawaiian Language, University of Hawai‘I at Hilo. (Vol. 25, No. 11, November 2008:16)

For this CIA, both spelling variations will be used. The two word format—Mauna Kea—will be used to address official entities such as the Mauna Kea Science Reserve and when citing content from other sources such as books or past, published interviews. For all other uses in the text, the name of the mountain will be written as one word—Maunakea.

Maunakea translates literally as white (*kea*) mountain (*mauna*), so named for its breathtaking snow-capped summit. However, according to Nā Maka o ka ‘Āina (2008) and other authorities on Hawaiian culture (e.g., Kepā Maly, Pualani Kanachele), Maunakea has numerous other

meanings and translations. It is a short version of Mauna a Wākea, a name that refers to the sky father, Wākea; this would be one of its *kaona* (hidden or more subtle meanings). An excerpt from Maly's testimony to the Hawai'i Island Burial Council in 2000 (reproduced by Nā Maka o ka 'Āina 2008) effectively illustrates this point:

When I spoke with *kupuna* about Mauna Kea, some of them believed that the name shouldn't be translated literally "white mountain."

Mauna Kea, not just simply the "white mountain" because it's periodically snow-covered. But that it is Mauna Akea, Ka Piko a Wakea. The summit, the *piko* that ties this earth to Wakea, the God father who is the sky.

They see it as the *piko kaulana o ka 'aina*, the famous peak, summit of the land. But that peak, or *piko*, is also what we would call navel or belly button. It's that which connects you back to the generations preceding you.

'Aha ho'owili mo'o, this line, this cord that connects the Hawaiian people from these lands, from these islands, which were the children of the gods or creative forces of nature, back to their cosmic origins.

Not just "white mountain." The mountain of Wakea, the progenitor of the Hawaiian race.

Waiau, the permanent lake located within Pu'u Waiau near the summit of Maunakea at approximately 13,020 feet elevation, translates as "swirling water," and is associated with the snow goddess Poli'ahu.

Pu'u Kūkahau'ula, which is the highest of several cinder-cones peaks around the summit of Maunakea, is located less than one mile southeast of the Project area. According to Nā Maka o ka 'Āina (2008), Kūkahau'ula translates as "[the peak of] Kū of the red-tinted snow," in reference to the light effects of the rising sun on this, the highest of peaks of Maunakea.

Pu'u Poli'ahu is named for Poli'ahu, "the woman who wears the snow mantle of Mauna Kea"; Poli'ahu, which is also the name of a land division on Maunakea, is translated as "garment [for the] bosom (referring to the snow)" by Pukui et al. (1974) and as "Snow goddess of Mauna Kea. *Lit.* Bosom goddess" by Pukui and Elbert (1986).

Maly and Maly (2005:200) include a citation by W.D. Alexander regarding the naming of Pu'u Poli'ahu. As the peak was nameless, Alexander called it "Poliahu" because he believed it to be "a poetical name, being that of the demigoddess with snow mantle who haunts Mauna Kea" (Maly and Maly 2005:200). This assignation of names to various places and peaks of Maunakea by non-Hawaiians was not an uncommon occurrence (Maly and Maly 2005).

Pu'u Līlīnoe, also known simply as Līlīnoe, is one of the major peaks (approximately 12,956 feet elevation) near the summit of Maunakea; Līlīnoe translates as "mists," and is associated with a goddess of mists by the same name, sister of Poli'ahu.

Other main *pu'u* in the summit area include **Pu'u Kanakaleonui**, which translates as "loud-voiced man"; **Pu'u Mākanaka**, which translates as "hill crowded with people (*mā-* is short for *maka*)"; and **Pu'u Loa**, or the "long hill." It is worth stating that there are many places named

pu‘u loa in the Hawaiian Islands, since it is a fairly generic descriptor. Another *pu‘u* is **Papalekōkōi**, which Pukui et al. (1974) do not define.

Keanakāko‘i (or **Ke-ana-kāko‘i**), literally “the adze-making cave” (Pukui et al 1974:103), is named for an ancient and most famous basalt quarry complex extending up to 12,400 feet in elevation on the southern slope of Maunakea. It is important to note that this place name is also fairly common in the Hawaiian Islands, and refers more generally to places at which excellent basalt for tool-making can be obtained. This particular Keanakāko‘i on Maunakea, however, is the finest such source in the islands (see discussion below).

Hale Pōhaku, literally “stone house,” refers to the two stone cabins constructed by the Civilian Conservation Corps in 1936 and 1939 at an elevation of 9,220 feet on the southern slope of Maunakea. L.W. Bryan, who served as the Territorial Forestry Office and oversaw the construction of the “stone houses,” also named them Hale Pōhaku.

3.3 Mo‘olelo Associated with Specific Place Names

3.3.1 Maunakea

There are several references to associations between Maunakea and other islands, including an overlook and *pali* (cliff) at Haleakalā Crater on Maui:

*Hahai ‘o Kaha ‘i me Haui iā Pele i ka ‘āina o Maui,
hakakā lākou i ke alo o Kamohoali ‘i.
Pū ‘ā ‘ā ka iwi o Pele,
mākole ka maka o Kānemilohai i ka uahi.
Hoaka ke ko ‘i ‘ula o Pele i luna o ‘Alenuihāhā,
kūhaka lunalilo ‘o Mauna Kea i ka ‘ihi ‘awa ‘awa.*

Kaha‘i and Haui pursued Pele to the land of Maui
where they battled in Kamohoali‘i’s presence,
Pele’s bones scattered in the crater of ‘Alenuihāhā,
where Kānemilohai’s eyes are inflamed by smoke.
The red cloud of Pele flames above ‘Alenuihāhā
where Mauna Kea rises above the storm. (Landgraf 2003)

Pukui provides two relevant *‘ōlelo no‘eau* (proverbs or poetical sayings) dealing with Maunakea: 1) Mauna Kea, kuahiwi ku ha‘o i ka mālie (Mauna Kea, standing alone in the calm) and 2) Poli‘ahu, ka wahine kapa hau anu o Mauna Kea (Poli‘ahu, the woman who wears the snow mantle of Mauna Kea) (Pukui 1983:234, 294). These sayings reflect a number of important Hawaiian beliefs and values about Maunakea, including her unique status as the unparalleled “top of the world,” her calm and reassuring presence, and her gifts of *hau* (snow).

A common reference to Maunakea is as the most visible landmark of the islands. Hence, the Maunakea summit has become symbolic for the Hawaiian Islands. In Fornander’s “The Legend of Kila (*He Ka‘ao no Kila*),” the ruling chief of Kaua‘i, Mō‘īkeha commands his son Kila to set sail in a double canoe for the Society Islands. As they leave the relative safety of the waters of the Hawaiian Islands they have their first strife with malevolent monster demi-gods of the deep when “they sailed on until the islands of Hawai‘i here were blotted out of sight and the land

disappeared and all that could be seen was the top of Maunakea...(*Holo aku la lākou a nahā nā moku o Hawai‘i nei, a nalowale ka ‘āina, koe o Mauna Kea, ‘a‘ole i nalowale*)” (Fornander 1919: Volume IV:160-161).

In Fornander’s “Story of ‘Umi: One of the Most Noted of Hawaiian Kings (*He Mo‘olelo no ‘Umi: Kekāhi Ali‘i Kaulana o ko Hawai‘i Nei Pae ‘āina*),” the ruling chief ‘Umi-a-Liloa leads a war party out of Waipi‘o, Hāmākua, to attack Hilo:

Up through the mountains of Mauna Kea and right back of Kaūmana, running towards Hilo, was a short cut over the mountains to the trail of Poli‘ahu and the well of Poli‘ahu at the top of Mauna Kea, the trail leading down to Hilo. It was an old trail for those of Hāmākua, of Kohala and of Waimea to take when going to Hilo. Therefore, preparations were made and the army ascended the Mauna Kea mountain and descended on the upper side of Hilo...

Aia ma ke kuahiwi a ma ka mauna o Mauna Kea, a mauka pono o Kaūmana iho i kai o Hilo, he alamui pōkole ma ke kuahiwi, o ke alamui o Poli‘ahu a me ka punawai o Poli‘ahu, iluna pono o Mauna Kea, a iho ma ka ‘ao‘ao ma Hilo. He alamui kahiko ia, no ko Hāmākua, no ko Kohala, a me ko Waimea, ke hele ma Hilo. Nolaila, ho‘omakaukau iho la ka pi‘i o ka huaka‘i kaua ma Mauna Kea, a iho ma ka ‘ao‘ao mahuna o Hilo...(Fornander 1919: Volume IV:224-225)

As Fornander (1919) documents in “Legend of Kūapāka‘a (*He Ka‘ao no Kūapāka‘a*),” the hero, Kūapāka‘a, is sailing in a double canoe with the ruling chief Keawenuia‘umi past Kaua‘i for Kaula Rock. When the ruling chief and his men fall asleep, Kūapāka‘a turns the canoe around and sails straight for the Big Island and: “...when they saw the top of Mauna Kea above the mist, passing and repassing in the distance like a pointed cloud. At this the men all woke up at the call ‘There is Hawaii’ (... ‘ike aku la lākou i ka piko o Mauna Kea i loko o ka ‘ohu, e mā‘alo ana me he ‘ōpua la. O nā kānaka a pau o luna o ka wa‘a, aia ‘ae la lākou, ‘aia o Hawai‘i’)” (Fornander 1919: Volume V:124-125). This is another account of Maunakea as a significant landmark for long-distance voyagers in Polynesia.

Fornander also recounts “Tradition of Kamapua‘a (*Ka‘ao no Kamapua‘a*),” the pig deity sees the fires of Pele, the goddess of volcanoes, and begins to chant:

The fire by Lonomakua	<i>O ke ahi a Lonomakua la,</i>
Of the woman Pele	<i>A ka wahine a Pele,</i>
It is burning in the uplands of Puna	<i>Ke a ala i uka o Puna,</i>
By the white snow of Mauna Kea	<i>I ka hau a‘ia‘i o Mauna Kea</i>
The smoke darkens the heaven	<i>I ka uwahi pō i ka lani</i>

(Fornander 1919: Volume V:340-341)

Here, the brilliant whiteness of the snows (*hau a‘ia‘i*) of Maunakea provide poetic contrast with the darkening smoke (*uwahi pō*) of Pele.

In Fornander’s “Legend of Pūpūkea (*Ka‘ao no Pūpūkea*),” is an account of several columns of Hawai‘i Island warriors rushing to repel an attack by the Maui ruling chief Kamalalawalu with the forces converging in the vicinity of Hōkū‘ula Hill in Waimea. Some 112,000 (*ehiku lau mano kānaka*) defenders from Ka‘ū District are related to have approached “from ‘Ōhaieka

between Mauna Kea and Hualālai (*Ma 'Ōhaikea mai, mawaena o Mauna Kea a me Hualālai*)” (Fornander 1919: Volume V:436-451).

Fornander (1919) provides an account of “Famous Men of Early Days (*Po'e Kaulana o ka Wā i Hala*)” he tells a story of Uma of Pūehuehu, Kohala, who lived in the time of Kamehameha I and was of very small stature (*'u'uku loa*). He was an expert in the art of bone-breaking (*akamai loa ia i ka lua*). Uma has a number of adventures dispatching brigands and muggers as he proceeds from Pu'uhue in southern Kohala to Kapia at Waimea, looking toward Maunakea (*e nānā ala ia Mauna Kea kuahiwi*), proceeding on to Manaua Stream and on to Pu'u o Moeawa at Mahiki between Waimea and Hāmākua, and then on to Kaupakuea in upper Hilo. The passing reference to Maunakea appears to serve as a geographic reference to Kapia. Kapia may be the first place from which Maunakea can be seen as one traverses the mid-slope of the west side of the Kohala Range arcing around to the southeast. The account notes that at the time “there was much robbery amongst the people in lonely places (*he nui loa ka pōwā ana o nā kanāka 'oia wā ma nā wahi mehameha*),” and certainly suggests that the trails around the north slope of Maunakea were among such lonely places (Fornander 1919: Volume V:500-501).

Fornander also tells of “The Flood in Hawaii in the Olden Times (*No Ke Kaiakahinali i Ma Hawaii Nei*)” is an odd account of the goddess Pele bringing “the sea of Kahinali'i” to Hawai'i at a time when “here in Hawaii in the earliest times there was no sea (*ma Hawaii nei mamua loa, 'a'ole he kai...*)” (Fornander 1919: Volume V:524-525). Pele poured out the sea from her head submerging almost all of the land except for the highest peaks including Maunakea (*...ua koe iki 'ae kekāhi wahi, 'oia no o luna o Haleakalā, a me Mauna Kea a me Mauna loa, 'a'ole i nalowale loa...*) and then caused the sea to recede to what it is today.

In Thrum's (1907) *Hawaiian Folk Tales, A Collection of Native Legends*, a chapter on “Pele and the Deluge” appears to have been borrowed from the preceding Fornander account or shares a common source, and relates effectively the same story.

Kalākau's *Legends and Myths of Hawaii* details an account of “Umi, the Peasant Prince of Hawai'i” which includes a number of passing references to Maunakea (such as comparing the color of an old priest's hair to the snows of Maunakea) but one account merits particular mention (Kalākau 1888:249-315). In a side bar story about the fabulous conch shell trumpet known as the Kiha-pū is the following vignette:

In obedience to the revelation of a *kaula* [seer] of great sanctity, he [Kiha] had secretly deposited it [the Kiha-pu] in a cave near the summit of Mauna Kea and retired to a valley below. Near the middle of the following night a sound unearthly and terrible came echoing down the mountain-side, followed by a hurricane which uprooted trees and tore great rocks from their fastenings and hurled them into the gorges below. The earth trembled as if a volcano was about to burst forth, and a ruddy light hung about the summit. The sound ceased, the wind fell to a whisper, and Kiha rose to his feet in the darkness and said: “It is well. The great [deity] Lono has kept faith. He has blown the sacred trumpet, and henceforth it will have the voice of a god!” The next morning he repaired to the cave, and found the shell, not where he had left it, but on the top of a huge rock with which the entrance had been forever closed. He raised the trumpet to his lips and such sound as his heart desired came forth at the bidding of his breath. He

breathed a simple call to his subjects, and it was heard the distance of a day's journey. He gave a battle-blast, and his ears were stunned with the mingled cries and groans of conflict. He ventured an appeal to the unseen, and to a weird music around him rose gnomes, fairies and grinning monsters. He returned elated to the palace, and more and more, as its strange voices were heard, did the Kiha-pu become an object of awe and wonder. (Kalākaua 1888:254)

Thus the summit region of Maunakea is associated with the actions of deities, transformation of the Kiha-pū, and the imparting of qualities of awe and wonder.

Also in Kalākaua's *Legends and Myths of Hawaii* regarding Lono and Kaikilani is an account of the prowess of the ruling chief Lonoikamakahiki: "He outran the fleetest...as in bringing a ball of snow from the top of Mauna Kea" (Kalākaua 1888:322). Thrum's *Hawaiian Folk Tales* also has a chapter on Lono and Kaikilani that describes Lono as the deity Lono whom we encounter "reclining on the bosom of a cloud that rested over Mauna Kea" (Thrum 1923:108-116).

Kalākaua's account of: "Kahavari, Chief of Puna" is a brief sidebar discussion of the demi-god "Kana" who had the capacity to elongate himself so as to walk between the islands of the Hawaiian chain (Kalākaua 1888:501-507). It is asserted that when Kana waded back from the southern lands of Kahiki "he hung his mantle to dry on Mauna Kea, which was then an active volcano" (Kalākaua 1888:503). The tale seems to play on the height of the mountain and appears to provide an alternate explanation for whose cape explains the summit mantle of snow.

In Thrum's (1907) *Hawaiian Folk Tales* is a chapter on Hawaiian "Legends Resembling Old Testament History." Thrum relates the following:

In the Hawaiian group there are several legends of the Flood. One legend relates that in the time of Nu'u, or Nana-nu'u (also pronounced *lana*, that is floating), the flood, kaiahinali'i, came upon the earth and destroyed all living beings; that Nu'u, by command of his god, built a large vessel with a house on top of it, which was called and is referred to in chants as "*He wa'a hālau Ali'i o ka Moku*," the royal vessel, in which he and his family, consisting of his wife Lilinoe, his three sons and their wives, were saved. When the flood subsided, Kāne, Kū, and Lono entered the *wa'a hālau* of Nu'u, and told him to go out. He did so, and found himself on the top of Mauna Kea (the highest mountain on the island of Hawai'i). He called a cave there after the name of his wife, and the cave remains there to this day – as the legend says in testimony of the fact. (Thrum 1907:20)

3.3.2 Hāloa and Kalo on Maunakea

Hawaiian genealogy reveals the importance of *kalo* (taro) and the reasons Hawaiians have such a sacred connection to this plant and to Maunakea. According to Hawaiian mythology, the first man was born from the taro plant. Wākea, the sky father, and Papahānaumoku, the earth mother, on the summit of Maunakea, birthed a child who was premature.

The first-born son of Wākea was of premature birth (*keiki aluahu*) and was given the name of Hāloa-naka. The little thing died, however, and its body was buried in the ground at one end of the house. After a while, from the child's body, shot up a

taro plant, the leaf of which was named *lau-kapa-lili*, quivering leaf; but the stem was given the name Haloa.

After that, another child was born to them whom they called Haloa, from the stalk of the taro. He is the progenitor of all the peoples of the earth. (Malo 1951:244)

Hāloa is therefore both plant and man. “Wākea’s stillborn son is reborn as a taro plant which produces his second son, a human child Hāloa” (Kanahele 1995:18). Taro therefore becomes a metaphor for life, because both need to be rooted in good soil and nourished with waters of Kāne. The kalo stalks and Hawaiians both grow towards the sun, striving to be nearer to the heavenly spirit, and as every plant must die, so too will every human. What remains of the plant lives on for the next generations. Because of this close interconnection between life and *kalo*, *kalo* and *poi* (pounded taro thinned with water) thereby became the main staples of the Hawaiian diet (Kanahele 1995:18).

For nutritional and spiritual significance *lo‘i kalo* became vital for Hawaiian way of life. The work was for men and required marshland, a large supply of *kalo* cuttings, and advanced irrigation systems (Kanahele 1995:19-22).

3.3.3 Kūkahau‘ula

Kūkahau‘ula, or Kū of the red-tinted snow, is Maunakea’s highest *pu‘u*. The following *mo‘olelo* about the love affair between Kūkahau‘ula and Poli‘ahu (another nearby peak named for the goddess of snows) comes from the July, 1931, edition of the *Paradise of the Pacific*, and was recounted by Ahuena (source: website maintained by Nā Maka o ka ‘Āina 2008):

The Betrothal of the Pink God and the Snow Goddess
The Pink Snow Is Always Seen Upon Mauna Kea
by Ahuena
(edited)

Tell me one of your many legends, Puna, some tale belonging to the Big Island of Hawaii ... something different, something altogether apart from the lore of Pele, goddess of Volcanoes, creator of the Islands.

So spoke a tawny-skinned young girl to her indulgent old Hawaiian nurse whose bent form bespoke four score years and more.

Her devoted old nurse sat on the edge of the mat, facing her.

Let us finish this task first... while I tell you the legend of the betrothal of the Pink God and the Snow Goddess of Mauna Kea. The Pink God's devotion to the Snow Goddess of Mauna Kea is most wonderful to behold. He is known as the most constant lover on the island of Hawaii.

“How beautiful!” exclaimed the maiden. “What a pleasure it would be to see them in real life — but continue with the story, please.”

Then the old nurse’s voice floated out in a low tremulous chant, apparently chiding the young girl for her impatience —

The youths of Kohala never travel unprepared;
 Their kapa togas are already on;
 They heed not the rain nor the wind
 for their shoulders are ever kept warm.
 So worry not for thou shalt hear
 The story of the Pink God of Mauna Kea
 whose glowing beam is seen afar,
 And she of the snow-white bosom
 Whose heart melts at his caress.

“Listen,” continued Puna, “the Pink Snow is always seen on Mauna Kea, the great white mountain that towers above and almost touches the blue heavens. Its summit of snow-clad peaks clings to the clouds that float near the sun, at Hikiana (the Beginning), where the rosy Kipu‘upu‘u (chilling) rain continually dwells and comes sweeping down to the district of Waimea and at Lanimamao, and away up on this great white mountain dwells a beautiful snow-white maiden whose name is Poliahu...who wears a wreath of the silvery, snow-white hina-hina blossoms that grow upon the mountain tops.

She is known as the Snow Goddess of Mauna Kea. She is the favorite daughter of the red-headed god, Ka-ne, Creator of Waters, and the Goddess of the Mist called Hina. Her nurse’s name is Lihau (the Chilling Frost).

Ka-ne, her father, created a silvery swimming pool with beautiful clear water within it for Poliahu, upon the summit of Mauna Kea, reflecting the heavens, forming a basin behind the snow-clad peaks. And in this wonderful, cool basin of Wai-au...he placed a Merman there, as a sentinel, to guard over it and keep a loving watch over the Snow Goddess. The name of this favored sentinel was Moo-i-nanea. [note, this description of Moo-i-nanea as a male is almost certainly in error, as these supernatural water spirits, *mo‘o*, were always female in Hawaiian traditions.] It was, and is, he that drives all admiring lovers from there, all who dare climb the mountain slopes and steep precipices to catch a glimpse of Poliahu and chant poems of love and admiration to her. Others he entrances until they become numb and fall asleep before they can behold the face of the beautiful Snow Goddess as she passes by on her way to the icy pool.

But there was a devoted lover whom he helped to cross the kapu pool, for he found this lover to be constant and true despite his trials and disappointment.

This lover was the handsomest and most daring man that he had ever seen. He was known as Ku-kahau-ula (The Pink Tinted Snow’s Arrival), the Pink-Tinted Snow-God of Mauna Kea, who made daily pilgrimages to court the Snow Goddess at morn and in afternoon.

Throwing his pink kapa toga over his shoulders, and starting down on the first sun’s ray, beyond Haehae, the Land of Desire at the eastern gateway of the sun at Kahiki (the Beyond), he tried to approach as near as possible the place where she dwelt upon the snow-capped mountain. He watched her each day as she played

with the kini-akua (fairies) amongst the silversword (hina-hina) near the pool, and, sometimes further down near the fern belt. But her faithful attendant, Lihau (the Chilling Frost), was always with her.

Each day he became more fascinated and made every effort to reach her abode and court her — win her for his bride — but Lili-noe, another sprite (the Fine Rain) drove him back, and at other times when he started, Pele's sister at the eastern gateway of the sun endeavored to entice him away, all striving to prevent him visiting Poliahu, at Mauna Kea.

Undaunted, he continued his pilgrimages, sending his beam towards Mauna Kea. One day when Poliahu had grown into womanhood, the handsome prince espied her, identifying her by her fine soft white kapa robe that Hina, her mother, had beaten out so beautifully from the bark of the Wauke plant with her magic kapa beater, until it resembled soft white clouds when finished. Her nurse, Lihau, wrapped it around her.

Poliahu was coming slowly down the mountainside almost to where plant life grew when he saw her, and immediately was enraptured with her beauty, beholding her from his place of vantage. Her sparkling face and divine form were radiantly beautiful, and it seemed to him that she even out-rivaled the silvery-white hina-hina blossoms. Throwing his pink kapa toga over his shoulder again, he hastened to greet her, but her nurse, Lihau (the Chilling Frost) and Kipu'upu'u (the Hail) came out and found her. It became so chilly he withdrew his beam.

However, that did not weaken his resolution to court her. The next day he departed earlier than usual on his love quest — for he planned all night how this feat of winning the Snow Goddess for his own could be accomplished, and when dawn arrived he departed bravely, but Lilinoe (the Fine Rain) chased him away again. Again and again he made the attempt at each new dawn of day and near sunset, approaching closer and closer, until one day Poliahu's mother, Hina (Goddess of Mist) discovered him just as he was nearing the Snow Goddess' abode. She immediately covered the mountain with mist and sent out Lilinoe (the Fine Rain), and then the biting, black, drizzling rains, Kua-uli and Kipu'upu'u to sweep across the forest, all in her anger and fear of losing her beautiful snow-white child.

So, the Snow Goddess was hidden from view, and he had to return alone to the Land of Paradise, disappointed.

Another dawn came and he started again, wearing his usual pink kapa robe, full of hope, and determined to win his heart's desire that day.

Hina, who was on guard, saw him and sent the biting black rain after him. He glided back and forth and waited until the rain had disappeared, when he departed again, his pink kapa so vivid as he traversed the heavens that its reflection caused a glorious rainbow to arch. When the sentinel Merman saw the rainbow caused by the radiant form of the Pink God reflected in the mist, he understood the omen of love and took pity on him, and blew his conch shell, calling out to him:

“Oh, Magnificent Pink Lord, come tomorrow at dawn and I will show you the way to meet Poliahu and conquer Hina; come with thy iridescent pink robe; part the Gray Veil of Night, and send thy red glow to fascinate her;

“I have watched thee daily as thou sailed the heavens in quest of thy loved one, at morn and in afternoons, and am convinced of your love; come to the swimming pool; be not afraid of Lihau’s anger; you can overcome her coldness.”

Ku-kahau-ula did as he was told, and as he started down in all his radiant beauty, he saw Moo-i-nanea beckoning and he came a little nearer to the topmost peak with his pink kapa cloth outspread prepared to throw one end of it over the shoulder of the Snow Goddess.

Poliahu, seeing him at that moment, called out to her mother in ecstasy and delight.

“Oh, Hina! Behold the handsome one as he stands at the very edge of the sun’s ray — all ray himself — and his rosy form is sending a warmth to my bosom. He is wearing a pink helmet and is swathed in a pink cape. Look, mother Hina! Call to him to come nearer that I may chant a message of aloha to him.”

Hina was beside herself with fear and grief at the possibility of losing her daughter, for she saw that his beauty had attracted Poliahu, and again, she sent the biting, driving rain and the cold, white mist over the land until the Pink Snow God was lost in the fog and it took him some time to find his home. He became discouraged, and he chanted to the sentinel of the pool, appealing to him to come to his assistance, for he was burning with an unquenchable love for Poliahu.

“Lead me over the swimming pool, to my beloved; to the gods Ka-ne and Hina that they may know of my devotion.”

“‘Then,’ the sentinel called to him, ‘come, brave one of the sky, but you must first conceal your beautiful pink kapa robe from view until you arrive at the pool; then take it out and wear it that you may go forward and snare the goddess with it. But you must come humbly, steadily and stealthily, spreading your radiant pink kapa well out as you approach the Goddess of the Treasure Bosom, Queen of the Snow.’

“Ku-kahau-ula followed the instructions minutely. The sun’s ray glided over the swimming pool causing a rainbow to arch, turning the silvery waters to a shimmering pink. As the god approached the spot where the snow-white goddess was reclining upon a couch of snow and hina-hina blossoms, clad in her soft white kapa robe, her faithful nurse was watching over her in the sacred stillness of the mountains.

“He advanced slowly, his pink robe outspread, radiantly gilding the brow of Mauna Kea with its glorious hue, until it was almost noon, chanting softly to her of his love, in the stillness of god’s acres until he was close enough to throw his brilliant pink toga over her shoulder. Drawing her within his arms, he wrapped the robe entirely around her until they both were concealed within its folds.

“The Merman, Moo-i-nanea, blew the conch-shell that the world would know of the betrothal, and chanted these words:

Ku-kahau-ula and Poliahu, Oh!
 These two were betrothed in the Chilling Frost
 In the cold region of Mauna Kea;
 They are the residents of the uplands,
 The children of the thicket of wild-woods
 The thicket that radiates their love
 From the summit of Mauna Kea
 Is most beautiful to behold;
 ‘Tis there the pink Sun’s beam
 Embraces and kisses the snow.

“And, from these early days, when the gods were betrothed on the heights of Mauna Kea we have followed the tradition of their marriage ceremony, the chieftain men, folding the feather cape of kapa around the chosen maiden, just as the sun’s ray is reflected on the snow mountain and turns it pink at morn and noon and the treasure-heart of the goddess melts and overflows with love and feeds the mountain streams with her refreshing gift for man and nature to thrive upon.

“You have heard of the waters of Poliahu that our ancient and noble chieftains of that great island preferred to any other, to quench their thirst with, and how each day, starting at early dawn, carrying their water gourds all the way up the steep slopes of Mauna Kea, to a place called Pohaku-loa to fetch the drinking water from the melted snow accumulated there, bestowed by the goddess, for their feudal lords.

“Well, child, that is the aloha of Ku-kahau-ula and Poli-ahu who were betrothed in the cold region.”

Then, as the story ended, and a chant floated out upon the air and faded away, the young girl sighed, and said, dreamily:

“Thank you, Puna,” and smilingly gazed out toward the glinting blue sea of Waikiki and whispered,

“I, too, shall watch for the arrival of the glorious sunbeam that brings happiness and plenty, called the Pink God (Ku-kahau-ula) of Mauna Kea.”

3.3.4 Poli‘ahu

Poli‘ahu lives within Lake Waiau atop Maunakea, from which she emerges each winter and to which she returns with the summer sun. She and her sisters are closely associated with Maunakea and are sometimes referred to as the “Four Sisters.” At other times, Poli‘ahu’s sisters are referred to as her maidens (Beckwith 1976:222). The four sisters were born as fully grown women who had great talents and wisdom. Waiau is the guardian of the lake that bears her name. The lake provides drinking and bathing water where Waiau bathes Poli‘ahu. Waiau sometimes assumes a bird form to fly to sources of sweet water to fill her drinking gourd. Līlīnoe is the goddess of the mists of the mountain. She maintains Poli‘ahu’s hair so that it will float like a cloud at the

summit. The fourth sister, Kahoupokane is the goddess of Hualālai. Known as a master kapa maker, the sound of thunder is said to be Kahoupokane beating her kapa while during heavy rains, Kahoupokane is tossing water on her kapa while she beats it (Ka‘ahele Hawa‘i 1999).

There are many *mo‘olelo* regarding Poli‘ahu, usually in association with her sisters, and also with other major gods and goddesses such as Hina (‘Moon Goddess’), Wākea, Kāne, Kū, and others that date from very ancient Hawaiian cosmological times. Westervelt (1915), for example, translated and published a lengthy story entitled “Ke Au Mele Mele, The Maid of the Golden Cloud,” a brief portion of which is reproduced below. This small part of the legend ties the natural phenomenon of snow atop Maunakea to Poli‘ahu’s mischievous nature:

[Referring to a high chief of the Hilo area] The chief looked up Mauna Kea and there saw the mountain women, who lived in the white land above the trees. Poliahu stood above the precipices in her kupua-ano (wizard character), revealing herself as a very beautiful woman wearing a white mantle.

When the chief and his friends came near the cold place where she was sitting, she invited them to her home, inland and mountainward. The chief asked his friends to go with him to the mountain house of the beauty of Mauna Kea.

They were well entertained. Poliahu called her sisters, Lilinoe and Ka-lau-a-kolea, beautiful girls, and gave them sweet-sounding shells to blow. All through the night they made music and chanted the stirring songs of the grand mountains, The chief delighted in Poliahu and lived many months on the mountain.

One morning Paliula in her home above Hilo awoke from a dream in which she saw Poliahu and the chief together, so she told Wakea, asking if the dream were true. Wakea, by her magic power [note, in many other legends and *mo‘olelo*, Wakea is a male form], looked over the island and saw the three young men living with the three maidens of the snow mantle. She called with a penetrating voice for the chief to return to his own home. She went in the form of a great bird and brought him back.

But Poliahu followed, met the chief secretly and took him up to Mauna Kea again, covering the mountain with snow so that Wakea could not go find them.

(Westervelt 1915)

McDonald and Weissich (2003), citing Westervelt’s classic *Hawaiian Legends of Volcanoes* (1991), discuss a special *lei* (Lei Pāpahi) dedicated to Poli‘ahu:

Lei-o-Poli‘ahu is a striking *lei*, a composition primarily of silver and white to commemorate the snow goddess Poli‘ahu. Hawaiian mythology features several snow maidens with white mantles, all of exceptional beauty, wit, and wisdom. They were adventuresome and were enemies of Pele, the volcano goddess. Poli‘ahu, the best known of the snow goddesses, is clearly visible each year as her dazzling mantle of white turns the great mountain Mauna Kea into a “white mountain.”

*‘O Poli‘ahu ke kua wahine o ka mauna nui
‘O kona mau panuhele*

‘O ka ‘a‘ahu hau ma Mauna Kea
 ‘O ka hau po‘i ma Waiau
 ‘O ka noe lana wale ma Lilinoe
 A ka nohoanu lahilahi
 Ka pua ke ‘oke ‘o a lū ka poni
 A ka lau hinahina
 He ‘ālana pono na ke akua

Poli‘ahu, the goddess of the great mountain
 Whose favorites are
 The mantle of snow on Mauna Kea
 The icy shroud on Waiau
 The drifting mist on Lilinoe
 And the delicate *nohoanu*
 That delicate flower with a touch of purple
 And glistening silvery leaves
 A prescribed offering for the goddess
 (McDonald and Weissich 2003:70)

Lei-o-Poli‘ahu is made of white plants and plant-parts such as the white flowers and silvery leaves of *nohoanu* (*Geranium cuneatum*), the white *liko* (newly opened colored leaves) and *mu‘o* (leaf buds) of ‘ōhi‘a (*Metrosideros* spp.), *pa‘iniu* (*Astelia* spp.), *pūkiawe* and white *limu* (seaweeds, algae, lichens, mosses and liverworts), in this case a type of lichen typically collected from branches and tree trunks at high elevations—areas identified with Poli‘ahu. These botanical components of the Lei-o-Poli‘ahu can be found “along the eastern segment of the long trail in the saddle between Mauna Loa and Mauna Kea that connects Hilo and North Kona” (McDonald and Weissich 2003:72).

In his retelling of the Story of ‘Umi-a-Līloa (the 16th century ruler of Hawai‘i), Kamakau describes the time when ‘Umi was mistreated by his in-laws at Hilo, and names a trail and a spring at the summit of Maunakea called “Poli‘ahu”:

As soon as they were released in Hilo, ‘Umi and his companions returned to Hamakua and went down to Waipi‘o. There he conferred with his chiefs and his father’s old war leaders. It was decided to make war on the chiefs of Hilo and to go without delay by way of Mauna Kea. From back of Ka‘umana they were to descend to Hilo. It was shorter to go by way of the mountain to the trail of Poli‘ahu and Poli‘ahu’s spring at the top of Mauna Kea, and then down toward Hilo. It was an ancient trail used by those of Hamakua, Kohala, and Waimea to go to Hilo. (Kamakau 1992:16)

In Kalākaua’s *Legends and Myths of Hawaii* (1888:455-480) account of: “Laie i ka Wai,” a *kupua* (supernatural chief) of Wailua, Kaua‘i, named Aiwohikupua is sailing the seas of Hāmākua, Hawai‘i, and “saw a woman of extraordinary beauty reclining on a cliff by the shore. She was graceful in every movement and wore a snow-white mantle. They landed and made her acquaintance. Her name was Poli‘ahu of Mauna Kea” (Kalākaua 1888: 462). She relates that she is also supernatural (“*kupua*”). They promise to marry and exchange mantles. Eventually

Aiwohikupua returns in state to claim Poli‘ahu. “The three mountains [understood as Mauna Kea, Mauna Loa and Hualālai] were covered with snow, which was the sign promised by Poli‘ahu.” Aiwohikupua and his party “were met by Poli‘ahu, Lilinoe, Waiau and Kahoupokane, the three later being mountain goddesses. The men suffered from cold but on being apprised of the fact Poli‘ahu and her friends removed their snow mantles, causing snow on the mountains to retire to its usual limits” (Kalākaua 1888: 467). The couple sailed to Kaua‘i but Poli‘ahu soon learns of the fecklessness of Aiwohikupua: “Poli‘ahu was enraged and returned to Mauna Kea.” Poli‘ahu repeated thwarts Aiwohikupua’s love life by sending waves of cold or heat over the object of his affections: “Poli‘ahu sent the chill of her snow mantle upon her rival, and she was benumbed with cold...” When Aiwohikupua met his new bride at noon the next day to consummate their marriage “Poli‘ahu put on her sun mantle, and a scorching heat almost consumed her rival” (Kalākaua 1888: 468).

3.3.5 Poli‘ahu and Pele

Poli‘ahu, the snow goddess, and Pele, the volcano goddess, engaged in legendary battles to control Maunakea. The following legend is often told and relates how the outcome of an *hōlua* (sled) competition established control over portions of the mountain and formed the peninsula of Laupāhoehoe.

Pele loved the holua-coasting—the race of sleds, long and narrow, down sloping, grassy hillsides. She usually appeared as a woman of wonderfully beautiful countenance and form—a stranger unknown to any of the different companies entering into the sport....

Poliahu and her friends had come down Mauna Kea to a sloping hillside south of Hamakua. Suddenly in their midst appeared a stranger of surpassing beauty. Poliahu welcomed her and the races were continued. Some of the legend-tellers think that Pele was angered by the superiority, real or fancied, of Poliahu. The ground began to grow warm and Poliahu knew her enemy.

Pele threw off all disguise and called for the forces of fire to burst open the doors of the subterranean caverns of Mauna Kea. Up toward the mountain she marshaled her fire-fountains. Poliahu fled toward the summit. The snow-mantle was seized by the outbursting lava and began to burn up. Poliahu grasped the robe, dragging it away and carrying it with her. Soon she regained strength and threw the mantle over the mountain.

There were earthquakes upon earthquakes, shaking the great island from sea to sea. The mountains trembled while the tossing waves of the conflict between fire and snow passed through and over them. Great rock precipices staggered and fell down the sides of the mountains. Clouds gathered over the mountain summit at the call of the snow-goddess. Each cloud was gray with frozen moisture and the snows fell deep and fast on the mountain. Farther and farther down the sides the snow-mantle unfolded until it dropped on the very fountains of fire. The lava chilled and hardened and choked the flowing, burning rivers.

Pele’s servants became her enemies. The lava, becoming stone, filled up the holes out of which the red melted mass was trying to force itself. Checked and chilled, the lava streams were beaten back into the depths of Mauna Loa and Kilauea. The fire-rivers, already rushing to the sea, were narrowed and driven downward so rapidly that they leaped out from the land, becoming immediately the prey of the remorseless ocean.

Thus the ragged mass of Laupahoe-hoe formed, and the great ledge of the arch of Onomea, and the different sharp and torn lavas in the edge of the sea which mark the various eruptions of centuries past. (Westervelt 1916:60-62)

3.3.6 Līlinoe

This peak of Maunakea, Līlinoe, is associated with *mo‘olelo* about a legendary “woman of the mountains” who was reportedly buried on Maunakea. Kamakau, whose description makes it evident that Līlinoe was understood by post-Contact Hawaiians to have been of great antiquity, makes two related references to this legendary figure:

It was on old custom to hide the bones of chiefs who were beloved, as ‘Umi’s bones were hidden by Koi, in order that they might not be made into arrows to shoot rats with, into fishhooks, needles for sewing tapa, or *kahili* handles, as is still done today. There is a story told about the bones of Pae which illustrates this custom. Pae was a kahuna and high chief in the time of ‘Umi son of Liloa [i.e., early 16th century] and a descendant of Lilinoe, the woman of the mountains...(Kamakau 1992:215)

The year 1828 is notable for the visit of Ka-‘ahumanu to Hawaii to fulfill a vow that she made to attempt the recovery of the bones of Lilinoe on Mauna Kea where her body was said to have lain for more than a thousand years in a well-preserved condition, not even the hair having fallen out. Others deny this and say her body was too well-hidden ever to have been found. Her [Lilinoe] offspring count from Hua-nui-i-ka-la‘ila‘i; she was the ancestress of ruling chiefs, and from her line was born ‘Umi-ka-lani...It is said that Ka‘ahumanu did not find the bones of Lilinoe, but only those of Liloa...[and others]. (Kamakau 1992:285)

3.3.7 Hale Pōhaku

L. W. Bryan, of the Territorial Forestry Office for the island of Hawai‘i from 1922 to 1949, and from 1949 to 1961 the Territorial Forester, built the two stone houses at Hale Pōhaku with the Conservation Corps in 1936 and 1939 (Rosendahl 1999:C-6). He named Hale Pōhaku after a *heiau* (temple, place of worship) (Maly, personal communication 2009).

‘Umi-a-Liloa, the renowned mid 1500s king, constructed *heiau* in honor of Halulu, the god who provided his power. The following excerpt from Maly and Maly (2005:28-29) tells of ‘Umi’s *heiau*:

...He (‘Umi) also built a *heiau* (temple) below Pohaku Hanalei, it is called the *ahua o Hanalei* (altar of Hanalei); and on the side of Mauna Kea, by where one

travels to Hilo, he built the third of his temples, at the place called Puukekee [also written Puu Keekee in historical texts]; and there at Mauna Halepohaku he built the fourth of his temples; there, it is said, Umi dwelt with his many people. It is said that Umi was a chief who dwelt upon the mountain, it was because of his love of his people, that he (‘Umi) returned and dwelt in the middle of the island [Ahu-a-Umi], that is where he dwelt with his beloved people. His commoners lived along the shores, and they brought food for them (in the uplands), from one side of the island to the other... [Ke Au Okoa; Mei 22, 1865; Maly, translator] (Maly and Maly 2005:28-29)

3.4 Cinder Cone Peaks

Numerous cinder cone *pu‘u* are located around the Maunakea summit area. The main peaks in the vicinity of the Project area include: Pu‘u Kūkahau‘ula, which is the highest of several cinder cones peaks around the summit of Maunakea, Pu‘u Līlīnoe, Pu‘u Kanakaleonui, Pu‘u Mākanaka, Pu‘u Papalekōkī, Pu‘u Kanakaleonui, Pu‘u Poli‘ahu and Pu‘u Waiau.

From a geological perspective, these cinder cones formed during the latest phase of shield-building of the volcano. The nearly symmetrical shape of these formations is a truly remarkable and beautiful sight; most of these *pu‘u* are *wahi pana* and all are associated with specific *mo‘olelo* that connect the landscape, genealogy and actual and/or legendary people, demi-gods and -goddesses and gods and goddesses.

Kealoha Pisciotta, in an interview reproduced by Nā Maka o ka ‘Āina (2008), has this to say about the many *pu‘u* of the Maunakea summit region:

Another level of the desecration is the leveling of the *pu‘u*, or the cinder cones. The cinder cones are sacred in and of themselves because they make up some of the *kino lau*, or the divine bodily manifestations of the gods.

For example, you can look up and see the image of Poli‘ahu laying down. She’s the woman of the mountain. That’s her place. And when it’s covered with snow, it appears as though she’s lying on a bed of clouds, a ring of clouds. And you can see her very clearly.

Unfortunately though, Poli‘ahu’s image and bodily form is being destroyed. They are altering the images of our deities because the *pu‘u*[s] are being leveled and the telescopes are being built on top of her.

3.5 Lake Waiau

Lake Waiau, situated within Pu‘u Waiau, is the highest permanent lake in the Hawaiian Islands at 13,020 feet elevation, and one of the highest permanent lakes in the world. Its area extent varies throughout the year, but is typically on the order of a couple hundred feet in diameter and is full of algae and microscopic life. It is generally assumed that in this otherwise arid region, this lake is permanent, on account of the underlying substrate that consists of a permafrost zone only three meters below the ground surface. This permafrost zone blocks the downward seepage of water into the porous bedrock (Ziegler 2002).

Some Hawaiian perspectives on Waiau’s remarkable qualities are provided by Nā Maka o ka ‘Āina (2008):

That glacier formed Lake Waiau, and it gave birth, I believe, to a lot of the springs that we now have. Some of that water is very, very old. Waiau is another of the *kupua* [supernatural being]. Waiau is the *kupua* of Lake Waiau on Mauna Kea. So Waiau is the keeper of all these hidden waters. Under Mauna Kea, under the lake and all the way through that whole area are large streams of water. And Waiau as the *kupua*, is the keeper of all those springs and hidden reservoirs, the great water supply of that island (the words of Keawe Vredenburg)

There’s a mystery about the lake and that is that it doesn’t seem to have enough water to actually maintain itself. People say, gee, it’s not that deep of a lake and it should evaporate because in the higher altitude there’s less moisture. It’s very arid. However, they [scientists] think that there is an ice cap down through the lava tube. So it holds the water in the lake (the words of Kealoha Pisciotta).

Lake Waiau is home of the goddess of snow, Poli‘ahu, and is guarded by the supernatural water spirit (*mo‘o*) known as Mo‘o-i-nanea, or “the matriarch of all *mo‘o* gods and goddesses,” according Nā Maka o Ka ‘Āina (2008). Waiau is located along the major Waiki‘i-Waiiau Trail (see Figure 6).

Westervelt relates that Waiau was one of the “four maidens with white mantles” in Hawaiian legends (Westervelt 1916:56), but:

...has been almost entirely forgotten. There is a beautiful lake glistening in one of the crater-cones on the summit of the mountain. This was sometimes called “The +Bottomless Lake,” and was supposed to go down deep into the heart of the mountain. It is really forty feet in its greatest depth—deep enough for the bath of the goddess. The name Wai-au means water of sufficient depth to bathe.

(Westervelt 1916:56)

According to Nā Maka o ka ‘Āina (2008),

Water captured in the *piko* (the center) of a taro leaf, the nodes of bamboo or the coconut is considered pure and sacred water because it has not touched the ground. Similarly and even more so, the water of Lake Waiau, suspended high above in the realm of Wakea, is considered the most sacred.

Hunters and other regular visitors to the mountain collect the water from Waiau and bring it back to the family to drink for good health.

Water from Waiau continues to be used in rituals of dedication, such as the blessing of a new canoe.

Waiau is also an area where families take the *piko*, or umbilical cords of their babies, to bury, and where the bones or ashes of deceased family members are placed.

Maly’s (1999) research demonstrates that the waters of Waiau were considered to be highly sacred by Hawaiians in the 19th century:

Mauna Kea falls in the senior line genealogy. During the 1880’s, Emma Rooke, the wife of the late Alexander Liholiho Kamehameha, and David La‘amea Kalakaua were in competition for the position of ruling chief for this kingdom of Hawai‘i. Both of them needed to prove their connection to the senior line and connect back to a *wahi pana* [legendary or storied place].

David La‘amea Kalakaua went to Kanaloa-Kaho‘olawe to bathe in the waters of the ocean god Kanaloa. Emma went to the top of Mauna Kea to bathe in the waters of Waiau. The ceremony was to cleanse in Lake Waiau at the *piko* [navel or center] of the island. The water caught at Lake Waiau was considered pure water of the gods much like the water caught in the *piko* of the *kalo* leaf is thought of as being pure therefore it was used medicinally. (Nā Maka o ka ‘Āina 2008)

3.6 Mauna Kea Adze Quarry

This brief subsection is based primarily on Kirch’s (1985) summary. The Mauna Kea Adze Quarry (State Inventory of Historic Properties [SIHP] No. 50-10-23-4136), also known as Ke-ana-kāko‘i “the adze-making cave” (Pukui et al 1974:103), is located on the southern slopes of the mountain, at elevations up to 12,400 feet. The site was listed on the National Register of Historic Places in 1969, and the Hawai‘i State Register of Historic Places in 1981.

The quarry occupies an area of at least 4,800 acres and is the largest site of its kind in all of Polynesia; in fact, there are very few quarry sites of its kind and size in the entire world (7 and Figure 8). Kirch explains:

The attraction that drew prehistoric Hawaiians to these inhospitable heights, inducing them to brave sudden and frequently severe winds and snowstorms, was a single flow of extremely hard and dense blue-black basalt, probably the best single source of adz rock in the archipelago. The flow had erupted at a time when the summit of Mauna Kea was capped with glacial ice, with the sudden cooling effect causing the extreme density of the basalt. (Kirch 1985:179-180)

Archaeological surveys of the quarry site have identified hundreds of features, including “extraction areas...workshops, open-air shelters, shrines, overhang shelters, and rockshelters” (Kirch 1985:180). Plant and animal food debris has also been recovered in excavation, which has yielded radiocarbon-dated hearth materials from as early as the fifteenth century. Other evidence suggests the quarry was likely used up until the time of European contact (i.e., late 18th century).

Abbott (1992), citing Allen (1981), notes that *pōpolo* (glossy nightshade, *Solanum americanum*) seeds have been recovered in excavations at the Mauna Kea Adze Quarry and dated to A.D. 1650.

Paul Cleghorn, who analyzed much of the Maunakea quarry material for his dissertation (1982) and has conducted extensive experiments with its properties and production techniques, characterized the makers of these tools as follows:

...there was a tremendous amount of standardization at the Quarry—standardization in adze form, standardization in size proportions, and standardization in procedure. This high degree of standardization supports the contention that the adze makers were craft specialists.

This study has also provided details on the development of behavior at the Quarry. It appears that expert craftsmen worked at the escarpment where there was abundant raw material. Novices or, perhaps more accurately, apprentices foraged for suitable raw material on the outwash plain, where they practiced their skills. (Cleghorn 1982:343)

3.7 Religious Shrines

As discussed in significant detail below (see Section 5), archaeologists have documented at least 79 religious shrines in the Maunakea summit region. Unlike traditional *heiau* in lower altitudes throughout the Hawaiian Islands—which were commonly constructed in the form of stone platforms, enclosures, walls, and other such features—the shrines atop Maunakea almost exclusively consist of large slabs of basalt that have been uprighted into vertical positions. Sometimes these upright slabs are balanced on small rock piles, *ahu*, or cairns, but frequently these slabs are situated directly atop exposed bedrock.

Some of these shrines are associated with informal stone-tool workshops and evidence of temporary site occupation (shelter areas). Archaeologist Pat McCoy, who has spent extensive time studying these sites, believes at least some of the sites were used as locations for performing traditional ceremonies related to “rites of passage” (McCoy 1999).

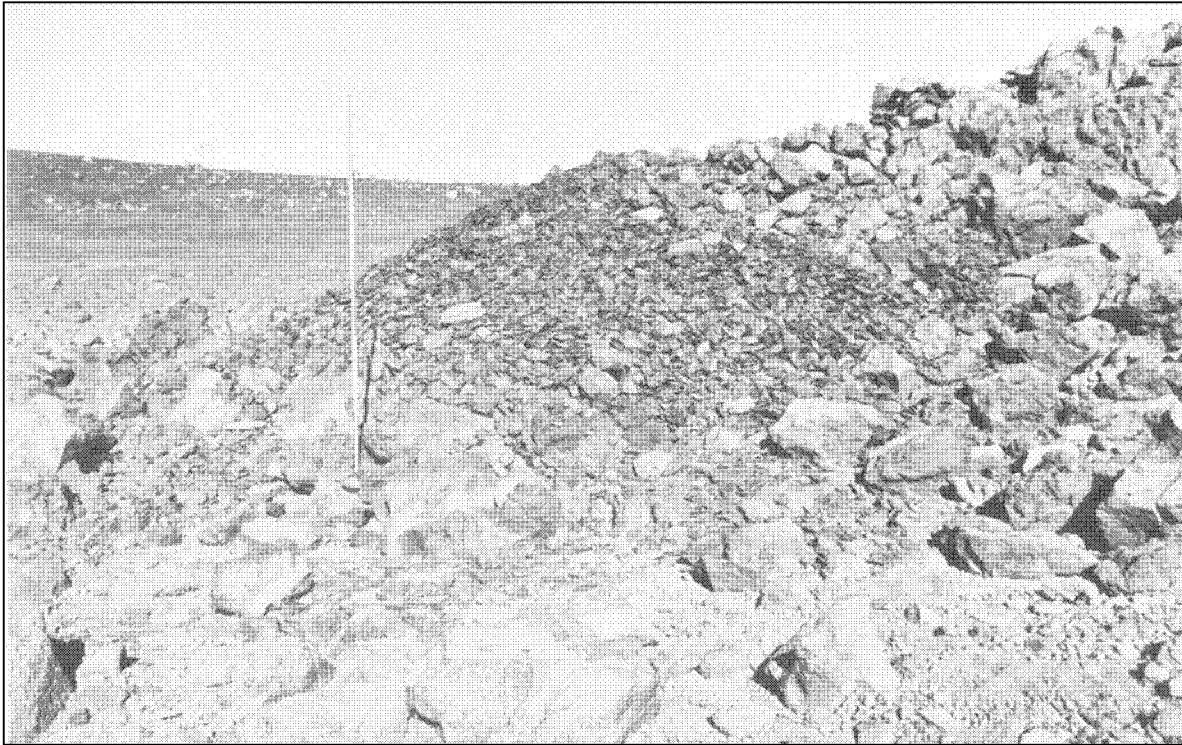


Figure 7. A representative large debris pile of discarded flakes and adze preforms at the Maunakea quarry site (source: Kirch 1985)



Figure 8. Detail of one of the rockshelter sites associated with the Mauna Kea Adze Quarry showing many preforms (source: Kirch 1985)

3.8 Burials

The subject of the presence of burials in the Maunakea summit region is a topic of considerable disagreement between the scientific, archaeological perspective, on one hand, and Native Hawaiian perspectives, on the other. The details are presented in full below (see Section 5.4.1). While historic accounts and *mo'olelo* tell of the presence burials on Maunakea (Maly and Maly 2005), archaeological evidence until recently, was relatively limited concerning confirmed human burials in the summit region. Prior to 2005, archaeological authorities on Maunakea, including Pat McCoy, had documented only one confirmed burial site (with multiple burials) and four possible burial sites in the summit region (McCoy 1991). All of these sites are located on Pu'u Mākanaka to the northeast of the subject Project area. However, McCoy (1999:28) also comments:

There is good reason to expect that more burials are to be found in the Science Reserve on the tops of cinder cones, either in cairns or in a small rockshelter or overhang. The basis of this prediction is that all of the known and suspected burial sites on the summit plateau are located on the tops of cinder cones and, more particularly, on the southern and eastern sides. No burials have been found on the sides or at the base of a cone, or on a ridgetop amongst any of the shrines. There in fact appears to be a clear separation between burial locations and shrine locations.

His comments appear to be apt as current in progress work by McCoy and Nees has documented 28 sites designated as burials and possible burials (McCoy et al 2008).

There are widespread perceptions among many Kānaka Maoli (Native Hawaiians), some of which are backed by various types of documentary evidence, that the area holds or once held many more burials than archaeologists have been able to document. The following information regarding burials on Maunakea is from a website maintained by Nā Maka o ka 'Āina (2008); it has been reproduced here verbatim (except for formatting changes):

The whole mountain throughout history was used as a burial ground of the highest born and most sacred ancestors. And like the kupuna say, so many generations that they have turned to dust. But their spirit remains. (Kealoha Pisciotto, Mauna Kea Anaina Hou, excerpt from Mauna Kea – Temple Under Siege)

I am Hawaiian. Our people are up there. (Manu Aluli Meyer, Philosopher of Education, interview)

There's many of our kupuna's and ali'i's buried on top that mountain, many more burial sites that have never been found. (Lloyd Case, Public meetings on Mauna Kea Science Reserve Master Plan, May, 1999)

Our ancestors were buried there for generations. They don't bury only on the surface. They buried layers and layers and layers and layers, generations through generations, all the way to the top. You cannot cut, you cannot cut the mountain.

You must preserve and protect. (Hannah Reeves, Public meetings on Mauna Kea Science Reserve Master Plan, May, 1999)

In the olden time, it was a common practice of the natives in the surrounding region to carry up the bones of their deceased relatives to the summit plateau for burial. (W. D. Alexander, "The Ascent of Mauna Kea, Hawaii", in the September 20, 1892 issue of the Hawaiian Gazette)

This high altitude area was also used as burial grounds. In particular, the cinder cones at and below the summit region...have been identified as burial areas. (Kepa Maly, From Mauna Kea – Kuahiwi Ku Ha'o i ka Mālie, A Report on Archival and Historical Documentary Research Ahupua'a of Humu'ula, Ka'ohe, districts of Hilo and Hamakua, Island of Hawai'i, Kumu Pono Associates and Native Lands Institute, 1997)

Boundary Commission testimonies for ahupua'a in Hamakua district include references to burials on cinder cones. (M. J. Tomonari-Tuggle. Bird Catchers and Bullock Hunters in The Upland Mauna Kea Forest; a cultural Resource Overview of the Hakalau Forest National Wildlife Refuge, Island of Hawai'i, International Archaeological Research Institute, Inc., August 1996)

The accounts of late 19th and early 20th century visitors to the mountain in conjunction with native boundary testimony, establish the use of both the mountain's upper slopes and the summit plateau as burial grounds.

Other observations of "graves" or "uncovered graves, eroded by high winds"...specifically locate burials within the summit plateau and suggest that interments in loose cinders were not necessarily marked by surface features or structures. (McEldowney 1982, McCoy 1982)

All of the known and suspected burials in the Science Reserve are located in cairns situated on the tops of cinder cones.

There are numerous references to human burials on the northern and eastern slopes of Mauna Kea, some at elevations that would fall within the boundaries of the Science Reserve. The practice of burying the dead in remote, high elevation areas may have been a common practice, based on the information collected by Thomas Thrum:

The use of the craters within Haleakala as burial places, far removed from places of habitation, is quite in keeping with ancient Hawaiian practice. Distances and difficulties were no bar to faithful execution in carrying out the instruction of a dying relative or friend. (Thrum 1921)

There are four other sites in the surveyed areas of the Science Reserve that have been identified as possible burials.

There is good reason to expect that more burials are to be found in the Science Reserve on the tops of cinder cones, either in cairns or in a small rockshelter or overhang. The basis for this prediction is that all of the known and suspected burial sites on the summit plateau are located on the tops of cinder cones and, more particularly, on the southern and eastern sides. No burials have been found on the sides or at the base of a cone, or on a ridgetop amongst any of the shrines. There in fact appears to be a clear separation between burial locations and shrine locations. (McCoy 1999)

Eben Low's obituary: Ebenezer P.K. Low, 89, a man who loved the Big Island ranch country died Sunday. He has asked that his body be cremated and the ashes strewn across the top of Mauna Kea. His daughter Clorinda Lucas, said that his request will be taken care of. Mrs. Annabelle Ruddell of Hilo, his eldest living daughter, flew to Honolulu for the private services. His full name was Ebenezer Parker Kahekawaioumaokauaamaluihi Low. (Maly 1999)

And in the olden days, when our grandparents, they die...then that's when we take the people where they want to go. Like my grandparents, they came from Kalapana side so they like to be up Mauna Kea mountain facing towards Kalapana. In 1944, we took them up there.

And not only us. There's lot of kupuna been buried up there on the mountain besides my kupuna. Lot of people take the bone up there.

But people come over here that don't have aloha for our kupuna, they don't care. Now the mountain get lot of building. We don't know if the bones have been dug out or the bulldozer push them over the side.

And they're still finding bones, people's bones that coming out from Mauna Kea. And that's what I don't like. I like them leave alone. (Arthur "Aka" Mike'e le Mahi, Interview, May 2005)

Hawaiians and observatory staff have mentioned over the years the rumors of burials being disturbed and destroyed. Has there been any attempt by UH/IFA to investigate persistent rumors that Hawaiian burials have been dug up during construction activities? (Sierra Club comments on Draft EIS, Mauna Kea Science Reserve Master Plan)

Archaeological surveys promised by IFA [Institute for Astronomy] in 1985 remain unfinished despite concerns from Native Hawaiians, archeologists and others that burials may be disturbed during continued telescope construction. These concerns arise from long-standing oral histories which say that the summit of Mauna Kea is the burial ground of the highest born and most sacred ancestors. Nineteenth Century archaeological surveys also confirm that Native Hawaiian burials were "commonplace" on the upper slopes of Mauna Kea. (Nelson Ho, "Astronomy director's response disappointing", Viewpoint, Hawai'i Tribune Herald 7/11/96)

All of the current observatories and/or telescopes were built without the completion of archaeological surveys. So how can they know if they disturbed any sites or not?

Some of the pu'u's, the cinder cones, in order to accommodate the telescope foundations, were just leveled. They were leveled in some cases as much as 40 feet. It's also important to us because the pu'u's are the burial places. And we don't have any way of knowing if our burials were disturbed or not. (Kealoha Pisciotto, Mauna Kea Anaina Hou; interview, Mauna Kea – Temple Under Siege)

Would bulldozing cemeteries be allowed anywhere else in the world? (Carol Nervig, testimony before University of Hawai'i Board of Regents, June 2000)

The bones, the 'ohana up on the mountain. Walking on our ancestors, stepping on our ancestors. (Richard Kupihea Romero, Public meetings on Mauna Kea Science Reserve Master Plan, May, 1999)

And how dare you put an observatory on top there, on our graves, on the grave site of my ancestors. How dare you do that? (Reynolds Kamakawiwo'ole, Public meetings on Mauna Kea Science Reserve Master Plan, May, 1999)

We cannot turn our back on our ancestors and say, "You know what, ancestors, can you just move your bones now?" No. We won't do it. We will fight in every way possible we can.

If it was your church, I would expect you to do the same. If it was your graveyard or the graveyard of your mother or your father or your grandfather, I would expect you to do the same. (Ali'i 'Aimoku Ali'i Sir Paul K. Neves, Royal Order of Kamehameha I, Moku o Mamalahoa, Heiau Helu Elua; testimony, NASA town meeting on Keck Outrigger Telescopes Project, October 2001)

The practice of removing burials for development has a long history in Hawai'i. In the late 1980's, when over one thousand bodies were removed for the construction of a beach resort on Maui, public opposition and outrage came to a head and forced the developers to move their site. Legislation was passed to establish burial councils on all islands to protect ancestral remains.

Today, laws call for Hawaiian families to be notified when potential development may impact the burial sites of their kupuna, or ancestors. But in the very act of protecting family burial sites, the burial councils are forced to reveal their locations.

And sorry, but I feel it personally. It hits me when somebody tell me my kupuna is buried there and I gotta prove 'em. Our belief is that the secret places, where they stay and how they kept it, is supposed to remain secret. (Member of Hawai'i Island Burial Council, Council meeting 3/30/2000)

Under burial law, where known or possible burials exist, a burial treatment plan must be created. We know that the pu'u's are the burial sites. We don't know all

the burials that are here. And, that’s why we need to resolve the burial issues on Mauna Kea. (Kealoha Pisciotto, Mauna Kea Anaina Hou; interview)

In the past, there may have been some misunderstanding or cases where people might have found bones and those bones were probably misplaced or whatever. And so, in order to avoid that kind of misunderstanding, what we’re attempting to do is hire a cultural monitor and an archeologist who will be there at the time of the construction so that there would not be any misunderstanding and any mistrust, so that the Hawaiian community would feel that there is someone who is actually watching what the construction crew is doing.

So this is the one step that NASA’s taking to try to get someone like that on board. So we will not only have a cultural monitor who’ll be there during construction, but we’ll also have an archeologist who will also be available, who are trained to know what to look for. (John Lee, NASA; town meeting on Keck Outrigger Telescopes Project October 2001)

3.9 Trails

As depicted in Figure 6 (above), there are several trails traversing the Maunakea summit region including, from the west, the Waiki‘i-Waiau Trail leading up to Waiau; from the northwest, the Makahālua-Kemole-Waiau Trail also leading up to Waiau; from the northeast, the Maunakea-‘Umi Koa Trail, leading to and from the Hamakua area; and, from the south and leading to the Mauna Kea Adze Quarry, the Mauna Kea-Humu‘ula Trail.

3.10 Oli (Chants), Pule (Prayers) and Mele (Songs)

There are many different *oli* (chants), *pule* (prayers) and *mele* (songs) about Maunakea and its summit region. The following examples and brief accompanying comments are from the Nā Maka o ka ‘Āina website (2008). These examples date from different times periods: some are modern, some are post-Contact in age, and some are much older (e.g., excerpts from the Kumulipo or creation chant). These *oli*, *pule* and *mele* associate Maunakea with the original progenitors of life in Hawai‘i, including Wākea and Papa, with the mountain’s status as the *piko* (navel or center) of the *mokupuni* (island), and with various mountaintop deities:

In some genealogical chants, Mauna Kea is referred to as “Ka Mauna o Kea” (Wakea’s Mountain), and it is likened to the first-born of the island of Hawai‘i (Pukui and Korn 1973). A *mele hanau* (birth chant) for Kauikeaouli (Kamehameha III) describes Mauna Kea in this genealogical context:

O hanau ka mauna a Kea
Born of Kea was the mountain

‘Opu‘u a‘e ka mauna a Kea
The mountain of Kea budded forth

‘O Wakea ke kane, ‘o Papa
Wakea was the husband, Papa

‘O Walinu‘u ka wahine.
 Walinu‘u was the wife
 Hanau Ho‘ohoku he wahine
 Born was Ho‘ohoku, a daughter
 Hanau Haloa he ali‘i,
 Born was Haloa, a chief
 Hanau ka mauna,
 Born was the mountain,
 He keiki mauna na Kea...
 a mountain-son of Kea

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 Indigenous Hawaiian Cultural Values
 of the Proposed Saddle Road Alignments
 Kanahele, Pualani K. and Edward L.H. Kanahele 1997

Mauna Kea is the *piko* of the island and this is another reason this area is considered sacred. This piko is the initial provider of the land mass of Hawai‘i *mokupuni*. Hawai‘i was also the first child of Papa and Wakea as stated in “Mele a Paku‘i”:

‘O Wakea Kahikoluamea ea
 Wakea the son of Kahikoluamea
 ‘O Papa, Papa-nui-hanau-moku ka wahine
 Papa, Papa-nui-hanau-moku the wife
 Hanau o Kahiki-ku, Kahiki-moe
 Kahiki-ku and Kahiki-moe were born
 Hanau ke ‘apapanu‘u
 The upper stratum was born
 Hanau ke ‘apapalani
 The uppermost stratus was born
 Hanau Hawai‘i i ka moku makahiapo
 Hawai‘i was born, the first-born of the islands
 Ke keiki makahiapo a laua
 The first born child of the two
 Wakea laua ‘o Kane
 Of Wakea together with Kane
 ‘O Papa Walinu‘u ka wahine
 And Papa of Walinu‘u was the woman

In 1980, Tutu Kawena Pukui shared a mele (chant) she had composed for Mauna Kea with me.

O Poli‘ahu i ke kualono o Mauna Kea
 Poli‘ahu is on the mountaintop of Mauna Kea

Noho ana i ka lau o ke kuahiwi
 Dwelling on the expanse of the mountain.

Wahine noho anu o uka o Lihu‘e
 Woman who dwells in the cold above Lihu‘e [on the Waimea plain]

E ku ana iluna o ke ki‘eki‘e
 Standing atop the heights

Ho‘anoano wale ana i Pali-uli e...
 Awe-inspiring [as seen from] Pali-uli...

Excerpts from Mauna Kea – Kuahiwi Ku Ha‘o i ka Malie, A Report on Archival and Historical Documentary Research, Ahupua‘a of Humu‘ula, Ka‘ohe, districts of Hilo and Hamakua, Island of Hawai‘i, by Kepa Maly, ©1997 Kepa Maly, Kumu Pono Associates and Native Lands Institute

Maunakea
 translation by Mary Kawena Pukui

E aha ‘ia ana o Mauna Kea
 What is doing with Mauna Kea?

Kuahiwi ‘alo pu me ka kehau
 Mountain ever moist with dew

Alawa iho ‘oe ia Mauna Loa
 Take a glance at Mauna Loa

Kohu moa uakea i ka malie
 It is like a white cock standing in the calm

Ku aku au mahalo o ka nani
 I stand and admire the beautiful scene

Ka haale a ka wai hui a ka manu
 The rippling of the cold water of the birds

Kau aku ka manao a e ike lihi
 Think constantly and to glimpse

Ka uwahi noe a o Kilauea
 Of the gray, misty smoke of Kilauea

Ke hea mai nei Halemaumau
 Halema‘uma‘u is calling

‘Ena‘ena i ke ahi a ke wahine
 She who is ever burning with the woman’s fire

Ka wahine kui pua lehua o Olaa

The woman who strings the lehua blossoms of 'Ola'a
I hoa hoouipo no ka Malanai
Is the sweetheart of the Malanai wind
I ahona Puna i ka hone a ke kai
Relieving Puna in the sweetness by the sea
Ke ala o ka hinano ka'u aloha
And the fragrance of the hinano I love so well
Aloha ia uka puanuanu
I love the chilly uplands
I ka hoopulu ia e ke kehau
in the wet and the snow
Haina ia mai ana ka puana
This is the end of my chant
Pulu elo i ka wai a ka Naulu.
Soaked, drenched in the water of the sudden shower.
Aia na kulu pakaua ko loku mau la ma na Kona i keia mau la.
There are dripping raindrops downpour unceasing days there at Kona to this
day.
Ola aku la no hoi ia mau kini!
lived that return many.

Section 4 Historical Background

4.1 Overview

Historical documents about Maunakea focus on early observations by explorers, missionaries and others as well as on scientific expeditions to the summit area. This information often provides bits and pieces of Native Hawaiian perceptions and ideas about the mountain, although these are invariably intermixed with biased views of the natives, themselves, held by those who created the documents. These early observations also inform us about how climatic and natural-resource conditions have changed over the last 200 years.

More recently, starting in the 1960s, Maunakea has been home to numerous astronomical observatories, the construction of which is a direct result of the finest conditions for such scientific work on the planet. It is worth mentioning at this point that the initial construction of these observatories predated the Native Hawaiian renaissance of the 1970s that included a revival of the Hawaiian language and led directly to the contemporary Hawaiian sovereignty movement and other cultural revivals.

4.2 Early Post-Contact Period

The first recorded ascent of Maunakea was in 1823 by the missionary Joseph Goodrich (who lived 1794-1852). Like many missionaries, the Yale-educated Goodrich was also a naturalist and he published his observations on Hawai'i Island volcanoes in the *American Journal of Science* in 1826 and 1829. According to records, the preacher hiked from Waimea to the Maunakea summit and back to Waimea in one 24-hour marathon. He approached via Kawaihae and Waimea. In the vicinity of Waimea he spent the night (at approximately 2,700 feet elevation). Leaving early, and approaching the summit from the north, he followed a steep ravine reaching the tree line at about 9,000 feet elevation approximately 15 miles from Waimea where he rested for a few hours recording the temperature at 43° F at sunset. At 11:00 PM, he pushed on in bright moonlight encountering snow at 1:00 AM and recording a temperature of 27° F. Goodrich attained the highest of several summits around 3:00 AM noting the presence of a pile of stones which he assumed had been constructed by Hawaiians. He roughly retraced his steps back to the vicinity of Waimea. Given that all of his time above 9,000 feet was in the dead of night and the distance he needed to cover, few details were recorded. Goodrich made a second trip up Maunakea in 1825 noting dead sheep on one of the cones at an estimated 13,612 feet elevation and speculating they had been driven there by wild dogs. For 150 years, the near perfect Pu'u Hau Kea (elevation 13,441 feet), as it is presently known, was popularly known as the "Goodrich Cone" (see Kilmartin 1974:13; Macdonald et al. 1983:18, etc.) in his honor.

Hitchcock (1911) described several early scientific ascents of Maunakea (Figure 9 through Figure 13):

Several of the party of the Blonde [i.e., the H.M.S. Blonde] ascended Mauna Kea in July, 1825, accompanied by a "missionary and botanist." Rev. Mr. Goodrich of Hilo writes of an ascent made by him in August 27, 1825. He brought back specimens of the "granite" [i.e., basalt] from the summit, as well as the fine

grained basalt used for the manufacture of adzes. James Jackson Jarves climbed to the summit in 1840, bringing back specimens of “augite, hornblende and olivine.” He looked into Mokuaweoweo and reported that there were no signs of activity, not even ascending vapors. In the early part of January, 1841, Dr. Charles Pickering of the Wilkes Exploring Expedition, made the ascent and noted the same features mentioned by his predecessors, such as the ice and several cones of volcanic origin. In a desolate and gravelly plain he found a few plants suggestive of a colder climate, probably the same that were brought back by Mr. Preston and named authoritatively, such as *Cystopteris fragilis*, *Trisetum glomeratum*, *Poa annua* and *Deschampsia australis*.

The English botanist David Douglas (for whom the common name of the Western American Douglas Fir [*Pseudotsuga menzies*] was named) carried out scientific ascents of Maunakea and Maunaloa and died of mysterious circumstances (at the age of 36) on the slopes of Maunakea in 1834 (Ziegler 2002).



Figure 9. Photograph of cinder cones of Maunakea with Waiau (lower left) (Brigham 1909)

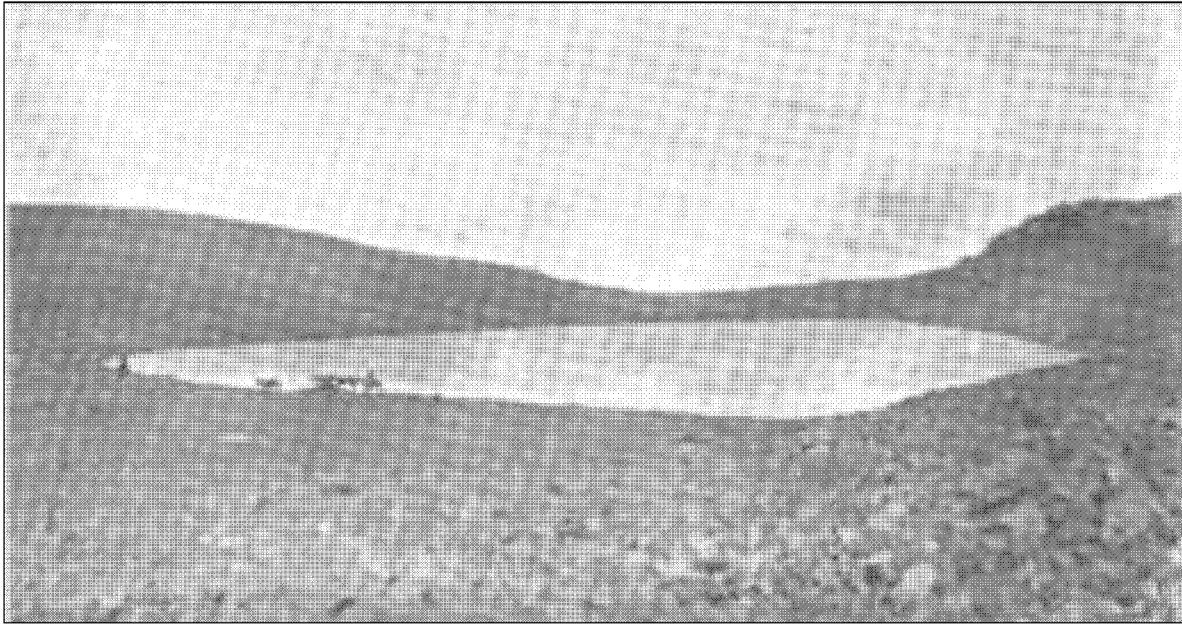


Figure 10. 1909 photograph of Lake Waiau from Brigham



Figure 11. Recent 2009 photograph of Lake Waiau (source: Brian Cruz)



Figure 12. Photograph of cinder cones of Maunakea from Hitchcock (1911)

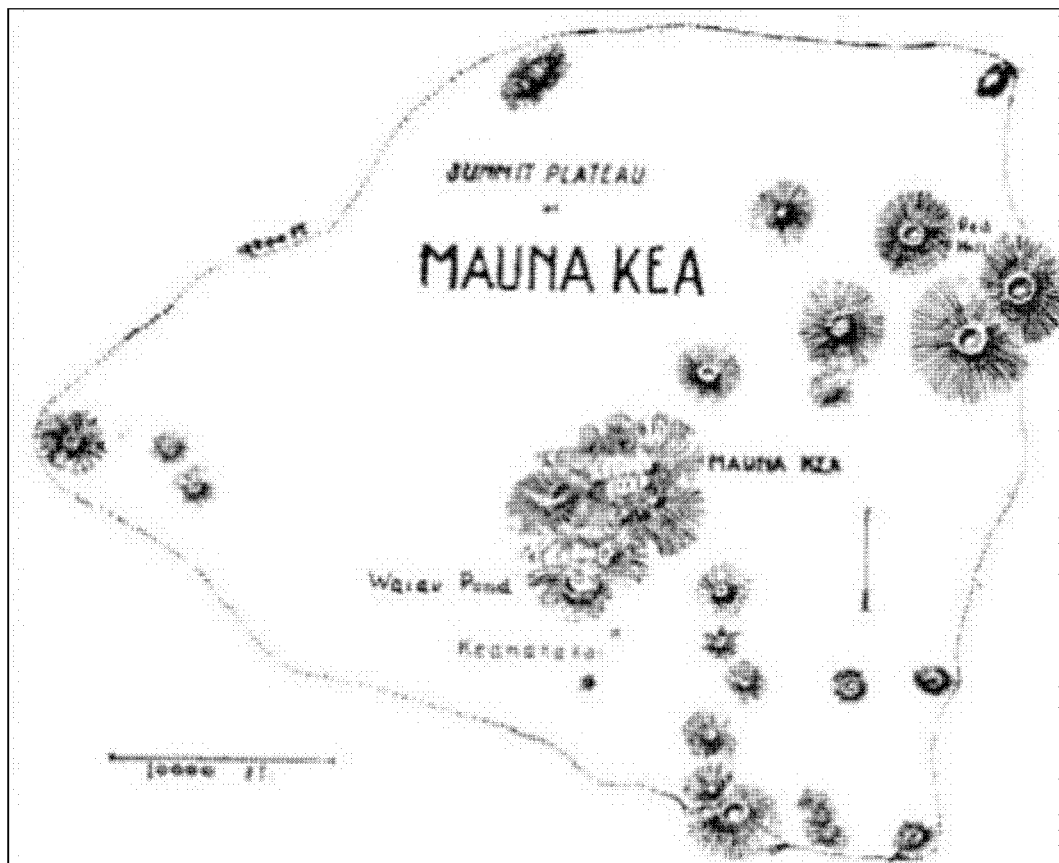


Figure 13. Hitchcock's copy of W.D. Alexander's 1892 map of the summit region

4.3 The Māhele

The Organic Acts of 1845 and 1846 initiated the process of the Māhele, the division of Hawaiian lands, which introduced private property into Hawaiian society. In 1848, the crown and the *ali'i* received their land titles. The *ahupua'a* of Ka'ōhe was designated as Crown land, and on January 27, 1848 was relinquished by Victoria Kamamalu to Kamehameha III (Buke Mahele, 1848:5–6). In March of the same year, Kamehameha III gave Ka'ōhe to the Government Land inventory (Buke Mahele, 1848:191). These same records state that four native claims were registered in Ka'ōhe Ahupua'a (Table 1) but only one was awarded.

Table 1. LCA claims in Ka'ōhe Ahupua'a

LCA	Claimant	District	Ahupuaa	Ili	Award
08297	Kookooku	Hāmākua	Koholalele, Ka'ōhe	Lipelau	Awarded 1 āpana in Koholalele
10180	Malao, Tatina	Hāmākua	Kemau 2, Kaohe	Kahaumake, Manele, Haleolono	Awarded 2 āpana in Kemau 2
03705B	Koolau	Hāmākua	Ka'ōhe		Awarded 1 āpana in Ka'ōhe
03722B	Keopohaku	Hāmākua	Ka'ōhe		None

The following testimony was provided as Native Testimony in support of Koolau's claim on October 30th, 1848:

Keopohaku, sworn, He has seen in Kaohu ahupuaa of Hamakua, Hawaii, 10 sections.

Section 1: House site: All konohiki boundaries, 2 houses for Koolau, no fence.

Section 2: All konohiki boundaries, 1 cultivated taro kihapai.

Section 3: Mauka, Kohala, Makai also by konohiki Hilo by Nuumalolo's land. 1 cultivated taro kihapai.

Section 4: All konohiki boundaries, 1 cultivated potato kihapai.

Section 5: Mauka & Kohala by konohiki. Makai by Moano's land. Hilo by konohiki. 1 cultivated banana and coffee kihapai.

Section 6: Koholalele ahupuaa: All konohiki boundaries, 2 cultivated banana kihapai.

Section 7: All konohiki boundaries, 1 cultivated coffee kihapai.

Section 8: All konohiki boundaries, 1 cultivated arrowroot kihapai.

Section 9: All konohiki boundaries, 1 cultivated arrowroot kihapai.

Section 10: All konohiki boundaries, 1 cultivated taro kihapai.

Land from Keopohaku in 1836; no one has objected to him.

(Native Testimony; 389v4)

Of the ten *āpana* that Koolau claimed, he was awarded only one 7-acre *āpana*. This was the sole *kuleana* award in Kaʻohe Ahupuaʻa. This single awarded *kuleana* claim indicates coffee, arrowroot, banana, and taro were all cultivated in the lands of Kaʻohe.

The 1862 S.C. Wiltse map of Humuʻula (Register Map 668/Figure 14) and the 1892 C.J. Lyons map of Kaʻohe, Hāmākua and Humuʻula (Register Map 1641/Figure 15) show the summit portion of the Project area. Questions related to the location of the eastern boundary of Kaʻohe and the western boundary of the *ahupuaʻa* of Humuʻula, led to an investigation by the Commissioner of Boundaries in the late 19th century. The 1892 map is likely related to that decision.

Testimonies regarding *ahupuaʻa* boundaries were initially heard in 1873, although the Kaʻohe and Humuʻula boundary was not completely documented. Additional testimonies were provided and a determination was made. In 1891 the boundary was determined to run along the Kaula Gulch (Foster 1893:455). This area supported the habitats of two native bird species:

From the mass of evidence taken we find that in ancient time the main value of the land of Kaohe was the “uwaʻo,” a sea-bird, whose habitat was the dry, rocky and elevated portion of the mountain. The habitat of the bird “oo,” whose feathers were valuable, was in the mamane of Humuula. So the bird-catchers, retainers of the chief to whom Humuula was assigned, were limited to this area on which to take the “oo,” and could not take the “uwaʻo,” for those belonged to Kaohe. (Foster 1893:456)

The “uwaʻu” bird is also spelled ‘uaʻu; this is a dark-rumped petrel.

During a discussion of the testimony, court documents note that:

The kamaainas of forty years ago [1851] were less likely then to be mistaken as to the correct boundaries of lands than those of these days. They lived on the lands, pursuing their occupations under the chiefs of gathering feathers, canoe making and getting articles of various kinds from the mountains. (Foster 1893:458)

McEldowney’s (1982:A-10) ethno-historical summary of the Maunakea summit region provides Boundary Commission Testimony of a man named Haiki for the disputed boundary. He asserts that: “my parents told me Humuula went to Kaluakaakoi and Poliahu. We used to go there after adzes for Humuula people.”

Maly’s 1999 archival study included a reference in border testimony to burials within Kaʻohe Ahupuaʻa:

[Puʻuokihi] it belongs to Kaohe and above that is where people were buried in old times, when people used to make fishhooks from the bones. [Testimony of Kahue, 1880, BCB, Hawaiʻi, B:444] (Maly 1999:D-4).

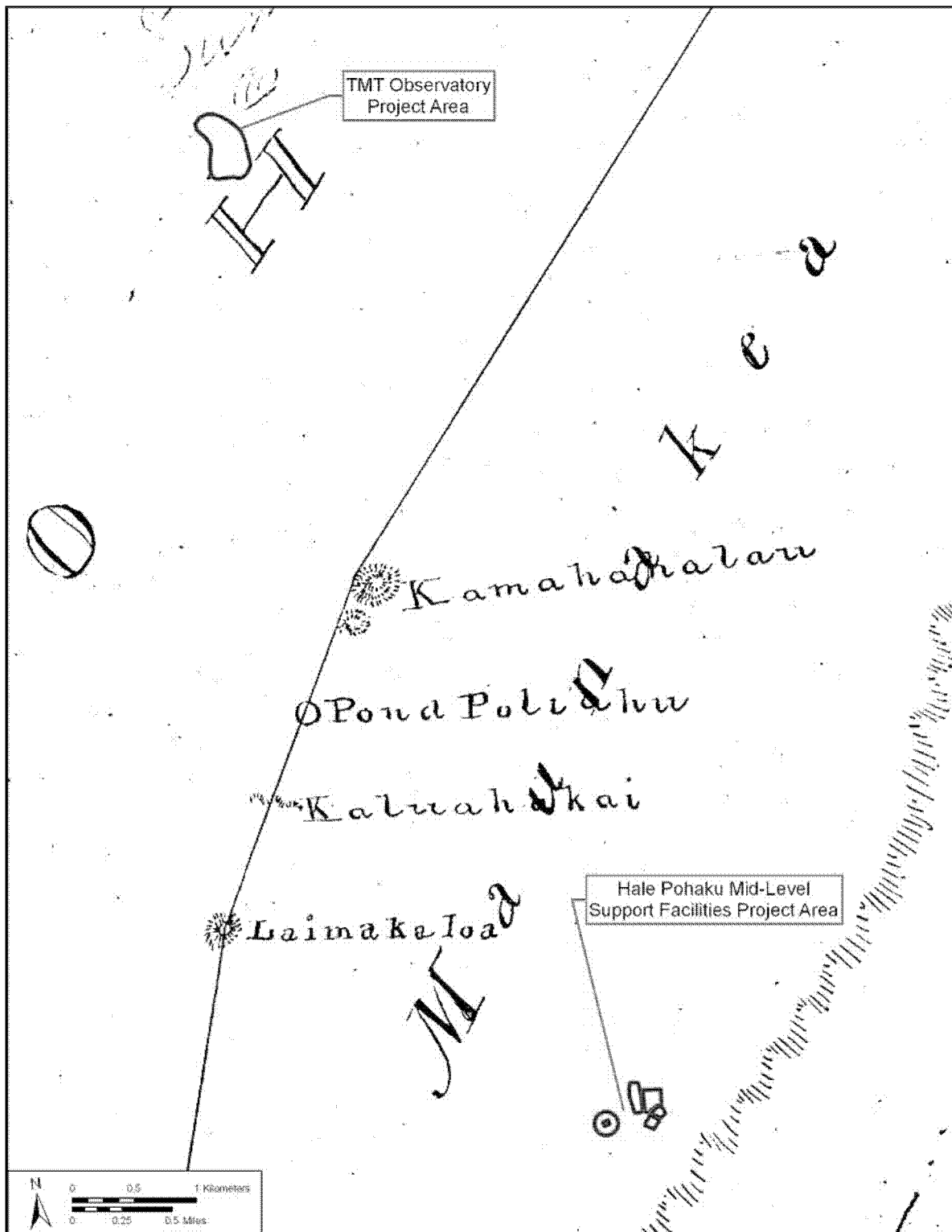


Figure 14. Portion of 1862 S.C. Wiltse map of Humu'ula (R.M. 668) showing the location of the Project areas

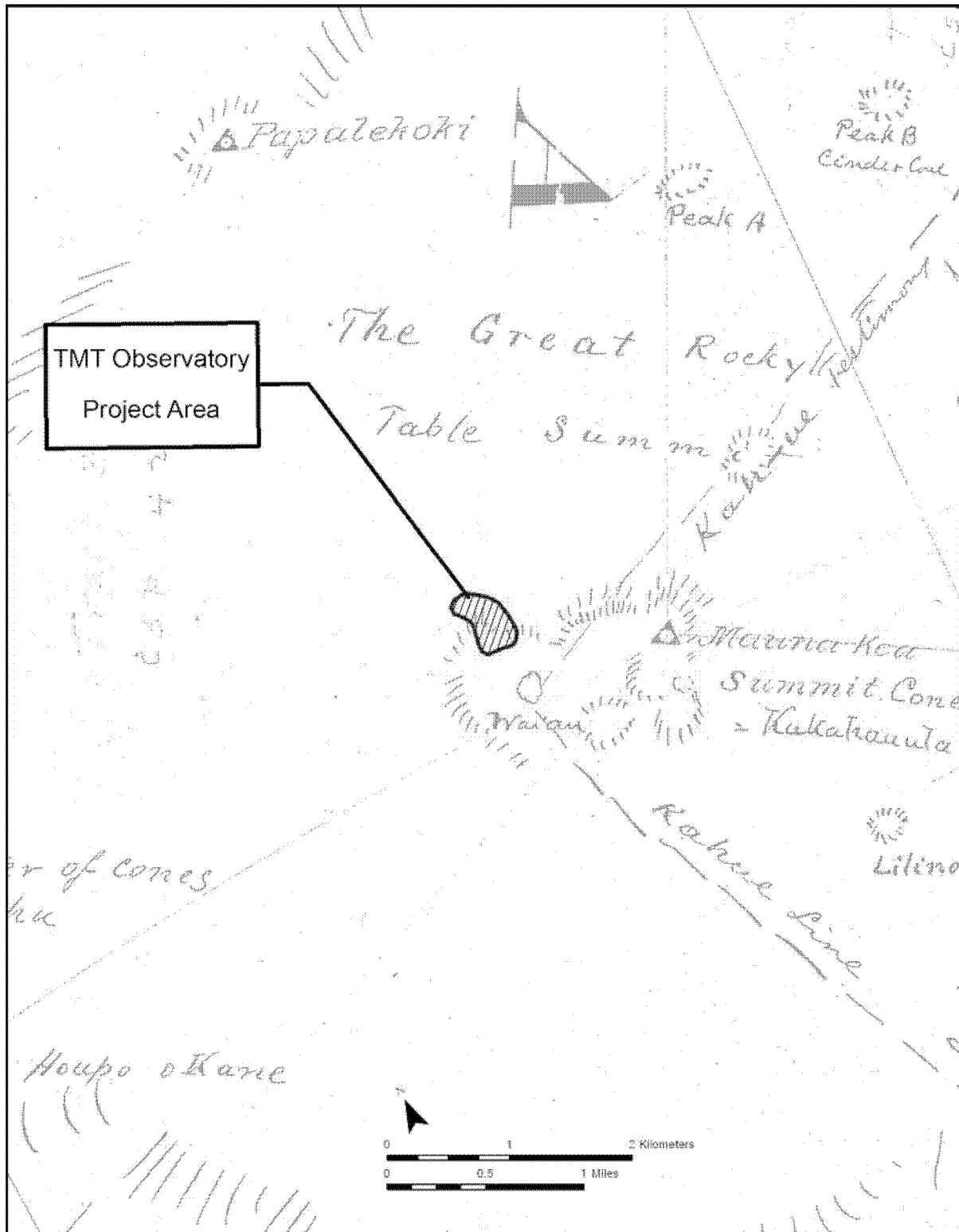


Figure 15. Portion of 1892 C.J. Lyons map (R.M. 1641) of Ka'ōhe, Hamakua and Humu'ula showing the location of the TMT Observatory Project area

4.4 Middle 19th Century

Wilkes (1856) discusses a scientific ascent of Maunakea in 1841 by Drs. Pickering and Brackenridge. Many of the details describe the long journey of ascent beginning in Hilo, rather than describing the summit region, itself; however, some of the details provide important observations about the presence and distribution (especially elevation) of natural resources that differ from contemporary data. These mid-19th century observations, in conjunction with modern data, provide comparative information about long-term change on the mountain.

Wilkes' description of Pickering and Brackenridge's ascent begins near Hilo, and mentions the names of Native Hawaiian guides and their chief:

They [Pickering and Brackenridge] were furnished with guides, among them Sandwich Jack, our bullock-driver, whose true name was Dawson, though he went by the sobriquet of Billy Lilly. They set out on the 8th of January, attended by natives from Hilo, belonging to [the chief] Kanuha, having agreed to pay each of them fifty cents a day. (Wilkes 1856:200)

After arriving for the night seven miles from Hilo at a dilapidated sawmill belonging to "Mr. Castle" and managed by a man named Simons, there was a disagreement or miscommunication regarding compensation between the Hawaiian guides and porters and their chief (Kanuha), which took a day to resolve. Traveling through a forest of "ohea (Callistemon)" and "koa (Acacia)," they encountered many unique fern species, including an edible one, and watched as one of the young men of the group tried (unsuccessfully) to capture a large bird. They also encountered many heads of cattle, thought to have been introduced by Vancouver in 1795, and Native Hawaiians hunting them. This was despite the fact that "[t]he cattle have been tabooed for five years, from the year 1840, in consequence of the slaughter that had been made among them" (Wilkes 1856:200).

At the location of these observations of feral cattle, described as no higher than 5,000 feet elevation, the expedition noted the presence of frost:

From these natives [hunters of cattle] they procured some jerked beef, and were told that ice had formed there the night before. The effects of frost on the foliage was evident, and yet the elevation did not exceed five thousand feet. (Wilkes 1856:200-201)

Later, Wilkes states:

On the 12th, they started at sunrise, and by eleven o'clock found they had cleared the forest. Their altitude was about six thousand feet...The ground was frozen, and the pools of water were covered with a thin ice. (Wilkes 1856:201)

It seems that during this time (1841), the mountain was a much colder place than it is now, when frost and ice do not extend down to the elevation of 5,000-6,000 feet. This may be at least partially explained by the fact that the 16th through the mid-19th century was the approximate time of three interspersed global cold periods collectively known as the "Little Ice Age."

Regarding the vegetation on Maunakea, Wilkes (1856) states that, unlike Maunaloa—where vegetation stops at around 7,000 feet elevation, vegetation on Maunakea "continued to twelve

thousand, and a few scattered plants may even be found within a few hundred feet of the top of Mauna Kea.” He also notes that *māmāne* (*Sophora chrysophylla*) “occupies a belt eleven thousand feet high” on Maunakea, which suggests a significantly higher treeline than at present, where *māmāne* occur no higher than above 9,000 feet elevation.

4.5 Late 19th century

Bryan (1915), describing Hitchcock’s 1885 ascent of Maunakea, noted:

When not covered with snow the surface of the plateau of Mauna Kea is described as a desolate gravelly plain on which occur five or six species of plants resembling those of the colder climates of high altitudes. As reported by Professor MacCaughey, the lake at the summit [Waiau], though very cold throughout the year, supports a luxuriant growth of green algae. (Bryan 1915:152)

W.D. Alexander, Surveyor General, ascended Maunakea along the Waimea-Waiki’i trail in 1892. His description of the route is as follows:

A wagon road made by the owners of the Humu’ula Sheep Ranch leads from Waimea around the western and southern sides of Mauna Kea. On the western side of the mountain it passes through a region which only needs more rainfall to make it a superb grazing country. The ancient forests here, as at Waimea have been nearly exterminated, but a fine grove of mamane trees still survives at the Auwaiakeakua Ranch. The manienie grass is gradually spreading and will in time add immensely to the value of the land. At the half-way station, called Waikii, water tanks and a rest house have been provided for teamsters.

4.5.1 Humu’ula Sheep Ranch

In 1897, 137,200 acres of Ka’ohe Ahupua’a were leased by the Humu’ula Sheep Station Company. The lease state was described as, “Subject to homestead reservation: term, 15 years” (Mitchell 1903:586).

The Humu’ula Sheep Station Company began as the Waimea Grazing & Agricultural Company, which by the mid 1860s, leased most of the upper elevations of Ka’ohe, as well as Waimea and Humu’ula. Frank Spencer, the owner, sold the leases.

One of these leases was sold to Parker Ranch. Parker Ranch held the lease to most of the Ka’ohe mountain lands until 1905 when leases were withdrawn on lands between the 7,500 and the 9,500-foot elevation to establish the Mauna Kea Forest Reserve (Maly and Maly 2005:522). Parker Ranch continues to utilize lower portions of Ka’ohe for grazing (Maly and Maly 2005:viii).

Parker Ranch continued to hold land in the Humu’ula lands and continued their ranching activities. Initially focusing on sheep ranching until 1964 when it ended it’s sheep program, Parker Ranch carried out it’s cattle operations until the end of their lease in August of 2002 (Maly and Maly 2005:vii).

4.6 Twentieth Century

In 1936 the Civilian Conservation Corps carried out improvements to the old Maunakea-Humu‘ula Trail from near the main base of the sheep station at Kalaieha to the summit (Bryan 1938). The first stone cabin at Hale Pōhaku was constructed at approximately the same time. The second stone cabin was built in 1939. L.W. Bryan, at that time the Acting Territorial Forester, wrote in a 1938 article that the original stone house measured 16 by 20 feet and was equipped with a 2,000 gallon water tank and a large stove. The summit road only extended to Hale Pōhaku in 1938 (Bryan 1938:38).

Starting in the early 1960s, Maunakea was promoted as a prime location for developing astronomical facilities by a group of business leaders on Hawai‘i led by Mr. Tetsuo Akiyama. A road was built to the summit in 1964, with the support of then Governor John A. Burns. After testing at the top of the mountain showed superb conditions for astronomical observations, two facilities were constructed by the University of Hawai‘i at the end of the decade. By the turn of the millennium, Maunakea was home to a total of 13 astronomical facilities, making it “the largest concentration of telescopes in the world” with facilities being operated by astronomers from ten countries (Juvik and Juvik 1998).

Some of the most important recent discoveries in the field of astronomy have taken place at observatories on Maunakea, and proponents and advocates of these facilities have stressed that this work in many ways represents a continuation of the long tradition of Polynesian celestial observation and navigation that was integral to the initial discovery and peopling of the Hawaiian Islands (Juvik and Juvik 1998). At the same time, many Kānaka Maoli (or Native Hawaiian) individuals and groups have become increasingly opposed to any additional development atop Maunakea; a sacred mountain which should not be subject to additional ground disturbance, vehicular traffic, trash and human wastes.

The Onizuka Center for International Astronomy Visitors Information Center was constructed in 1986 within the vicinity of Hale Pōhaku.

4.7 Previous CIA and Cultural Studies for Maunakea

Several extensive cultural studies and management plans have been previously carried out for Maunakea. This section summarizes these studies. Some of these studies, particularly Maly (1999) and Maly and Maly (2005), have provided details for the current study.

Management plans for Maunakea dating from 1977 to 2000 are listed on the Mauna Kea Comprehensive Management Plan website (<http://www.mkcmp.com/about>). Table 1 was taken from the website and summarizes the management plans written for Maunakea.

Table 2. Maunakea Management Plans

Year	Description of Management Plan	Approved by
1977	<i>Mauna Kea Plan</i> . Adopted by DLNR to serve as policy framework for the management of Mauna Kea. The plan divided Maunakea into five management areas and described acceptable uses and management controls for each area. (1998 audit report)	BLNR (Board of Land and Natural Resources)
1980	<i>Hale Pōhaku Master Plan</i> . Prepared by DLNR to address the mid-level facility at Hale Pōhaku. Served as a guide to UH in the design and construction of the astronomy mid-level facility. The plan incorporated the needs of the six telescopes in the operation at that time, allocated space for public restoration and set controls for future expansion. (1998 audit report).	
1982	<i>Research Development Plan (RDP) for the Mauna Kea Science Reserve and Related Facilities</i> . UH approved the RDP as its own research development plan for the Mauna Kea Science Reserve and Hale Pōhaku facilities. The RDP was to serve as a programmatic master plan for the continued development of the Mauna Kea Science Reserve.	UH Board of Regents
1983	<i>Mauna Kea Science Reserve Complex Development Plan</i> . UH developed this plan to facilitate the implementation of the specific research facilities identified in the plan. The plan consisted of two components. The first component was a complex development plan to provide the physical planning framework to implement the UH Research Development Plan. The objective of the document was to guide and control development in order to preserve the scientific, physical, and environmental integrity of the mountain. The second component was the environmental impact statement (EIS) to evaluate the general impact of implementing the actions proposed in the complex development plan and propose mitigating actions for potential negative impacts. (1998 audit report).	UH Board of Regents
1985	<i>University of Hawai'i Mauna Kea Management Plan</i> . Revised management plan to address concerns from DLNR and the public. BLNR retained management control over the commercial activities. (1998 audit report)	BLNR
1995	<i>Revised Management Plan for the UH Management Areas on Mauna Kea</i> . Adopted by UH and DLNR to improve control over commercial uses in the summit area. All management responsibilities, except those related directly to astronomical facilities or the summit road, are transferred back to DLNR. This plan replaced and superseded the 1985 Management Plan. (1998 audit report)	BLNR

Year	Description of Management Plan	Approved by
2000	UH Mauna Kea Science Reserve Master Plan. Adopted by the UH Board of Regents as the policy framework for the responsible stewardship and use of university managed lands on Maunakea. Master Plan created a new management structure, housed within the University of Hawai‘i at Hilo, as the local management authority over Maunakea. UH also established the astronomy precinct, which confines astronomy development to 525 acres within the MKSR. (2000 audit report).	UH Board of Regents
2008	<i>Preliminary Draft Report: Cultural Resource Management Plan for the University of Hawai‘i Management Areas on Mauna Kea, Ka‘ohe Hamakua, Island of Hawai‘i TMK (3) 4-4-012, 015</i>	Draft

This section reviews relevant previous cultural research in the Maunakea summit region (Table 3). Several CIA and cultural studies have been previously prepared since the 1980s for the Maunakea summit region.

Table 3. Cultural Studies in the Maunakea Summit Area

Reference	Comments
McEldowney 1982	First ethnographic study prepared and included in an EIS. No consultations were conducted.
Kanahele and Kanahele 1997	Cultural assessment for the proposed realignment of the Saddle Road, detailed discussion of cultural values, protocols and practices
Maly 1998	Archival and historical documentary research, including “limited” oral historical interviews not formally part of the study
Langlas et al. 1999	Archaeological Inventory Survey and cultural assessment along Saddle Road and Hawai‘i Defense Access Road
Maly 1999	Oral history and consultation study including 22 interviews, and 3 interviews dating 1956-1967 translated by Maly
PHRI 1999	First Cultural Impact Assessment study prepared for the University of Hawai‘i Mauna Kea Science Reserve Master Plan Project Area. Basis of the study was Maly (1999)
Maly and Maly 2005	The study’s Executive Summary appears in Appendix A of this current document. Study includes extensive background research and oral histories and recommendations that have been ongoing since 1996

4.7.1 McEldowney (1982)

Holly McEldowney (1982), then of the B. P. Bishop Museum Department of Anthropology, produced an Ethnographic Background report for the Maunakea Summit Region for the Research

Corporation of the University of Hawai'i as part of an EIS for a Mauna Kea Science Reserve Master Plan. The data are presented in three sections addressing 1) myths and legends and "oral traditions," 2) land use practices and cultural activities and ,3) a study of place names.

McEldowney (1982:A-5) starts by relating a tradition of the goddess Poli'ahu from Haleole's (1863) story of Lā'ieikawai. While McEldowney relates this as a "Hawaiian tradition recorded by S. N. Haleole," Lā'ieikawai has increasingly been recognized as a "romance," a Cinderella-like story that undoubtedly utilized pre-Contact traditions and motifs but was self-consciously more in the nature of a fairy-tale or work of imagination than a recordation of traditional legends. Haleole's traditions of Poli'ahu, however, have almost nothing to do with Maunakea (although "Lilinoe" is given as the name of one of Poli'ahu's companions). McEldowney then goes on to discuss Westervelt's accounts of Poli'ahu and opines that Westervelt "took the unwarranted license to assign each of the 'goddesses of the snow covered mountains' to specific localities" (McEldowney 1982:A-6). This appears to be the case as popular assignments of the names of deities to specific land-forms are modern appellations. McEldowney goes on to briefly discuss mentions of Maunakea, Poli'ahu, Lilinoe in works by Fornander, Kamakau, Kalākaua and Thrum. She notes the common case (as exemplified in Haleole's Lā'ieikawai and Fornander's Hawai'i Loa legend) of characters and themes inserted into more recent versions of older myths and legends. McEldowney notes that "Otherwise Mauna Kea is mentioned only briefly and rarely as the backdrop to more compelling events, or to characterize the attributes of a figure or an event by analogy" (McEldowney 1982:A-7).

McEldowney points out that: "Several early accounts report that Hawaiians were reluctant to travel or serve as guides on inland journeys, or that they professed no knowledge of these areas, leading to the false impression that these regions constituted a wilderness unknown to the Hawaiian people" (McEldowney 1982:A-7, A-8). This generality is even more pronounced for the summit plateau of Maunakea, where almost all early post-Contact visitors made the final ascent to the summit without native guides. The only report of Hawaiians on Maunakea prior to the 1870s Boundary Commission accounts is Kamakau's reference to Ka'ahumanu's 1828 visit "to Hawaii to fulfill a vow that she had made to attempt the recovery of the bones of Lilinoe on Mauna Kea..." (Kamakau 1992:285). It is unclear whether Ka'ahumanu or her retainers actually ascended the mountain but: "It is said Ka'ahumanu did not find the bones of Lilinoe...." (Kamakau 1992:285).

McEldowney relates various western visitors' accounts of Hawaiians acquiring birds, hardwoods, fine-grained basalt, sandalwood and wild cattle in "this region" (McEldowney 1982:A-8, A-9). The first specific Hawaiian account of activities on the mountain discussed in the McEldowney study is in the Boundary Commission Testimony of a certain Haiki who asserts that: "my parents told me Humuula went to Kaluakaakoi and Poliahu. We used to go there after adzes for Humuula people" (McEldowney 1982:A-10). As McEldowney notes: "Haiki's overall testimony and placement of the boundary was rejected by the commission" (McEldowney 1982:A-10).

Similar to her study of legends, myths and early accounts of land use, McEldowney's accounts of place names also emphasizes the dearth of information, the lack of specificity of that information, and the suspicious nature of the paucity of early data. McEldowney points out that guides and informants were often familiar with land features but traveled from landmark to

landmark rather than on trails. She notes that access to the mountain in the second half of the 1800s appeared to utilize ranching establishments (Humuula Sheep Station, Umikoa Ranch) and may not have related to pre-Contact approaches (McEldowney 1982). Many Hawaiian place names were noted to be modern.

4.7.2 Kanahele and Kanahele 1997

Kanahele and Kanahele are native cultural practitioners and authorities on Native Hawaiian customs, beliefs, and practices (Maly 1999:D-18). The cultural assessment was conducted for the proposed realignment of the Saddle Road (Hwy 200). The study discussed the broader cultural impacts addressing the cultural and natural landscape from the summit of Maunakea down to the ocean. This is evident in their following conclusions:

The native Hawaiian was a creature of the land and his environment was his life line. He recognized and practice respect for hierarchy of *hiapo* for man and land alike. The mountain is sacred because it the sacred child of Wākea. It is also the nourishment source for our land. The mountains and the land were genealogically connected to him through the original ancestor, Wākea and Papa. The mountains or land, water and sky were a necessary part of life cycle.

(Kanahele and Kanahele 1997 as cited in May 1999:D-21)

4.7.3 Maly 1998

Maly (1998) conducted archival and historical documentary research for Maunakea from August 1996 to March 1997 for the Native Lands Institute: Research and Policy Analysis. The study “reported on Native Hawaiian traditions, history culture, practices, and beliefs; and post contact history for the summit and mountain slopes of Mauna Kea” (Maly 1998:1). Maly also mentions that he conducted “limited oral historical interviews” that were not “part of a formal study of Mauna Kea” (Maly 1998:61). Individuals that were interviewed expressed a strong attachment to Maunakea’s landscape and those interviewed “feel disheartened about the highly visible presence and impact of the telescopes and development on the summit” (Maly 1998:61).

4.7.4 Langlas et al 1999

Langlas conducted and archaeological inventory as well as cultural assessment for the proposed realignment of the Saddle Road (Hwy 200). As part of the cultural assessment, Langlas interview several area present and past residents. Information acquired in the interviews provided details on both pre- and post-Contact land uses, including trails, adze manufacture, bird catching, cattle hunting, and ritual sites.

4.7.5 Maly 1999

In 1999 Maly prepared an oral history and consultation study with archival literature research for an update of the Mauna Kea Science Reserve and Hale Pōhaku Complex development plan for Group 70 International. Since the author had previously researched and reported on the same Maunakea summit area from August 1996 to May 1998, this study “focused on oral history interviews, limited archival research, and development of an overview of several recent studies which provide important historical documentation of Mauna Kea” (Maly 1999:iii). During the study, 22 individuals were interviewed. Maly also spoke to over 100 people in the course of the

study. The general consensus was that the construction of additional observatories was “inappropriate due to their deep respect for Mauna Kea”; two of the individuals hesitated to support additional development; and one individual stated the observatories “provided important knowledge to mankind” and the benefits outweighed the concerns (Maly 1999:25). The basis of the concerns is related to the “cultural attachment” of Native Hawaiians to Mauna Kea. Maly explains that cultural attachment:

...embodies the tangible and intangible values of a culture. It is how a people identify with and personify the environment (both natural and manmade) around them. Cultural attachment is demonstrated in the intimate relationship (developed over generations of experiences) that people of a particular culture share with their landscape – for example, the geographic features, natural phenomena and resources, and traditional sites etc., that make up their surroundings. This attachment to environment bears direct relationship to beliefs, practices, cultural evolution, and identity of a people. In Hawai‘i, cultural attachment is manifest in the very core of Hawaiian spirituality and attachment to landscape, the creative forces of nature which gave birth to the islands (e.g., Hawai‘i), mountains (e.g., Mauna Kea) and all forms of nature, also gave birth to *na kanaka* (the people), thus in Hawaiian tradition, island and mankind share the same genealogy. (Maly 1999:27)

4.7.6 PHRI 1999

In 1999, Paul H. Rosendahl, Ph.D., Inc. (PHRI) prepared a Cultural Impact Assessment study for the University of Hawai‘i Mauna Kea Science Reserve Master Plan Project Area. The basis of the study was “the oral history and consultation study carried out by Cultural Resources Specialist Kepa Maly” [Maly’s 1999 study – see above] (PHRI 1999:ii). The document notes that a good faith effort was made to “identify the full range of Native Hawaiian cultural practices, features, and beliefs” associated specifically with the Science Reserve project area. PHRI recommended that “a comprehensive plan for both the short-term and long-term management of the Science Reserve Master Plan project area is vital for the protection and preservation of significant traditional cultural resources.”

Three places that have been identified by SHPD as traditional cultural properties and documented in the PHRI study are: 1) Kūkahau‘ula, the summit (Site 21438), 2) Līlīnoe (Site 21439), and 3) Lake Waiau (Site 21440). Other traditional places that may qualify include: 1) Pu‘u Poli‘ahu, 2) Pu‘u Mākanaka and Kaupō, 3) Kūka‘iau-‘Umiko Trail, and 4) Mauna Kea-Humu‘ula Trail (see Figure 6).

4.7.7 Maly and Maly (2005)

Maly and Maly (2005) prepared a study for the Office of Mauna Kea Management (OMKM) that:

compiled a detailed collection of archival-historical records, and conducted oral history interview with *kūpuna* and elder *kama‘āina*, pertaining to the *ahupua‘a* (native land divisions) of Ka‘ohe, Humu‘ula and neighboring *‘āina mauna* (mountain lands) of Mauna Kea, on the island of Hawai‘i. (Maly and Maly 2005:v).

The document includes research and interviews that Maly and Maly have been conducting since 1996. Additional research, including translations of Hawaiian documents and oral history interviews were conducted for the study. Compiling historic documentation of the traditions and history of Mauna Kea into a single document was one of the study's primary goals (Maly and Maly 2005:v). The study's Executive Summary appears in Appendix A of this document.

In addition to the interviews, the study cited numerous sources among which are included native accounts translated from Hawaiian language sources, Kingdom and government records, post-Contact visitors' journals, ranching and lease records and narratives from the many scientific expeditions.

The study looked at not solely the summit of Maunakea but adapted a broader perspective encompassing the *ahupua'a* of Ka'ōhe, Humu'ula and neighboring *'āina mauna* (mountain lands) as well and acknowledging Maunakea as a sacred landscape.

As Maly and Maly point out, an additional purpose of this study was to address the native lore associated with traditional knowledge of the heavens. Some of their conclusions in this regard are that:

as is the case in all areas of Hawaiian life, the traditions, customs and practices associated with the *'oihana kilokilo* (astronomy) and *kilo hōkū* (observing and discerning the nature of the stars) were deeply tied to the spiritual beliefs of the Hawaiian people. The stars are physical manifestations of the gods who created the heavens, earth, and humankind, or are body-forms granted to select individuals or beings of nature (Maly and Maly 2005:vi)

Based upon their research, Maly and Maly were able to document 270 Hawaiian names for stars.

The study also discusses the land uses of Maunakea and the traditional knowledge and practices associated with it, including such places and activities as: Maunakea, Pu'u o Kūkahau'ula, Waiau, Pu'u Poli'ahu and Pu'u Līlīnoe, heiau and *ahu*, trails, resource collection sites, shelters, water collection, and bird hunting.

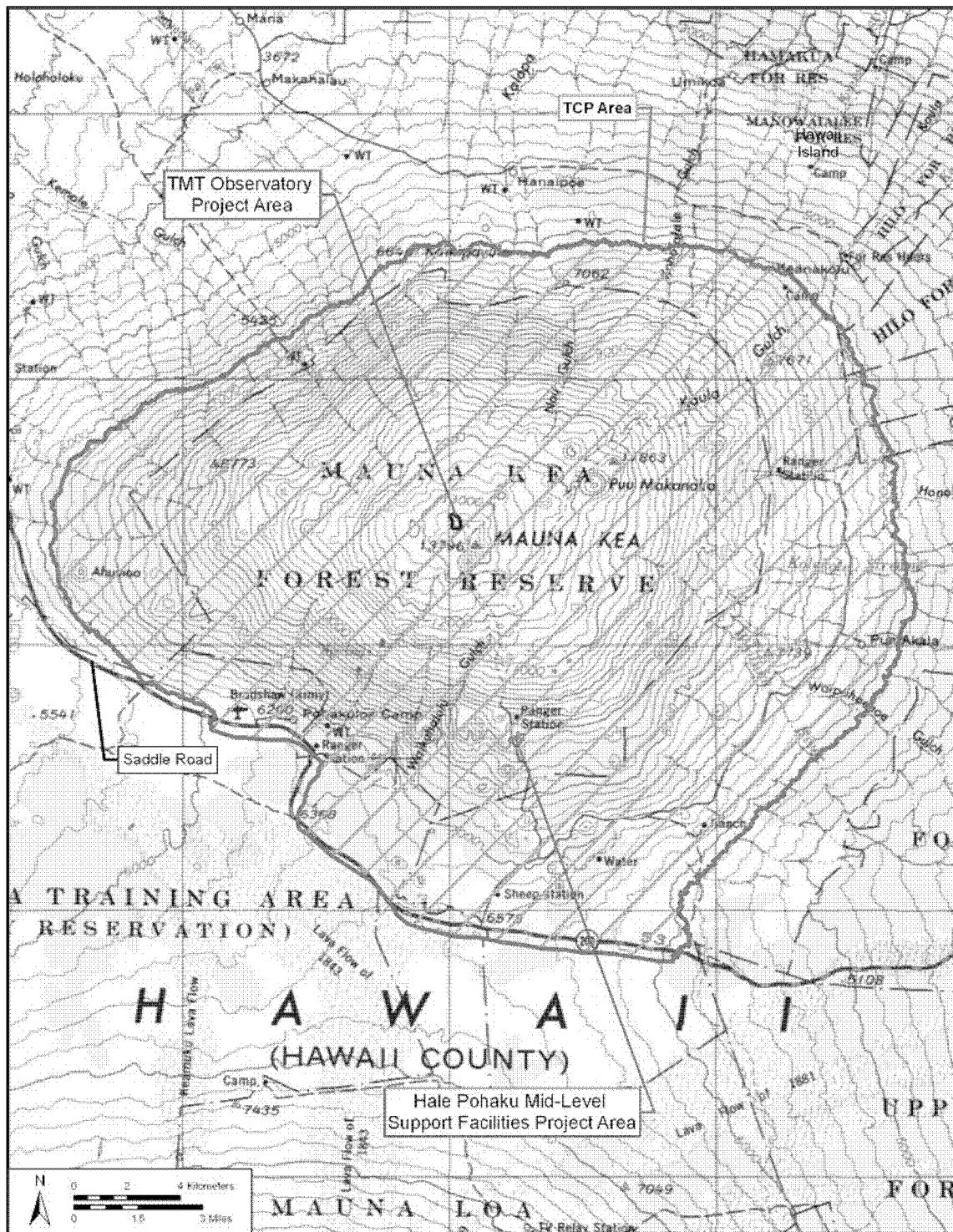


Figure 16. Map showing the proposed Tradition Cultural Property boundaries at the Maunakea summit region down to the 6,000 foot elevation contour based on Maly (1999)

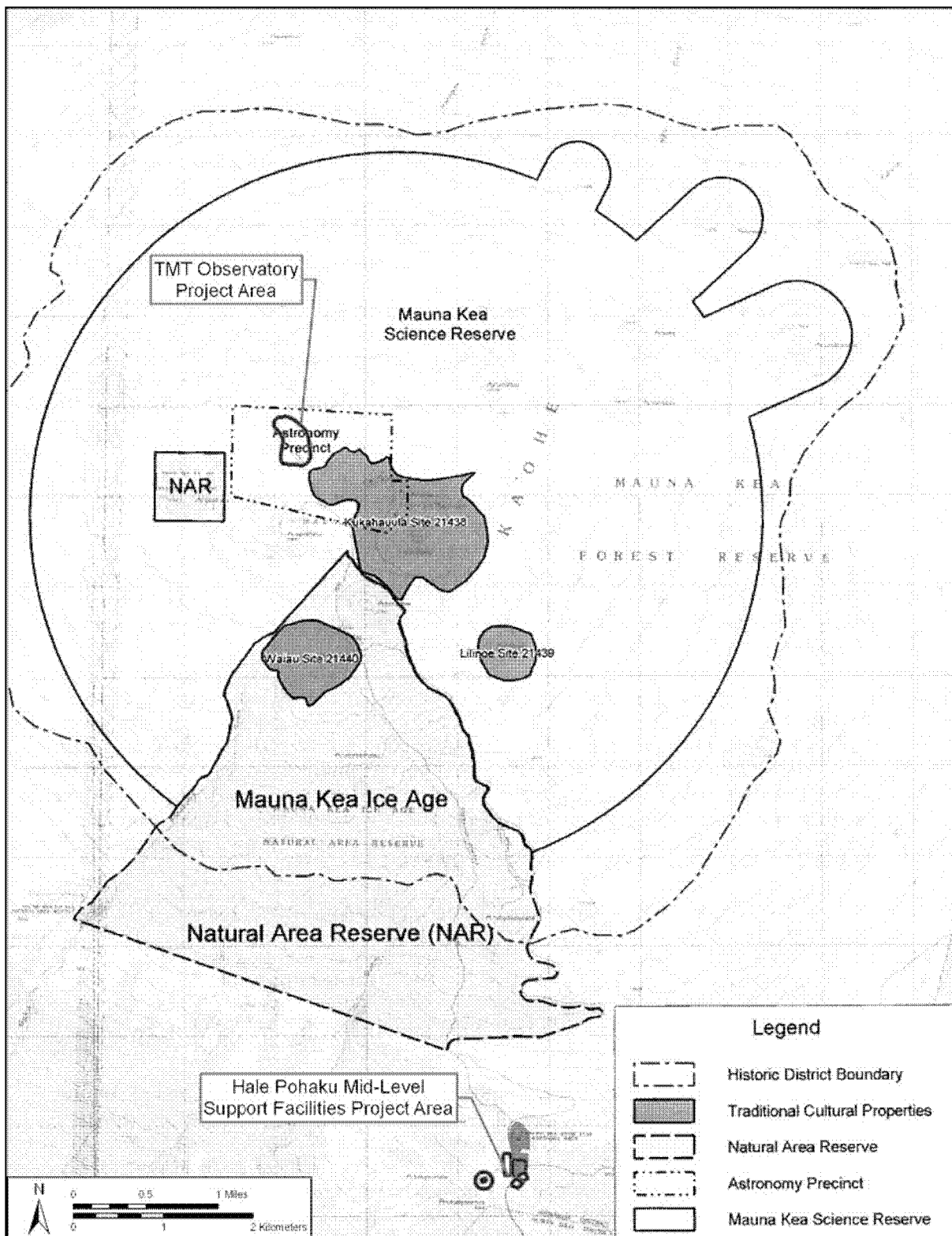


Figure 17. Map showing the three SHPD designated TCPs in the Maunakea summit region (adapted from McCoy et al 2008:2-25)

Section 5 Archaeological Research

5.1 Overview

This section reviews relevant previous archaeological research in the Maunakea summit region. The single most outstanding aspect of the archaeological record around the Project area is the high number of shrines to the virtual exclusion of all other types of sites. At least 79 shrine sites (three that are also lithic workshops) have been documented in the summit region, comprising approximately 83% of known sites in the region. Shrines typically consist of one or more large basalt slabs turned upright and arranged in different formations (Figure 17), sometimes associated with other foundation stones or rock piles (i.e., “cairns”). Several burials or possible burials have been documented in the summit region. A few stone markers and sites of unknown function have also been documented. Overall, the very high proportion of shrines near the summit is noteworthy and unique in comparison to most other places on Hawai‘i Island.

Numerous historic properties have been previously documented in the Maunakea summit region (Figure 19). There are also a large number of remains present that do not qualify as historic properties (Figure 20). These remains are referred to as “find spots” and are either clearly modern or their age and function is unable to be determined (McCoy et al 2008:2-1).

Five archaeological sites—all shrines—have been documented within approximately 1,000 feet of the TMT Observatory Project area: three of these (16171, 16172 and 21200) consist of single uprights; Site 16172, the closest site to the TMT Observatory Project area, is approximately 250 feet north of the northern boundary of the Project area. The other two sites are a pair of cairns with several uprights (16170) and a pair of uprights (16169). As discussed above (Section 3.9), several trails pass through the summit region; the closest to the Project area is about 1.5 miles to the west and south (see Figure 6).

Several historic properties have also been identified in the area surrounding the Hale Pōhaku Project area (Figure 21). These sites include primarily stone tool workshop locations and shrines.

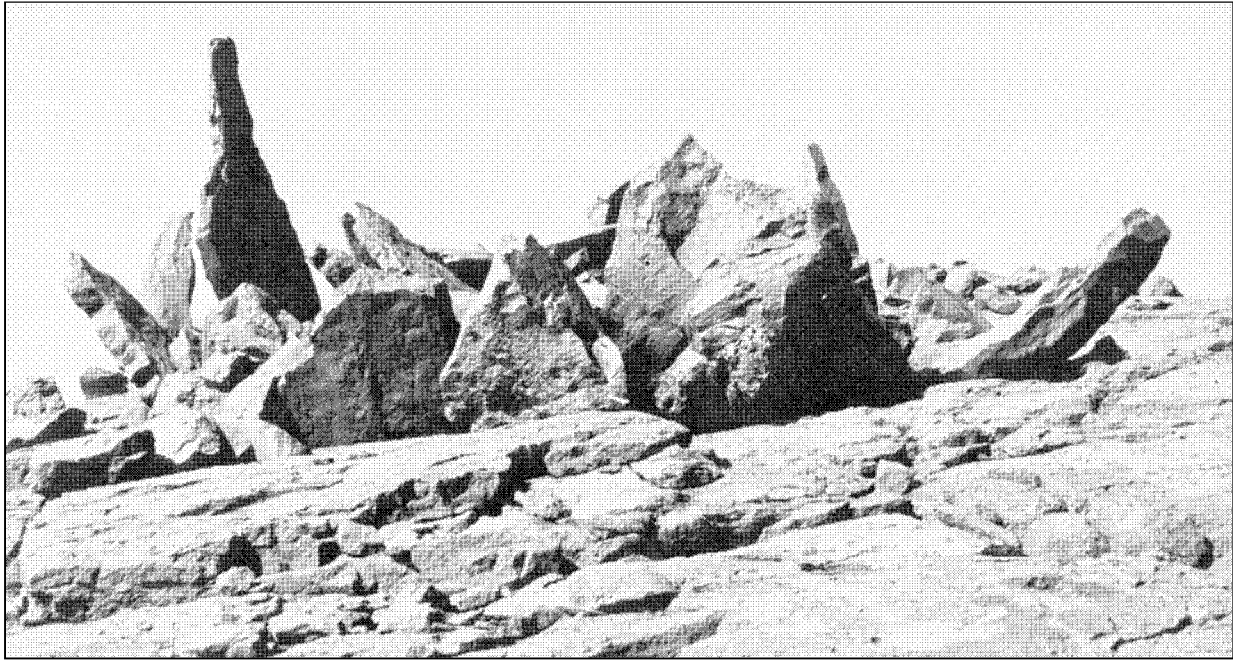


Figure 18. Traditional Hawaiian religious shrine at the Mauna Kea Adze Quarry (source: Kirch 1985)

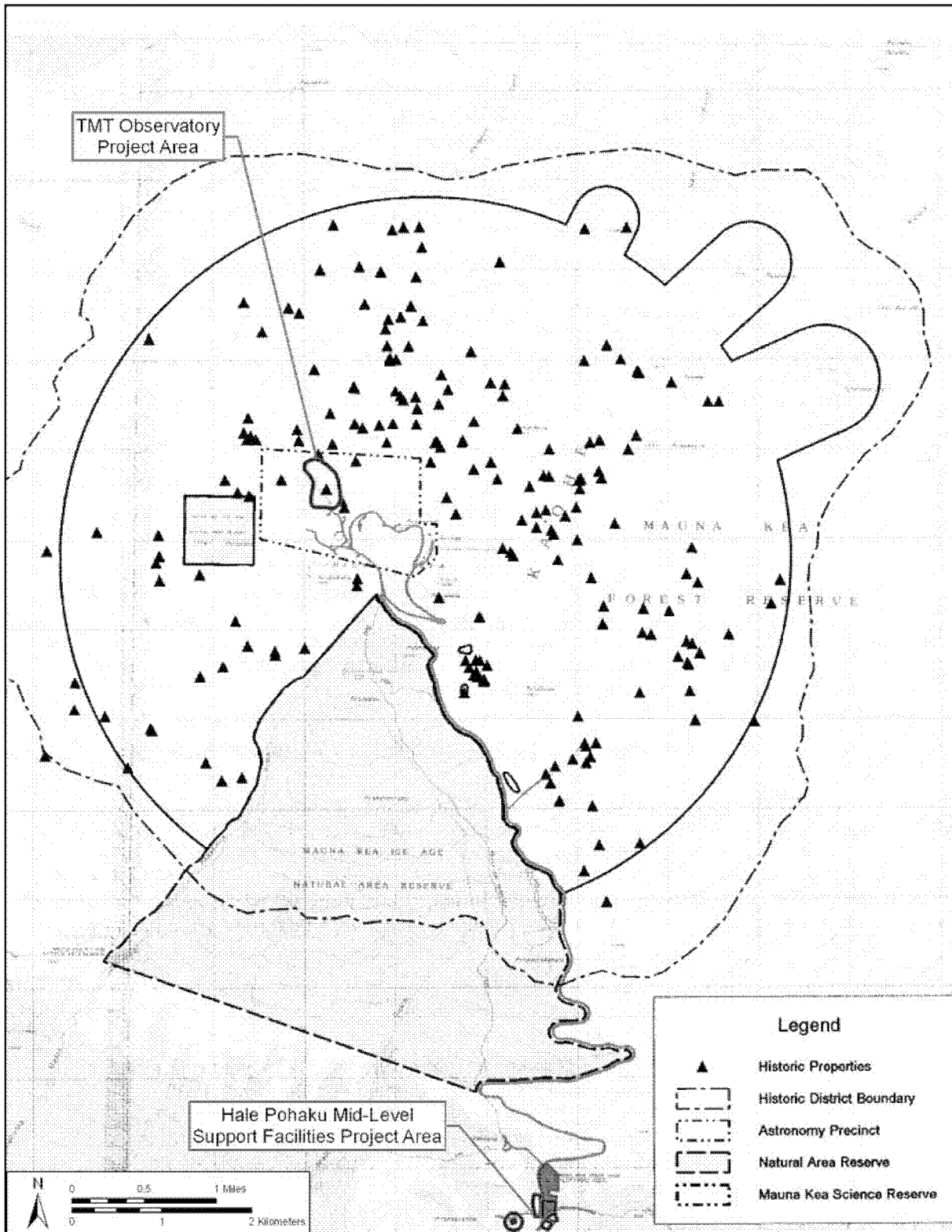


Figure 19. Map showing historic properties in the Maunakea summit region (adapted from McCoy et al 2008:2-16)

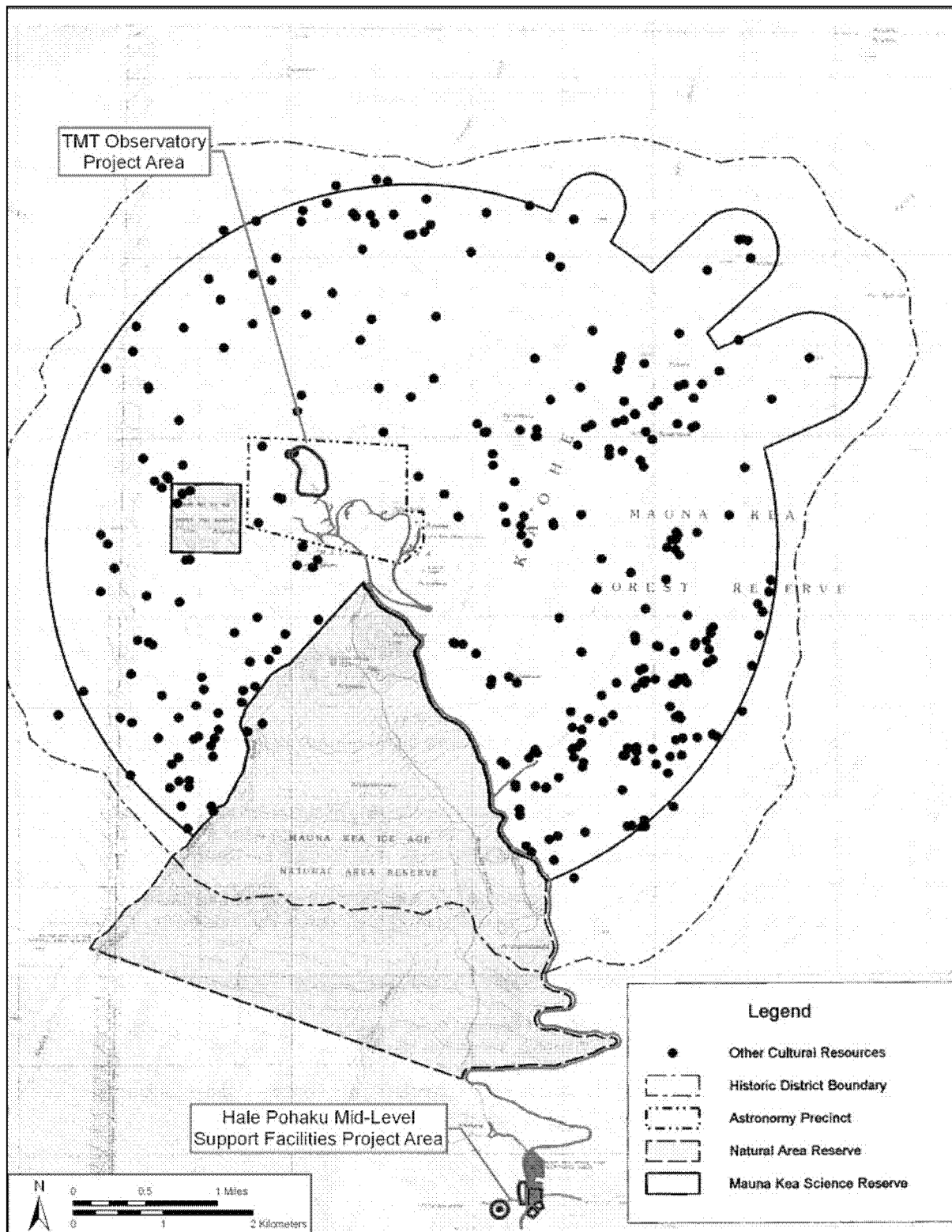


Figure 20. Map showing find spots in the Maunakea summit region (adapted from McCoy et al 2008:2-33)

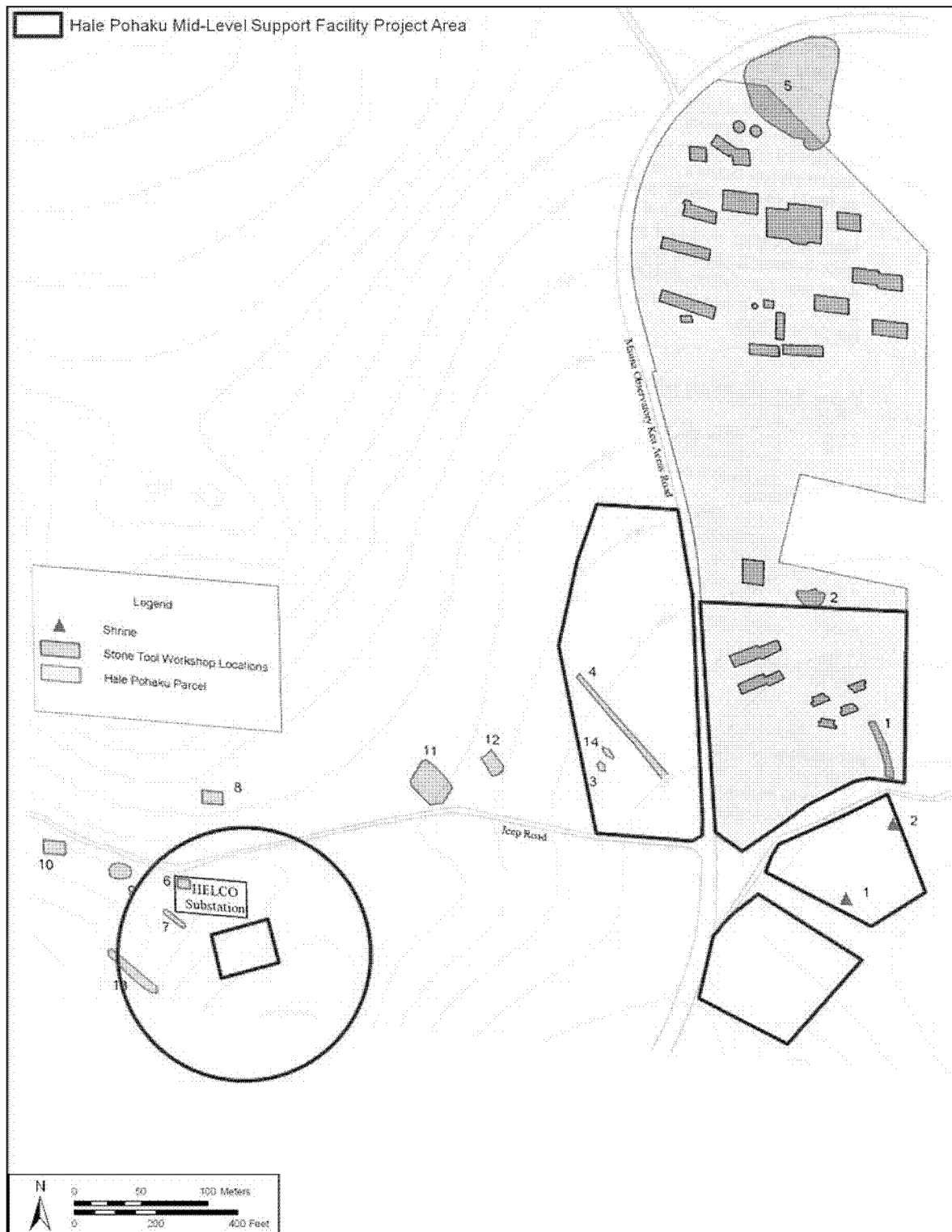


Figure 21. Map showing historic properties near the Hale Pōhaku Project area (adapted from McCoy et al 2008:2-21)

5.2 Early Observations

Early documentation of archaeological sites in the upper reaches of Maunakea was somewhat anecdotal and ad hoc. McEldowney's (1982:A-11) summary of the ethnographic background of the Maunakea summit region notes:

Although most accounts speak in general terms, those that specifically locate the presence of human bones, "graves," "burial caves" or mortuary features indicate that burials are "not uncommon" between 7,800 ft and 13,000 ft elevation along the northern and eastern slopes of Mauna Kea (Alexander 1892; Preston 1895:601; Gregory 1921; Aitken 1935:48; Gregory and Wentworth 1937:1720; Kilmartin 1974:15; Bryan 1927:106; Hamakua Site Records, Dept. Anthro, B.P. Bishop Mus.).

On the first recorded ascent of Maunakea in 1823, Rev. Goodrich (see Section 4.2) noted the presence of a pile of stones which he assumed had been constructed by Hawaiians. Goodrich's time on the mountain, however, was extremely brief and his observations about archaeological matters, at least, were quite cursory.

William D. Alexander described a trip up Maunakea with a surveying party, and observed:

That same afternoon [July 25, 1892] the surveyors occupied the summit of Lilinoe, a high rocky crater, a mile southeast of the central hills [the "summit"] and a little over 13,000 feet in elevation. Here, as at other places on the plateau, ancient graves are to be found. In olden times it was a common practice of the natives in the surrounding region to carry up the bones of their deceased relatives to the summit plateau for burial. (cited in McCoy 1999)

McCoy discusses a visit in 1975 to the summit of Līlinoe in which he described two adjacent cairns on the eastern rim and comments that: "If the cairns that were recorded in 1975 were in fact the same graves [as described by William D. Alexander in 1892] the remains had been removed sometime prior because no human bone was visible at that time" (McCoy 1999:27). It is also possible that Alexander was in error in his assessment of the function of the cairns.

Jerome Kilmartin (1974) published a brief reminiscence reflecting on his involvement in a 1925 United States Geological Survey project to map the Lake Waiau topographic quadrangle. That 1925 work put him in the summit region for more than five months in 1925. He did not return again until 1971. Kilmartin's 1925 U.S. Geological Survey work was facilitated by the Umikoa Ranch based at approximately 3,500 foot elevation above Kūka'iau in Hāmākua. The team established a base camp at Pu'u Kihe (7,821 feet elevation), where water and forage were available, and a summit camp (Camp 3) of four tents at Lake Waiau.

Kilmartin reported little archaeological detail, but did note that at Pu'u Mākanaka (elevation 12,414 feet):

On the rim I found a partially uncovered grave, eroded by high winds, with an incomplete human skeleton. This was unknown as far as I could discover, to anyone familiar with the area. The name Pu'u Mākanaka means "Hill crowded with many people" and the grave must have been ancient. (Kilmartin 1974:15)

He also notes:

Ancient stone piles, quarries, walls, platforms, and burial caves are sufficient evidence that early Hawaiians were familiar with Mauna Kea's highlands. Stone chips from adze manufacture are found near a cave at 12,360 feet. ... (Kilmartin 1974:13)

It may also be noted in passing that the U.S. Geological Survey party created archaeological sites of their own (and perhaps many):

...the wind was so strong I thought surely we would be blown away. However the *ahu* (stone pile) that we built did give a little protection after I had made a setup with the plane table only two feet above the ground. (Kilmartin 1974:15)

Kenneth Pike Emory was the first person to have described the distinctive shrine features of Maunakea in a brief, popular piece published in *Paradise of the Pacific* magazine (April 1938). Emory was struck by the "immense quantity of chipped stone" and posited that the piles of debitage were "the largest so far recorded anywhere in the world." He concluded that the evidence of "chips and rejects" was the result of skilled adze makers and that "they were able to create a stone-tool industry on a scale unequaled in the stone-age because of the superior social organization of the Hawaiian people." Emory noted similarities of the shrines to a shrine on Maunaloa photographed by the geologist Dr. T. A. Jaggar in 1919 and also to the shrines of Necker Island. Emory posited that in the shrines "each upright stone stood for a separate god" and referred to them as "*'eho*" ("a collection of stone gods")—a term used in the Tuamotus as well as Hawaii to designate an alignment of upright stones.

Wentworth and Powers (1943) carried out geological studies on Maunakea in 1939 that noted archaeological sites in the Hopukani and Liloe Springs area. They noted stone walls that they interpreted as a trap to impound wild cattle that frequented the springs and certain older sites:

In the area to the east and up the slope from the springs are numerous small heaps of pre-European stone adz workings. Certain lava caves contain evidence of habitation, suggesting that the springs were frequented by adz workers. The latter not only secured adz material from lava flows in places but carried on a surprising amount of casual prospecting on dense basalt boulders included in the moraines and outwash strewn several thousand feet down the mountain. (Wentworth and Powers 1943:544)

Two tables are provided below detailing both previous archaeological studies of the summit region (Table 4) and documented archaeological sites within the summit region prior to the on-going McCoy and Nees study (Table 5).

Table 4. Archaeological Studies in the Maunakea Summit Area

Reference	Nature of Study	Area of Study	Comments
McCoy 1976	"The Mauna Kea Quarry Project: A First Analysis"	Mauna Kea Adze Quarry Complex	--
McCoy 1977a	"Archaeological Investigations at the, Hawaii: Preliminary Results of the 1975-76 Fieldwork"	Mauna Kea Adze Quarry Complex	--
McCoy 1977b	"A Summary of the 1975 Field Investigations"	Mauna Kea Adze Quarry Complex	--
McCoy 1978	Account of the "The B.P. Bishop Museum Mauna Kea Adz Quarry Project."	Mauna Kea Adze Quarry Complex	--
McCoy 1979	Reconnaissance survey	Hale Pōhaku	--
Allen 1981	Adze quarry analysis thesis	Mauna Kea Adze Quarry Complex	--
McCoy 1981	"Stones For the Gods: Ritualism in the Mauna Kea Adz Quarry Industry, Hawaii."	Mauna Kea Adze Quarry Complex	--
Cleghorn 1982	University of Hawai'i Ph.D. dissertation in Anthropology on Mauna Kea Adze Quarry lithics	Mauna Kea Adze Quarry complex in the vicinity of Pu'u Ko'oko'olau	Focuses on technological analysis and experimental tests. Some 534 archaeological site components of 38 designated sites are briefly summarized.
McCoy 1982	Reconnaissance survey	~1,000 acres of the summit and north slope (down to 13,000 ft. elevation)	Documents 22 sites including an open air shelter and 21 shrine sites.
Kam and Ota 1983	Reconnaissance survey	Mauna Kea Observatory Power Line	--
McCoy 1984a	Summary of the 1984 fieldwork	Mauna Kea Summit Region	--
McCoy 1984b	Archaeological reconnaissance	Hopukani, Waihu & Liloe Springs area, west side of Pōhakuloa Gulch between 8,640 and 10,400 ft. elevation	Documents six archaeological sites and a number of find spots (More thorough coverage is presented in McCoy 1986).
McCoy 1985	Reconnaissance survey	~40 acres extending on both sides of the Mauna Kea Observatory access road between 9,080 and 9,400 ft. elevation	Preliminary report for Pu'u Kalepeamoia Site documenting five lithic scatters and two shrines used for the manufacture of hammerstones and octopus lure sinkers. Ritual was an integral part of the manufacturing process

Reference	Nature of Study	Area of Study	Comments
Bonk 1986	Reconnaissance survey	HELCO transmission line and substation	--
McCoy 1986	Report on archaeological investigations	Hopukani and Liloe Springs area located on the west side of Pōhakuloa Gulch well southwest of the Mauna Kea summit region	Documents three sites initially discussed in McCoy (1984). Eight radiocarbon dates indicated use from A.D. 1000-1800; camps used for acclimatization and for procuring water, food (primarily birds) and fuel.
Sinoto 1987	Reconnaissance survey	HELCO transmission line and substation	--
Williams 1987	Reconnaissance survey	Mauna Kea Access Road	--
Hammatt and Borthwick 1988	Reconnaissance survey	Two locations: ~15-acre area between 11,560 & 11,840 ft. elevation, west side of present summit road; ~100-acre area, east side of summit road in a saddle between two cinder cones at 12,100-12,225 ft. elevation	4 sites: Sites 11,076 & 11,077 are probable pre-Contact shrines; Site 11,078 is a probable pre-Contact overhang shelter; Site 11,079 included a probable pre-Contact shrine and a probable pre-Contact <i>ahu</i> or cairn with basalt flakes and an adze preform.
Williams 1989	Inventory survey	Mauna Kea Adze Quarry Complex	--
Borthwick and Hammatt 1990	Reconnaissance survey	Two locations (total 2 acres) on summit of Mauna Kea.	No finds – the areas had been “fully graded” for existing telescope facilities.
McCoy 1990	Lithic analysis	Mauna Kea Adz Quarry Complex	--
Robins and Hammatt 1990	Reconnaissance survey	Two locations: 5.1-acre area on Pu'u Hau Oki cinder cone at summit and a 21-acre lot near Hale Pōhaku	No finds at JNLT summit project area which had been largely graded. In Hale Pōhaku area, three lithic scatters described in McCoy (1985) are discussed.
McCoy 1991	Survey and Test Excavations report	Pu'u Kalepeamo Site	--
Borthwick and Hammatt 1993	Reconnaissance survey	Proposed Gemini Telescope location at ~13,700 ft. elevation on a ridge line north of the summit cone	The entire summit ridge on which the Project area was located had been graded for existing telescope facilities. No finds.
McCoy 1999	Analysis of a site complex (Site 50-10-23-16204) that he had described 24 years earlier	East side of Mauna Kea Access Road between 12,240-12,300 ft. elevation just south of Pu'u Līlinoe	McCoy posits a ritual significance to the site specifically as a location for a rite of passage.
Hammatt and Shideler 2002	Data Recovery report for two lithic scatters	Sites 50-10-23-10,310 and -10,311 located in the Hale Pōhaku area between 9,080 and 9,160 ft. elevation	Documentation of data recovery of sites identified in McCoy (1985) and Robins and Hammatt (1990). Two radiocarbon dates (A.D. 1260-1410 and A.D. 1510-1950 at 95% probability) were both were thought to be problematic. Possible ritual associations with healing and the deity Kanaloa are explored.

Reference	Nature of Study	Area of Study	Comments
McCoy 2005	Monitoring	Septic tank excavations	--
McCoy et al 2005	Inventory survey	Mauna Kea Science Reserve	--
McCoy and Nees 2006	Inventory survey	Mauna Kea Science Reserve	--
Hammatt 2009a	Archaeological Assessment	Proposed Thirty-Meter-Telescope Observatory (TMT) Project on the northern plateau of the Mauna Kea summit area, within Area E of the Astronomy Precinct of the Mauna Kea Science Reserve	No findings
Hammatt 2009b	Archaeological Assessment	Hale Pōhaku area at approximately 2,800 m (9,200 ft.) elevation on the southern slope of Mauna Kea	No findings
McCoy and Nees (in progress)	Inventory survey	Mauna Kea summit region	In progress

Table 5. Documented Archaeological Sites in the Summit Region

SIHP #	Elevation	Description	Function
11077	12320	Single upright	Shrine
11079	12313	Lithic scatter of adze manufacturing byproducts and 2 associated cairns	“Workshop” and possible shrine
16163	12880	Platform/pavement with 14 uprights	Shrine
16164	13397	3 to 5 uprights on platform and 1 isolated upright	Shrine
16165	13362	Single row of 2 uprights	Shrine
16166	13422	2 rows of uprights, 8 to possibly 9 total	Shrine
16167	13395	Single row of 2 uprights	Shrine
16168	13098	Semi-enclosure with 21 to possibly 25 uprights	Shrine
16169	13210	Single row of 2 uprights	Shrine
16170	13139	2 cairns with 3 to possibly 4 uprights	Shrine
16171	13087	Single upright	Shrine
16172	13218	Single upright	Shrine
16173	13009	7 dispersed uprights	Shrine
16174	13075	Boulder with 1 to possibly 8 uprights on the side	Shrine
16175	NA	5 cairns with 1 upright each	Shrine
16176	13078	Single row of 3 uprights	Shrine

SIHP #	Elevation	Description	Function
16177	13118	Single row of 3 uprights	Shrine
16178	13236	Single upright	Shrine
16179	13122	Single row of 3 uprights	Shrine
16180	13086	Boulder with 3 uprights	Shrine
16181	13401	Single upright	Shrine
16182	13155	3 to 5 uprights	Shrine
16184	13072	Semi-enclosure with 24 uprights	Shrine
16185	13008	Single row of 3 uprights	Shrine
16186	13076	Single row of 2 and possibly 3 uprights	Shrine
16187	12775	Single row of 9 uprights	Shrine
16188	12857	Single upright	Shrine
16189	12902	Single row of 3 and possibly 4 uprights	Shrine
16190	12956	Single row of 10 and off-set uprights	Shrine
16191	12889	Single row of 4 uprights	Shrine
16192	12842	2 sets of uprights, 6 total	Shrine
16193	12843	Single upright	Shrine
16194	12673	Single row of 12 - 14 uprights	Shrine
16195	NA	2 cairns	Possible burial
16196	12953	Single row of 2 uprights	Shrine
16197	12953	Single upright	Shrine
16198	12930	2-tiered platform with 7 uprights	Shrine
16199	12991	1 and possibly 4 uprights	Shrine
16200	12975	Single row of 5 and possibly 6 uprights	Shrine
16201	12990	Single row of 3 uprights	Shrine
16202	13006	Single upright	Shrine
16203	13145	Single row of 2 and possibly 3 uprights and a lithic scatter of adze manufacturing byproducts	Adze "workshop" and shrine
16204	12332	5 shrines, 26 stone-walled enclosures and a lithic scatter of adze manufacturing byproducts	Adze "workshop" and shrine complex
16248	NA	Series of cairns	Burial
18682	12955	Single row of 3 uprights	Shrine
18683	13012	Single row of 2 uprights	Shrine
21197	13052	2 platforms with a total of 5 uprights	Shrine
21198	13043	Single upright	Shrine

SIHP #	Elevation	Description	Function
21199	12876	Single upright	Shrine
21200	13165	Single upright	Shrine
21201	13087	Single row of 2 uprights	Shrine
21202	13048	Single row of 6 to possibly 7 uprights	Shrine
21203	13034	Single row of 2 uprights	Shrine
21204	12925	3 areas of stacked rock	Unknown
21205	13484	Single upright	Shrine
21206	12754	Single upright	Shrine
21207	12787	Single upright	Shrine
21208	12799	1 to 2 uprights on a boulder	Shrine
21209	NA	Cairn on summit	Unknown
21210	12233	Single upright	Shrine
21211	12275	Single row of 2 uprights on a platform and a lithic scatter of adze manufacturing byproducts	Adze "workshop" and shrine
21212	12385	Single row of 2 uprights	Shrine
21213	12249	3 piles of rocks with 1 upright	Shrine
21214	12241	Single row of 5 and possibly 7 uprights	Shrine
21406	NA	Single upright	Shrine
21407	12952	Single row of 2 uprights	Shrine
21408	12913	Single upright	Shrine
21409	12984	Single upright	Shrine
21410	12801	Single row of 5 uprights	Shrine
21411	12815	Cairn	Marker
21412	NA	Cairn	Marker
21413	NA	Cairn	Possible burial
21414	NA	Cairn	Possible burial
21415	13130	Cairn on boulder	Unknown
21416	12792	Cairn	Possible burial
21417	12974	Cairn	Unknown
21418	12889	3 and possibly 4 uprights on top and to the side of a boulder	Shrine
21419	12495	Single upright	Shrine
21420	12152	Enclosure with 11 and possibly 12 uprights and a nearby stone platform	Shrine
21421	12731	2 cairns, one with a possible upright and an isolated upright	Shrine

SIHP #	Elevation	Description	Function
21422	12847	Single upright	Shrine
21423	NA	Stones on boulder	Marker
21424	12320	4 to 5 uprights on a platform and boulder	Shrine
21425	12523	Single upright	Shrine
21426	12568	Single row of 4 uprights	Shrine
21427	12635	Terrace with possible upright	Unknown
21428	12720	Single upright	Shrine
21429	12719	Single upright	Shrine
21430	13111	Single row of 3 uprights	Shrine
21431	12532	Semi-enclosure with 7 to 10 uprights	Shrine
21432	13044	Single row of 2 uprights	Shrine
21433	12579	Single upright	Shrine
21434	12551	8 stones on a boulder	Unknown
21435	12564	Cairn and boulder with 1 upright	Shrine

5.3 Formal Studies

This section presents additional descriptions of the most important findings of the works summarized in Table 4.

5.3.1 Cleghorn (1982)

Cleghorn (1982) produced his University of Hawai'i Ph.D. dissertation in Anthropology on Mauna Kea Adze Quarry lithics focusing on technological analysis and experimental tests. Some 534 archaeological site components of 38 designated sites of the Mauna Kea Adze Quarry complex in the vicinity of Pu'u Ko'oko'olau were briefly summarized (sites are referred to by Bishop Museum site nomenclature).

5.3.2 McCoy (1982)

Patrick McCoy (1982) documented reconnaissance-level surveying of approximately 1,000 acres of the summit and north slope (down to 13,000 ft). McCoy notes that:

Few, if any, archaeological sites were predicted to occur within the boundaries of the Project area, given the high altitude location and presumed absence of exploitable resources, including adze-quality stone, which on present evidence is restricted to the south slope of the mountain. (McCoy 1982)

Thus, it was far beyond expectations when 22 sites were recorded including an open-air (i.e., non-cave and non-rockshelter) shelter and 21 shrine sites. McCoy was quite familiar with the "occupational shrines" near the adze quarries but concluded the function of these shrines located away from the main quarrying area was unknown. McCoy posits:

...that these structures were erected by travelers, most probably in propitiation of mountain spirits. Such practices are universal in the high mountain regions of the world. (McCoy 1982:A-37)

McCoy does note, however, that the majority of the shrines were located in a narrow 200-foot contour interval band between 12,900-foot and 13,100-foot elevation. He theorizes that this clearly defined vertical zonation site pattern is the result of utilization of a break in slope at the edge of the summit plateau where: “when viewed from either the base of the steep inclined slope directly below, or from the base of the summit cones above, is a relatively flat horizon on which the shrine uprights are silhouetted and therefore visible from some distance” (McCoy 1982). McCoy associates these shrines with “the request for permission to pass over the summit” and notes that this indicates a preponderance of access from the northern, windward side of the islands consistent with the inclusion of the land within Hāmākua District. He further posits that the distribution of the shrines may relate to “the lower margins of snow fields” and possibly, by extension, to the goddess Poli‘ahu. McCoy notes that at least one of the more complex shrine sites, “The placement of offerings and whatever other ritual took place here appear to have been intentionally directed away from Mauna Kea. The possibility of astronomical concepts being operative is explored.” McCoy also suggests that smaller sites were built and utilized by one or a few individuals while more complex shrines were built and utilized by a larger kin group and that perhaps “each structure would represent a separate social unit that had exclusive use rights.” McCoy recommended intensive archaeological survey and avoidance of construction and related activities on or in proximity to known archaeological sites.

5.3.3 McCoy (1984)

McCoy's (1984) archaeological reconnaissance report for the Hopukani, Waihu, and Liloe Springs area documents six archaeological sites and a number of find spots located on the west side of Pōhakuloa Gulch between 8,640 and 10,400 feet elevation. The work was associated with a Pōhakuloa Training Area (PTA) pipe line project. This preliminary report was elaborated upon in McCoy's later (1986) study.

5.3.4 McCoy (1985)

McCoy's (1985) preliminary report for the Pu‘u Kalepeamo Site documents three archaeological surveys for a proposed new construction laborer camp at Hale Pōhaku located just above and below the Hawaii Institute for Astronomy's Mid-Level Facility encompassing a total of approximately 40 acres. This project was located on both sides of the Mauna Kea Observatory access road between 9,080 and 9,400-foot elevation. Five lithic scatters and two shrines were recorded. These archaeological features were understood as functionally integrated components of a single activity system and one Bishop Museum site number was assigned (lithic scatters nos. 1 & 2 would subsequently be given SIHP Nos. 50-10-23-10,310 and -10,311, respectively). McCoy concluded that the primary activity at the site was the manufacture of hammerstones and octopus lure sinkers from the crystalline dunite and gabbro deposits on the slopes of Pu‘u Kalepeamo but he noted that ritual was an integral part of the manufacturing process. Further research was recommended. The lithic scatters would be subject to further documentation (Robins and Hammatt 1990) and data recovery work (Hammatt and Shideler 2002).

5.3.5 McCoy (1986)

McCoy's (1986) report on archaeological investigations for the Hopukani and Liloe Springs area documents three mid-level sites located on the west side of Pōhakuloa Gulch well southwest of the Maunakea summit region (that were initially discussed in McCoy 1984). These sites included a rock shelter at Hopukani Spring (10,400 foot elevation), the Hopukani Rockshelter (10,160 foot elevation) and an open camp site at Liloe Spring (8,921 foot elevation). Eight radiocarbon dates indicated use spanning A.D. 1000 to A.D. 1800. It was concluded that these camps were used for acclimatization and for procuring water, food (primarily birds) and fuel.

5.3.6 Hammatt and Borthwick (1988)

CSH (Hammatt and Borthwick 1988) carried out an Archaeological Reconnaissance Survey of two locations for proposed antennas for the National Radio Astronomy Observatory. An approximately 15-acre relatively level location between the 11,560 foot and 11,840 foot elevations on the southeastern slope of the summit region on the west side of the present summit road was examined but no archaeological sites were observed. Another approximately 100-acre location on the east side of the summit road in a saddle between two cinder cones at the 12,100 to 12,225 foot elevation was also examined and four archaeological sites were documented (none of which appear to have been previously recorded). Sites 11,076 and 11,077 are probable pre-Contact shrines; Site 11,078 is a probable pre-Contact overhang shelter with a stacked stone alignment; and Site 11,079 had two components: a probable pre-Contact shrine and a probable pre-Contact *ahu*, or cairn, with basalt flakes and an adze preform present. Preservation of the four sites was recommended but it was thought that the antenna project potentially would be compatible with such preservation of the four relatively small and discrete sites in the large acreage.

5.3.7 Borthwick and Hammatt (1990)

In 1990 CSH carried out an Archaeological Reconnaissance Survey of two locations for the proposed Galileo Telescope on the summit of Maunakea. The study was of an approximately 2-acre portion of the summit ridge that (at that time) included the UKRT, U.H. 2.2 m, U.H. 24-inch telescopes and Medical Support facilities. The study notes that previous work (McCoy 1982) had identified no sites in the summit region (above circa 13,330 foot elevation). Borthwick and Hammatt (1990) note that the entire summit ridge on which the project areas were located had been "fully graded" for existing telescope facilities and no archaeological features were observed; no further work was recommended.

5.3.8 Robins and Hammatt (1990)

CSH carried out another Archaeological Reconnaissance Survey in 1990 for the Japan National Large Telescope (JNLT) project at both the summit and the Hale Pōhaku area. The actual JNLT summit construction area was an approximately 5.1-acre area on Pu'u Hauoki cinder cone in the northern portion of the Mauna Kea Science Reserve approximately 61 m (200 feet) west of the existing W. M. Keck Observatory and 304 m (800 feet) north of a paved "spur road" passing by the Submillimeter Telescope (CSO). The JNLT summit project area had been largely graded although certain undisturbed outcrop formations were present. No archaeological features were identified within the JNLT summit project area.

The Robins and Hammatt (1990) study also included several areas near the Mid-Level Facility Complex (OCIA) including a small dormitory construction area located approximately 134 m (440 feet) east of the Mauna Kea Observatory access road at 9,245 foot elevation (where no sites were observed). An approximately 21-acre lot surrounding the dormitory delineated on the west and north side by the Mauna Kea Observatory access road and to the south by an existing jeep road was also included in the study. Two archaeological features were newly described and three previously identified sites were recorded in the approximately 21-acre lot. The two newly-described features included a small oval enclosure and a roughly square enclosure that were both thought to be relatively recent constructions (no formal SIHP site numbers were assigned). The three previously-recorded (McCoy 1985) sites included three lithic scatters (lithic scatters nos. 1, 2 and 5) that McCoy had understood as being functionally-integrated components of a single site. Further work at the lithic scatters was recommended. CSH completed a later Data Recovery report (Hammatt and Shideler 2002) for lithic scatters nos. 1 and 2.

5.3.9 Borthwick and Hammatt (1993)

In 1993 CSH carried out an Archaeological Reconnaissance Survey for the proposed Gemini Telescope location at approximately 13,700 foot elevation on a ridge line north of the summit cone. The study notes that previous work (McCoy 1982) had identified no sites in the summit region above circa 13,330 foot elevation. The study notes that the entire summit ridge on which the project area was located had been graded for existing telescope facilities and no archaeological features were observed; no further work was recommended.

5.3.10 McCoy (1999)

McCoy (1999) wrote up an analysis of a site complex (SIHP No. 50-10-23-16204), that he had described 24 years earlier, located on the east side of the Mauna Kea Access Road between 12,240 and 12,300 foot elevation just south of Pu'u Līlinoe. The site included five shrines and three enclosure complexes. The complex was notably located 500 m from the nearest known source of worked raw lithic material and was perceived as "isolated." McCoy noted that when viewed in terms of the natural environment and human productivity, "the location of this site appears to be irrational" (1999:14). Of particular interest were some 26 very small open-air enclosures (typical interior area approximately 1.6 m²). This led McCoy to posit a ritual significance to the site, specifically as a location for rites of passage.

McCoy goes on to consider the form of the upright slabs of (typically unworked) basalt that were arranged into the many shrines of Maunakea and Site 16204, in particular. McCoy posits that pointed uprights symbolize gods and that flat-topped slabs symbolize goddesses (McCoy assumes that the Hawaiian goddesses Līlinoe and Poli'ahu were worshipped). Determining the affinities of the slabs is complicated by the presence of other forms ("angled," "gabled," "rounded" and "notched") and the general difficulty of determining whether a particular stone was an upright at all.

McCoy argues that evidence supporting an unusual ritual function (rites of passage) includes:

- Unusual orientations of four of the five shrines,
- Lack of evidence of habitation,

- Unusual “lack of a cohesive structure” among the lithic byproducts present in the artifact assemblages – suggesting “symbolic manufacture and use,”
- The numerous (26) very small open-air enclosures that were “too small to accommodate a person and a fire hearth” of no obvious purpose and believed to relate to temporary day-time use.

McCoy concludes that the small enclosures “may symbolically represent both a womb and a grave” and that the site “was the locus of initiation rites” related to “formal initiation rites for groups of apprentices” (McCoy 1999).

5.3.11 Hammatt and Shideler (2002)

In 2002 CSH completed a Data Recovery report for two lithic scatters (SIHP Nos. 50-10-23-10,310 and -10,311) located in the Hale Pōhaku area between 9,080 and 9,160 foot elevation. These sites were first recorded by McCoy (1985:11-12) as Lithic Scatter No. 1 (SIHP No. 50-10-23-10,310) and Lithic Scatter No. 2 (SIHP No. 50-10-23-10,311) of the Pu'u Kalepeamo Complex. Initially, the University of Hawai'i Institute of Astronomy planned to preserve the two lithic scatters; however, dormitory construction increased erosion in the vicinity and, in consultation with the State Historic Preservation Division, a data recovery program was developed. Data recovery fieldwork included mapping, surface collection and four 1 m² test units (two at each of the two sites). Two radiocarbon dates (A.D. 1260-1410 and A.D. 1510-1950 at 95% probability) were obtained but both were thought to be problematic. It was concluded that the sites were modest, out-lying, open, lithic workshop sites with octopus lure sinker manufacture of both “coffee-bean” and “bread-loaf” morphological types. It was concluded that the location of the sites was associated with a micro-climate of slightly greater moisture, slightly greater soil and slightly greater protection from the wind at the top of a natural drainage that favored *māmane* forest growth—which in turn provided greater protection from the elements, fuel and construction materials. It is suggested that the endeavor to produce octopus lures may have had other purposes than food procurement and the affinities with healing prayers (*pule he'e*) dedicated to the deity Kanaloa are explored.

5.3.12 Hammatt (2009a)

CSH conducted an Archaeological Inventory Survey for the Thirty Meter Telescope Observatory Project (TMT) in 2008. No historic properties were identified within the approximately 36-acre survey area. Previously identified historic properties in the vicinity of the survey area were found and confirmed to be outside of the survey area. CSH's effect recommendation for the proposed TMT Observatory Project is “no historic properties affected,” therefore the final report was submitted as an Archaeological Assessment.

5.3.13 Hammatt (2009b)

CSH conducted an Archaeological Inventory Survey for construction staging areas and development of housing in the Hale Pōhaku area in 2009. The project is a component of the TMT Observatory Project and involves the construction of ancillary facilities. Previously identified historic properties in the vicinity of the survey area were found and confirmed to be outside of the survey area. CSH's effect recommendation for the proposed TMT Observatory

Project Ancillary Facilities is “no historic properties affected,” therefore the final report was submitted to SHPD as an Archaeological Assessment.

5.3.14 McCoy et al. (2009 in progress)

5.3.15 McCoy and Nees (in progress)

As the Hammatt inventory surveys (2009a, 2009b) were being prepared, CSH archaeologists interacted with Dr. Patrick McCoy at the offices of Pacific Consulting Services, Inc. and also within the Project area. This study should greatly advance our knowledge of traditional Hawaiian use of the Maunakea summit region. Though drafts of this extensive survey project are not yet available, McCoy does detail some of the findings in the *Preliminary Draft Report: Cultural Resource Management Plan for the University of Hawai‘i Management Areas on Mauna Kea, Ka‘ohe Hamakua, Island of Hawai‘i TMK (3) 4-4-012, 015* (McCoy et al 2008). As of the publishing of this draft CRMP, McCoy et al had documented 223 sites in the Mauna Kea Science Reserve, including 93 previously documented sites. These 223 sites also include 28 sites which McCoy et al are designating as burials and possible burials (McCoy et al 2008:2-20, 2-23).

5.3.16 Traditional Cultural Properties

The State Historic Preservation Division has designated three prominent localities on Maunakea as Traditional Cultural Properties (TCP) due to their cultural significance to the Hawaiian people. Several additional prominent locations in the summit region are also considered culturally significant (see Figure 6). Additionally, a large area on the mountain’s summit has been determined to be eligible for listing on the National Register of Historic Places as a historic district. Maly (Maly 1998:29) has suggested the entire Maunakea summit region down to the 6,000 foot elevation contour be designated a Traditional Cultural Property (see Figure 16).

5.4 Summary Observations

5.4.1 Burials and Possible Burials

McCoy (1999) presents a summary discussion of burials and possible burials on Maunakea noting that there are numerous traditions of burials at high elevations on Maunakea. He begins by presenting the account of Jerome Kilmartin (1974) who in 1925 personally observed human remains on Pu‘u Mākanaka. McCoy relates that in 1991 he and others observed human bones within several cairns on the southern rim of Pu‘u Mākanaka. He also notes that “several other spatially discrete groups of cairns, each comprised of two to three individual cairns, were found on the southern or eastern rim” (1999:26) [of Pu‘u Mākanaka] – suggesting that these may also contain human skeletal remains.

Pu‘u Mākanaka is the only documented place in the uplands of Maunakea in which human remains have been confirmed—although McCoy makes reference to “the well-known burial center at Kanakaleonui” and also to “a small group of cairns on the eastern rim of Pu‘u Waiau that are also believed to be burials” (McCoy 1999).

McCoy (1999:26) then goes on to discuss four “possible burial sites” (16195, 21413, 21414 and 21416). Although no human remains were observed, these were thought to be burials due to the morphological similarity of these cairns to those on Pu‘u Mākanaka and Kanakaleonui, their dissimilarity to other cairns (which are more cylindrical), and their presence on the eastern or southern rim of cinder cones.

McCoy clearly suggests that Site 16195, consisting of two adjacent cairns on the eastern rim of Pu‘u Līlinoe (recorded by McCoy in 1975), are “possible burials” (1999:27). This conclusion is based on William D. Alexander’s 1892 account of “ancient graves” on the summit of Pu‘u Līlinoe. McCoy comments that: “If the cairns that were recorded in 1975 were in fact the same graves [as described by William D. Alexander in 1892] the remains had been removed sometime prior because no human bone was visible at that time” (1999:27). It appears that by 1975 these features were no longer graves but may have functioned as graves previously.

McCoy (1999:27) then discusses three possible burial cairn sites (21413, 21414 and 21416) located on the southern and eastern rim of an unnamed cinder cone. This cinder cone is 12,840-foot high and located approximately 1 kilometer northwest of the Mauna Kea Ice Age Natural Area Reserve). McCoy’s discussion indicates that these may well be graves on the basis of form and location.

McCoy concludes:

There is good reason to expect that more burials are to be found in the Science Reserve on the tops of cinder cones, either in cairns or in a small rockshelter or overhang. The basis of this prediction is that all of the known and suspected burial sites on the summit plateau are located on the tops of cinder cones and, more particularly, on the southern and eastern sides. No burials have been found on the sides or at the base of a cone, or on a ridgetop amongst any of the shrines. There in fact appears to be a clear separation between burial locations and shrine locations. (1999:28)

His comments have proven to be apt as current in progress work by McCoy and Nees has documented 28 sites designated as burials and possible burials (McCoy et al 2008).

In striking contrast to the earlier archaeological data is the belief of some contemporary Hawaiians that the summit region of Maunakea is something of a burial ground (“There’s lot of *kūpuna* been buried up there...” and several similar concerns at www.mauna-a-wakea.info/maunakea/F4_burials.html). Allied with this line of thinking are rumors of burials disturbed and destroyed by prior observatory developments (“Would bulldozing cemeteries be allowed anywhere else in the world?” www.mauna-a-wakea.info/maunakea/F4_burials.html).

5.4.2 Shrines

In McCoy’s analysis of a total of 93 sites identified in the Maunakea summit area Science Reserve some 76, or 81.7%, are classified as shrines (and an additional eight shrines are components of adze manufacturing workshop sites) (McCoy 1999:3). McCoy concludes that: “The vast majority of shrines are conspicuously sighted in the landscape, either on a ridgetop, or at a break in the slope, which generally seems to correspond to either a lava flow margin or a change in the slope of a glacial moraine” (1999:6). McCoy notes that “there are no shrines in the Science Reserve located on top of a cinder cone.”

As previously noted McCoy noted an unusually high density of shrines located in a narrow 200-foot contour interval band between 12,900 and 13,100-foot elevation on the north side of Mauna Kea that he attributes to a visually preferable location (1982:A-37).

5.4.3 Adze Quarries and Manufacturing Workshops

Based upon McCoy's 1999 summary analysis of site typology, the only quarries were in the extreme southern portion of the Maunakea summit area Science Reserve (the Mauna Kea Adze Quarry; SIHP No. 50-10-23-4136). McCoy does describe four adze manufacturing workshops (11079, 16203, 16204 and 21211) defined in part by their location in areas absent of naturally occurring stone-tool quality raw material. All four of these adze manufacturing workshops are on the south face of the mountain on the east side of the main Mauna Kea Observatory Access Road.

Section 6 Community Consultation

6.1 Community Consultation Effort

An effort is currently underway to contact and consult with Hawaiian cultural organizations, government agencies, and individuals who might have knowledge of and/or concerns about Hawaiian cultural practices, resources and beliefs related to Maunakea. This ongoing effort is being made by letter, e-mail, telephone, and in person. In most cases, letters with a detailed description of the proposed action and conceptual plan provided by Parsons Brinckerhoff, along with an aerial photograph and USGS map of the Project area and two figures depicting proposed TCPs: trails, sites and view corridors adapted from Maly 1999 (see Figures 6 and 16) are mailed to community consultants.

6.1.1 Community Respondents: A Note on Non-Participation

It is important to understand that community response to the proposed TMT and support facilities projects is represented not only by those who agreed to participate in this consultation, but also—and perhaps as importantly—by those who chose not to participate. A number of likely contributors to this cultural impact study by way of their cultural use, knowledge, attachment and generational ties to Maunakea (*‘ohana* that have for generations brought family *piko* and *iwi kūpuna* to the summit), as well as those committed to community advocacy for the protection of Maunakea, declined to provide comment for this CIA. Their reasons for non-participation vary, but generally underscore decades of discontent with how developments on Maunakea (and attendant studies and management plans) have been undertaken. Many are fatigued by multiple cultural studies and public meetings that have similarly sought their *mana‘o*; a subset of this group are frustrated by the continued construction of telescopes on Maunakea with what appears to be little to no attention to their earlier testimonies regarding cultural concerns and sometimes expressed opposition to further development on Maunakea. It is the perception of many community contacts—including those inclined to support the proposed actions—that past recommended mitigation measures have often been ignored (e.g., recycling telescope sites no longer in use, cultural education and protocols for scientist and visitors, access to cultural and natural resources). It is further assumed by these community contacts that the TMT Observatory and Hale Pōhaku Mid-Level Support Facilities Projects will similarly proceed without regard to community consultation outcomes. Instead of participating in this study, to express their disapproval for the proposed projects, a few organizations and individuals committed to protection of Maunakea and cultural activities and resources on the mountain prefer to pursue an independent, legal course of action and/or express their concerns at public forums. The words of one participant in this current cultural impact study (Ms. Ku‘ulei Keakealani) summarize the general sentiment of many (participants and non-participants alike) that the voices of Hawaiian community members have not been heard:

...there is a harsh reality for some reason that's on my heart that says, if this already has been stamped with a seal of approval that this is going through...if we are there at that point and that is the game we are in—again that is just a reference because I know by no means is this a game—then what are ways [to respond to this]...It's beyond having the Hawaiian people recognized or heard or they sit on

the board. That’s all wonderful and we need all these things, but then...how much have they listened to us? If the majority of the testimony is “No, don’t put that TMT there,” and it still goes in anyway, did it just not matter that we all said, “no, no”?

The results of the community consultation for this CIA, while elucidating many of the key cultural issues surrounding Maunakea, may not reflect the wealth of concerns possessed by many other members of the Native Hawaiian community who chose not to be interviewed for this study. As such, the findings of past and current cultural studies and management plans (see Section 4.7) provide necessary complementary information to this report. In particular, the oral-history interviews of many elders (some now deceased) included in Appendix A of Maly and Maly (2005) and found in Maly (1999) serve as important documentation of many facets of Hawaiian customary practices, understandings of the cultural landscape and ongoing attachment of Kānaka Maoli and *kama ‘āina* to Maunakea for further reference.

6.1.2 Community Outreach and Consultation Table

As described in Section 1.1., when the TMT Observatory Project’s CIA consultation was initiated in November 2008, communication with Project proponents indicated that the proposed Thirty Meter Telescope CIA consisted mainly of the actual construction of the TMT Observatory Project within the 36-acre area known as Area E in the Mauna Kea Science Reserve Master Plan. In February 2009, CSH was informed that the TMT Observatory Project will also include a construction staging area located at the 9,000 foot level Hale Pōhaku site, approximately 3.5 miles south of the proposed TMT Observatory Project site. Also included in the proposed TMT Observatory Project description is a new electrical transformer to be installed at the Hawaiian Electric Light Company (HELCO) site also located at the Hale Pōhaku site. For this reason, CSH sent out a second round of community consultation letters in February 2009 to include the additional information regarding the construction staging area and the electrical transformer in order to provide community consultants the opportunity for additional comments and concerns.

Initial community outreach letters sent to community contacts in November 2008 along with an aerial image and a USGS map were mailed with the following text:

Cultural Surveys Hawai‘i (CSH) is conducting a Cultural Impact Assessment (CIA) for the proposed construction and operation of the Thirty Meter Telescope (TMT), an optical-infrared telescope on an estimated 4 acres of presently undeveloped land of the 525-acre Astronomy Precinct of the Science Reserve near the top of Mauna Kea. The project would be located in Ka‘ohe Ahupua‘a, Hāmākua District, on the island of Hawai‘i, on a portion of TMK: (3) 4-4-015: 009 and 012. Please see the attached figures: USGS and aerial photographs of the proposed project area, maps of the Mauna Kea summit, considered a Traditional Cultural Property, and other TCPs, including trails, sites and view corridors adapted from Kepa Maly’s 1999 Oral History and Consultation study for the Mauna Kea Science Reserve Master Plan (UH, 2000).

The proposed telescope facility would be located within the western portion of the area known as the northern plateau within the Astronomy Precinct. More specifically, the area being considered is the general vicinity of the 36-acre area

designed Area E in the Mauna Kea Science Reserve Master Plan (UH, 2000). Area E ranges in elevation from 13,100 to 13,300 feet and is located approximately half a mile northwest of the nine existing optical-infrared telescopes located near the summit at elevations of 13,600 to 13,775 feet. The entire Mauna Kea Science Reserve is designated part of the State of Hawai'i Conservation District, resource subzone. Ancillary facilities include an access road from the end of the current access road near the summit to the new telescope site would need to be developed.

The purpose of this cultural study is to assess potential impacts to cultural practices, beliefs and resources as a result of the proposed TMT development on Mauna Kea. We are seeking your kōkua and guidance regarding on any of the following:

- **General history and present and past land use of the project area.**
- **Knowledge of cultural sites which may be impacted by future development of the project area - for example, historic sites, archaeological sites, and burials.**
- **Knowledge of traditional gathering practices in the project area, both past and ongoing.**
- **Cultural associations of the project area, such as legends and traditional uses.**
- **Referrals of *kūpuna* or elders and *kama'āina* who might be willing to share their cultural knowledge of the project area and the surrounding *ahupua'a* lands.**
- **Any other cultural concerns the community might have related to Hawaiian cultural practices within or in the vicinity of the project area.**

In February 2009, new letters which include the additional project information for the construction staging area and the electrical transformer were sent to community consultants with the following text:

Cultural Surveys Hawai'i (CSH) is conducting a Cultural Impact Assessment (CIA) for the proposed construction and operation of the Thirty Meter Telescope (TMT), an optical-infrared telescope on an estimated 4 acres of presently undeveloped land of the 525-acre Astronomy Precinct of the Science Reserve near the top of Mauna Kea. Previous outreach letters sent to our community consultants for the proposed Thirty Meter Telescope Project CIA did not include a project description for the Hawaiian Electric Light Company (HELCO) electrical transformer, which will supply power to the TMT, and a construction staging area, both of which are located approximately 3.5 miles south of the proposed TMT site. Information regarding the electrical transformer and the construction staging area was provided to CSH by project proponents on February 13, 2009 and are both included below with the original project description.

The project would be located in Ka'ohe Ahupua'a, Hāmākua District, on the island of Hawai'i, on a portion of TMK: (3) 4-4-015: 009 and 012. Please see the

attached figures: USGS and aerial photographs of the proposed project area, maps of the Mauna Kea summit, considered a Traditional Cultural Property (TCP), and other TCPs, including trails, sites and view corridors adapted from Kepa Maly's 1999 Oral History and Consultation study for the Mauna Kea Science Reserve Master Plan (UH, 2000).

The proposed telescope facility would be located within the western portion of the area known as the northern plateau within the Astronomy Precinct. More specifically, the area being considered is the general vicinity of the 36-acre area designed Area E in the Mauna Kea Science Reserve Master Plan (UH, 2000). Area E ranges in elevation from 13,100 to 13,300 feet and is located approximately half a mile northwest of the nine existing optical-infrared telescopes located near the summit at elevations of 13,600 to 13,775 feet. The entire Mauna Kea Science Reserve is designated part of the State of Hawai'i Conservation District, resource subzone. Ancillary facilities include an access road from the end of the current access road near the summit to the new telescope site would need to be developed.

The proposed Thirty Meter Telescope construction staging area will include a temporary dormitory complete with restroom facilities, a cafeteria, and a parking area (Figure 5). The proposed staging areas, located both in and adjacent to the Hale Pōhaku site, will also be used to stage both construction equipment and materials needed for the construction of the TMT. A new transformer will be added to the existing HELCO site near Hale Pōhaku. The new transformer may require an expansion of the fenced-in area at the HELCO site. From there, new wires will be placed in existing underground conduit to provide power to the TMT Observatory.

The purpose of this cultural study is to assess potential impacts to cultural practices, beliefs and resources as a result of the proposed TMT development on Mauna Kea. We are seeking your kōkua and guidance regarding on any of the following:

- **General history and present and past land use of the project area.**
- **Knowledge of cultural sites which may be impacted by future development of the project area - for example, historic sites, archaeological sites, and burials.**
- **Knowledge of traditional gathering practices in the project area, both past and ongoing.**
- **Cultural associations of the project area, such as legends and traditional uses.**
- **Referrals of *kūpuna* or elders and *kama'āina* who might be willing to share their cultural knowledge of the project area and the surrounding *ahupua'a* lands.**
- **Any other cultural concerns the community might have related to Hawaiian cultural practices within or in the vicinity of the project area.**

Several (3-9) attempts were made to contact individuals, organizations, and agencies apposite to the CIA for the subject project. The results of all consultations are presented in Table 6; brief consultation responses and review letters from government agencies are included below Table 5. Excerpts from more extensive interviews and statements related to the proposed project and its environs are presented in Section 7 below.

Table 6. Community Contacts and Consultation Effort

Name	Affiliation, Background	Comments
Ailā, William	Hui Mālama I Na Kūpuna 'O Hawai'i Nei	CSH sent letter on December 5, 2008 and sent revised letter on April 2, 2009.
Akaka, Danny	Dir. of Cultural Affairs at Mauna Lani and Kahu.	See Section 7 below for full interview.
Ako, Val	Kohanaiki fisherman	CSH sent letter on November 29, 2008 and sent revised letter on February 25, 2009. Mr. Ako responded with the following statement on March 25, 2009: "That one I'm in opposition. Enough is enough, but they are not satisfied. They are just for money. There are Hawaiians who want to go ahead with that [TMT] telescope. I'd rather the mountain stay as it is. Enough telescopes already." In reply to the proposed changes, Mr. Ako stated: "Like I said, enough is enough already."
Alapai, Howard	Hawai'i Island <i>kupuna</i>	CSH sent letter on November 29, 2008 and sent revised letter on February 28, 2009. CSH called on March 26 and again on April 7, 2009. Mr. Alapai declined to comment.
Arakaki, Aric	Superintendent, National Park Service, Ala Kahakai National Historic Trail	CSH sent letter on November 29, 2008 and again on January 16, 2009. CSH sent revised letter on February 28, 2009. CSH emailed a follow-up letter and re-sent maps on April 1.

Name	Affiliation, Background	Comments
Ayau, Halealoha	Hui Mālama I Na Kūpuna ‘O Hawai‘i Nei	<p>CSH sent letter on April 2, 2009. Mr. Ayau replied on April 3, 2009 with the following statement:</p> <p>Aloha no kakou,</p> <p>Our comments are as follows. As many have stated before us, Mauna Kea is kapu [restricted, prohibited]. It is the largest ahu in all of Hawai‘i which contributes to it being a sacred place. There are already many intrusions into its kapu space and adding another such intrusion that serves no spiritual function further diminishes the mana of Mauna Kea.</p> <p>We wonder how Hawaiian spiritual practices would be affected by the building of the TMT Project, whether our akua, kini akua or ‘aumakua would view the TMT has being there to honor their role in our lives or whether they would view it is our continued inability to maintain the kapu of these sacred places. The bottom line is that the TMT like the other telescopes on Mauna Kea lacks spiritual function for cultural practitioners.</p> <p>Mahalo for the opportunity to share our mana‘o on this Project.</p> <p>Edward Halealoha Ayau Donna Kainaniokalihiwai Kahaunaele</p>

Name	Affiliation, Background	Comments
Baybayan, Chad Kalepa	‘Ahahui Kū Mauna	CSH sent letter on April 14, 2008. Letter was returned April 20, 2009 as undeliverable.
Boston, Richard	Kaloko-Honokōhau National Historic Park	CSH sent letter on Nov. 29, 2008. CSH called and left message on Jan. 20, 2009. CSH was contacted on Jan. 20 and told that Mr. Boston no longer works at Kaloko-Honokōhau National Historic Park.
Carpenter, Alan	Archeologist, Hawai‘i State Parks Division	CSH sent letter on November 29, 2008 and again on January 16, 2009. CSH sent revised letter on February 28, 2009. CSH mailed letter and maps on April 2.
Cayan, Phyllis “Coochie”	State Historic Preservation Division, History and Cultural Branch Chief	CSH sent letter on November 29, 2008 and sent revised letter on April 2, 2009. CSH sent an email and left a phone message call on April 27, 2009. CSH is awaiting response to the revised letter. SHPD a memo via email in response to the initial letter pertaining specifically to the TMT Observatory Project area on May 4, 2009. The response is included below this table (Figure 22).
Chang, Clement	Trail and Access Specialist, Na Ala Hele Trail and Access Program, Department of Land and Natural Resources	CSH sent letter on November 29, 2008 and again on January 16, 2009. CSH sent revised letter on February 28, 2009. CSH again mailed letter and maps on April 2.

Name	Affiliation, Background	Comments
Ching, Clarence	Hawai‘i Island <i>kupuna</i>	CSH sent letter on February 28, 2009. Mr. Ching was interviewed on March 6, 2009; publication of his interview in this report was pending his review and approval. On May 6, 2009, Mr. Ching provided additional comments. CSH is updating his interview summary with new biographical information and commentary for Mr. Ching’s final review and approval. His interview will be included in the next draft report of this CIA.
Elarionoff, Leningrad	Kama‘āina and Hawai‘i Island Burial Council member	See Section 7 below for full interview.
Eoff, Karen	Community activist and president of Kohanaiki Ohana,	CSH sent letter on November 29, 2008 and again on January 16, 2009. CSH sent revised letter on March 5, 2009. CSH emailed letter and maps again on April 2.
Fergerstrom, Harry “Hank”	Hawai‘i Island <i>kama‘āina</i>	CSH sent letter on April 13 and again on April 20, 2009.
Flores, Kalani	Lecturer of Hawaiian History, University of Hawai‘i	CSH sent letter on November 29, 2008 and sent revised letter on April 13, 2009. Mr. Flores replied on April 17, 2009 saying he would provide a written statement for this Project.
Gmirkin, Rick	Archaeologist, Ala Kahakai Trail	CSH sent letter on November 29, 2008 and again on January 16, 2009. CSH sent revised letter on February 28, 2009. CSH called and left a message on April 8.
Greenwell, Kelly	Hawai‘i Island farmer	See Section 7 below for full interview.
Guiles, Peter	‘Imiloa Astronomy Center Executive Director	CSH sent letter on December 5, 2008 and sent revised letter on April 2, 2009.


Name	Affiliation, Background	Comments
Halemau, Karin	Hawai‘i Island <i>kupuna</i>	CSH sent letter on November 29, 2008 and again on January 16, 2009. CSH sent revised letter on February 28, 2009. Mr. Halemau replied by phone on March 11, 2009 with the following statement: My whole feeling is anything concerned with this generation and the next is good...if anything could educate the next generation, that would be good.
Harp, Isaac	Hawai‘i Island <i>kama‘āina</i>	See Section 7 below for full interview..
Hoke, Arthur	Kahu Kū Mauna	CSH sent letter on April 13, 2009. Letter was returned on April 17, 2009. CSH sent new letter on April 21, 2009 to a newer address. CSH sent the letter and figures April 21, 2009 via email.
Kakalia, Tiffnie	Kahu Kū Mauna	CSH sent letter on April 13, 2009. Letter was returned on April 17, 2009. CSH sent new letter on April 20, 2009 to a newer address.
Kalikokalehua, Kanaele	Hale o Lono	See Section 7 below for full interview.
Keakealani, Ku‘ulei	Ka‘upulehu Interpretive Center curator	See Section 7 below for full interview.
Keanaaina, Duane	Hawai‘i Island <i>kama‘āina</i>	CSH sent letter on November 29, 2008. CSH called on January 27 and on March 11. CSH showed revised Project changes on March 20. Mr. Keanaaina declined to comment.
Kimura, Kaiu	‘Imiloa Astronomy Center Associate Director	CSH sent letter on December 5, 2008.
Kwiatowski, P.F. “Ski”	Author on two books on Hawaiian Petroglyphs and Tattoos	See Section 7 below for full interview.

Name	Affiliation, Background	Comments
Lee, Reggie	State Department of Conservation and Resource Enforcement, DLNR	CSH sent letter on November 29, 2008 and again on January 16, 2009. CSH sent revised letter on March 5, 2009.
Lightner, Leina'ala	Hawai'i Island <i>kupuna</i>	CSH sent letter on November 29, 2008 and again on January 16, 2009. CSH sent revised letter and maps to Mrs. Lightner on February 19. Mrs. Lightner declined to comment.
Mahi, Arthur	Hawai'i Island <i>kupuna</i>	See Section 7 below for full interview.
Maigret, Mary Anne	Archaeologist, Division of State Parks, Hawai'i Island	CSH sent letter on November 29, 2008 and again on January 16, 2009. CSH sent revised letter on February 28, 2009. CSH emailed letter and maps on April 2.
Mallow, Antoinette Keahiolalo	Kahu Kū Mauna, Hawaiian Civic Club of Hilo, Na Pua No'eau	CSH sent letter on April 14, 2009 and sent second letter on April 20, 2009.
Mau, Lehua Lopez	Hawai'i Island Land Trust Executive Director	CSH sent letter on April 14, 2009 and sent second letter on April 20, 2009. However, the second letter was returned.
McDonald, Ruby	Community Resources Manager, Office of Hawaiian Affairs	CSH sent letter and maps on December 12, 2008. CSH emailed revised letter and maps on April 2, 2009. CSH mailed letter and maps on April 3.
McKenna, Dan	Palomar Observatory, Superintendent	CSH sent letter on November 29, 2008 and again on January 16, 2009. CSH sent revised letter on March 5, 2009. Mr. McKenna declined to comment.
Medeiros, Clarence	Hawai'i Island <i>kama'āina</i>	CSH sent letter on November 29, 2008. Mr. Medeiros replied December 6, 2008; referred CSH to contact E. Kalani Flores and Burt and Sheila Okin.
Meyer, Manu Aluli, Ed.D.	University of Hawai'i Hilo, professor of education	CSH sent letter on December 5, 2008. CSH sent revised letter on April 14, 2009 and an email on April 20, 2009.


Name	Affiliation, Background	Comments
Naleimaile, Sean	Kahu Kū Mauna	CSH sent letter on April 14, 2009 and sent second letter on April 20, 2009. On April 21, 2009, in a telephone call, Mr. Naleimaile declined to comment at this time.
Nāmu‘o, Clyde	Administrator, Office of Hawaiian Affairs	CSH sent letter on November 29, 2008 and sent revised letter on April 2, 2009. Response to the initial letter pertaining specifically to the TMT Observatory Project area is included in Appendix B and is summarized below this table. OHA is currently reviewing the additional Project information and will comment at a later time.
Nazara, Cynthia	Member, Hawai‘i Island Burial Council	CSH sent letter on November 29, 2008 and again on January 16, 2009. CSH sent revised letter on February 28, 2009. CSH called and left message on March 26.
Neves, Sir Paul K. Ali‘i ‘Aimoku	Royal Order of Kamehameha	CSH sent letter on December 5, 2008 and sent revised letter on April 14, 2009.
Nihoa, Moke and Lei	Hawai‘i Island <i>kama‘āina</i>	CSH sent letter on February 28, 2009. Mr. and Mrs. Nihoa expressed that they are against the proposed TMT Project because of the United States illegal occupation in Hawai‘i.
Okin, Burt and Shiela	Hawai‘i Island <i>kama‘āina</i>	See Section 7 below for full interview.
Omphroy, Leilehua	Kahu Kū Mauna	CSH sent letter on April 14, 2009. CSH sent a second letter on April 20, 2009.
Ontai, Kalai	‘Imiloa Astronomy Center	CSH sent letter on December 5, 2008 and sent revised letter on April 14, 2009. CSH sent follow-up letter on April 20, 2009.
Pihana, Kimo Keali‘i	Hawai‘i Island Park Ranger and <i>kupuna</i>	See Section 7 below for full interview.

Name	Affiliation, Background	Comments
Pisciotta, Kealoha	Mauna Kea Anaina Hou	See Section 7 below for full interview and Appendix C for written testimony.
Puhipau	Nā Maka o ka ‘Āina	CSH sent letter on December 5, 2008 and sent revised letter on April 2, 2009.
Soehren, Mr. Lloyd J.	Archaeologist, expert on place names	CSH sent letter and maps on November 29, 2008. Mr. Soehren contacted CSH on December 6, 2008 by email and stated that he does not have “particular knowledge of the project area.” CSH did not send the revised Project description to Mr. Soehren.
Spielman, Elisabeth Tita	Resident of Waimea	CSH sent letter and maps on December 5, 2008. In December, in a phone conversation, Mrs. Spielman stated that she has, “said everything I had to say” for Kepa Maly’s report.
Stevens, Ed	Kahu Kū Mauna	CSH sent letter and maps April 9, 2009. On April 15, 2009, in a telephone call, Mr. Stevens stated that Kahu Kū Mauna is meeting on April 22, 2009 and will decide then if they will provide a statement.
Sterling, Jo-Anne Kahanamoku	Hawai‘i Island <i>kupuna</i>	CSH mailed letter and maps on January 27, 2009. Ms. Sterling called CSH on January 30 and declined to make a comment.
Tamanaha, Miwa	KAHEA: The Hawaiian Environmental Alliance	CSH sent letters and maps on December 5, 2008 and sent revised letter and figures through email on April 4, 2009.
Takamine, Vicky Holt	‘Ilio‘ulaokalani Coalition, president	CSH sent letter on December 5, 2008 and sent revised letter on April 2, 2009.
Ursua, Larry	Hawai‘i Island <i>kumu hula</i>	CSH sent letter and maps on November 29, 2008.
Van Gieson, George	Volcano Fire Station Fire Chief	See Section 7 below for full interview.

Name	Affiliation, Background	Comments
Young, Charles	Chair, Hawai'i Island Burial Council	CSH sent letter on November 29, 2008. CSH left message on January 26, 2009 and again on February 12. CSH sent revised letter on February 28, 2009. CSH called and left message on March 23.



LINDA LINGLE
GOVERNOR OF HAWAII



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DEPARTMENT OF LAND AND NATURAL RESOURCES
STATE HISTORIC PRESERVATION DIVISION
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HISTORIC PRESERVATION
KAOHOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

May 4, 2009

LOG NO: 2009.1748
DOC. NO: 0905PC001

MEMORANDUM

TO: Mishalla Spearing, Cultural Researcher
Cultural Surveys Hawai'i, P.O. Box 1114, Kailua, Hawaii 96734

FROM: Phyllis Coochie Cayan, History and Culture Branch Chief

Subject: **MAUNAKEA 2: Cultural Impact Assessment (CIA) for the proposed construction and operation of the Thirty Meter Telescope (TMT), an optical-infrared telescope on an estimated 4 acres of presently undeveloped land of the 525-acre Astronomy Precinct of the Science Reserve near the top of Mauna Kea, Ka'ohē Ahupua'a, Hamakua District, Island of Hawaii.**
TMK: [3] 4-4-015:009 and 012.

This memo is in response to your request to help assess potential cultural impacts to cultural practices as a result of the proposed construction and operation of the Thirty Meter Telescope (TMT) as described above.

As you may have discerned from the most recent Mauna Kea Comprehensive Management Plan (MCMP) for the UH Management Areas (January 2009) and the public hearings for that plan that Mauna Kea is a very sensitive subject that truly needs and deserves more time to consider all the cultural impacts to this iconic symbol of all cultural connections including but not limited to the genealogical connections, and the spiritual connections to all of the deities in the Hawaiian cosmos and to the kanaka maoli world view.

Some areas that should be addressed include but are not limited to the following mana'o:

1. Mauna Kea is the first sighting for voyaging canoes to arrive safely to our islands in the middle of the Pacific. Mauna Kea is a significant part of the Pacific Rim mythological connections to all the Pacific Rim. The significance of Mauna Kea is not limited to Hawaii only.
2. There is continued debate on the number of telescopes and buildings on the summit. There should be a deaccession of buildings no longer functional before building new structures or perhaps no more development on this sacred mountain.
3. Access for cultural practitioners need to be clearly addressed and defined.
4. The entire summit of Mauna Kea should be treated as one traditional cultural landscape and consider all the impacts to it – not a piecemeal analysis of just the Science Reserve.
5. More community outreach must occur for all cultural impacts on the summit and the proposed area. (Note: see list of contacts in the MCMP.)

This is a short list of the department's concerns. Any questions, please call me at 808-692-8015 or via email Phyllis.L.Cayan@hawaii.gov

C: Nancy McMahon, Deputy SHPO
Theresa Donham, Hawaii Island Archaeologist
Analu Josephides, Hawaii Island Cultural Historian

Figure 22. May 4, 2009 SHPD memo response

6.2 Office of Hawaiian Affairs

In its response letter dated January 9, 2009 (see Appendix B for full letter), OHA describes the ongoing debate surrounding the development on Maunakea and offers several recommendations.

OHA notes that Maunakea is a spiritual, sacred place, home to “wao akua” (dwelling, place of the gods) and where “Papa and Wakea meet in the physical world.” Maunakea stops “the rainclouds which provide pristine life sustaining water known as Kaneawaiola The “life sustaining waters known as Kanekawaiola” contributing to “a healthy natural environment, which in turn allow man to thrive.” It is the place where numerous “ahu and iwi kūpuna known to be situated in the summit area provide silent testimony that generation upon generation of Hawaiians” have worshipped and buried loved ones “at the highest point possible to rest in peace.”

At the same time, OHA recognizes the unique atmospheric conditions that make Maunakea an ideal place for observation of even the farthest galaxies and for this reason it hosts “the world’s largest astronomical observatory with telescopes operated by astronomers from eleven countries.”

OHA recommends that due to this forty-year-long debate surrounded the continued development of Maunakea which “has intensified and the divide between the above mentioned perspectives has not changed,” that the, “proposed TMT project should be viewed as one part of this long history.” The letter further states, “With this in mind, your assessment should... consider the overall impacts of development on Mauna Kea.”

OHA also refers CSH to the following individuals and organizations for consultation: Kealoha Pisciotto, Clarence Ching, Reynolds Kamakawiwo‘ole, Ke‘alahi Meyers, the Royal Order of Kamehameha I, KAHEA, the Edith Kanaka‘ole Foundation, Kahu Kū Mauna and the ‘Imiloa Astronomy Center.

CSH later contacted OHA with the additional Hale Pōhaku Mid-Level Support Facilities Project Area description and figures on April 2, 2009. OHA is currently reviewing the additional Project area information and determining whether they will provide additional comments.

Section 7 Summaries of Kama‘āina “Talk Story” Interviews

Kama‘āina and *kūpuna* with knowledge of the proposed Projects and study area participated in “talk-story” sessions for this CIA. The approach of CSH to cultural impact studies affords community contacts an opportunity to review transcriptions and/or interview notes and to make any corrections, deletions or additions to the substance of their testimony. CSH employs snowball sampling, an informed consent process and semi-structured interviews (cf. Bernard 2005). CSH attempted to contact 58 individuals for this draft *preliminary* CIA (see Table 5, above); 30 responded; and 13 participated in talk story interviews. Efforts are still ongoing to solicit additional responses, which will be incorporated into subsequent drafts of this report. To assist in discussion of natural and cultural resources and any cultural beliefs and practices associated with the Project areas within the larger context of Maunakea, CSH initiated talk-story sessions with questions from the following broad categories: Gathering and Hunting, Ritual and Ceremonial Practices, Freshwater and Marine Resources, Burials, Trails and Cultural and Historic Properties. Presented below are brief backgrounds of participants’ “talk-story” sessions and their comments and concerns about the proposed Project area.

7.1 Acknowledgements

The authors and researchers of this Cultural Impact Assessment report extend our deep appreciation to *everyone* who took time to speak and share their mana‘o with CSH in talk story interviews and in brief phone, post or email consultations noted in Table 6; including contacts who opted not to contribute to the current CIA, but nevertheless spent time explaining their position on the proposed Projects. We request that if these interviews are used in future documents, the words of contributors are reproduced accurately and not in any way altered, and that report preparers obtain the express written consent of the interviewee/s.

7.2 Arthur Mahi

CSH interviewed Kupuna Arthur Mahi in his Hamanamana home on December 3, 2008. Born July 5, 1933 in Laupāhoehoe, North Hilo, Kupuna Mahi is a pureblood Native Hawaiian who was raised in the traditional Hawaiian way of life. His maternal great-great grandfather was Kuakahela, who was the *konohiki* (headman) of Ka‘ūpūlehu Ahupua‘a when Kuakini was the governor. As a baby, he was given in the *hānai* (adoptive) custom to his maternal grandfather, Keaua Kuakahela, who was born in 1870 and skilled in Hawaiian beliefs and practices. Kupuna Mahi was chosen by his grandfather to carry on the knowledge of Hawaiian culture.

A former *paniolo* (cowboy), he worked for Hu‘ehu‘e Ranch in the 1930s to 1946. In 1947, he was drafted in the army. Kupuna Mahi was stationed in Korea, Lebanon, Philippines and Vietnam, among other places, and was a member of the military police. Married to his wife Theresa for 55 years, Kupuna Mahi has 18 *hānai* children, including his own. He is knowledgeable about traditional fishing, trails, native plants and other Hawaiian cultural resources, beliefs and practices.

When CSH asked about Maunakea’s cultural resources and sites, Kupuna Mahi noted that Lake Waiau is a pristine alpine lake that was reserved for the *ali‘i* and is now being used by

people who wrongly believe that it is for healing and cleansing. He stated the lake should be kept free from contamination as it is a source of pure drinking water:

Cleansing is only for *ali‘i nui*, not for anybody cleansing. No healing the water will bring them. It only dirties the water. We know when people use the lake to clean themselves. It’s not good because it’s people’s water. The water goes down to the ocean, and it is clean water. All the mountains water comes from up there.

Kupuna Mahi stated that it was obvious when visitors use the lake because of what they leave behind:

People are there because of the green scum bucket they leave there. Lake Waiau is sacred for *ali‘i*...not for any Tom, Dick, and Harry. On top of that, they throw a lot of rubbish in there. People don’t care...they come and do their thing and think it’s theirs. But it belongs to people in Hawai‘i. It isn’t theirs unless the *kūpuna* (grandparents, ancestors) say so.

When CSH asked what he thinks about the proposed TMT Observatory Project, Kupuna Mahi emphasized the sacredness of Maunakea:

The mountain is sacred, but people like UH is supposed to care for it. But they don’t care for it. The mountain is our *kupuna* (grandparent, ancestor), it is a man mountain. We use the mountain as a guide for us, that’s why we call it our *kupuna*. No do nothing. No add anymore. The hell with scientists...they *nīele* [inquisitive, nosy] somebody. They probe and look...see? We like no more nothing. As a *kupuna* of Kona, no like. I don’t care what people say, put back the mountain like it was. Clean it up. Put [the] mountain like it was...I don’t like observatory on top of the mountain. Leave the mountain alone.

Upon hearing the details of the proposed location of the TMT Observatory Project on the Maunakea Science Reserve area, Kupuna Mahi stated:

There’s no scientific area. I don’t want to see anything on that mountain. Enough already! Tell scientists go somewhere else; go China, Russia, someplace else. Why here? We like our land free, free from junk. We like our land to be free, and leave our animals alone and stuff.

He suggested that the telescope could be put on the mainland and other countries. Kupuna Mahi also discussed how the *kūpuna* of Hawai‘i did not give their permission for the other telescopes to be built, and whatever financial windfall the telescopes were promised to bring has never materialized:

Put the dome in the mainland. People of Hawai‘i didn’t give permission. *Kūpuna* did not give permission. The young ones did it, and they didn’t get paid. And now they get mad. They say Hawai‘i gets money, but I stay here all my life and I didn’t see any money. That’s why I don’t believe.

Kupuna Mahi noted the glaring obtrusiveness of the present buildings on Maunakea and again firmly stressed his opposition to the proposed Project and the role of the mountain as a guide for people:

For me, I don’t want any more telescopes. The ones on top ruin the mountain. Now Sierra Club is eradicating our animals. They are paid by the [former] President Bush. Send them back home. They are killing our sheep, our goats, whatever. They no care where we get our food. The mountain is no place for anybody to put anything on top. Stop making everything worse. We are guided by the mountain, when we are out in the ocean so we know where we are...the mountain is our *kupuna*.

CSH contacted Kupuna Mahi on March 11, 2009 regarding the changes in the Project description. Kupuna Mahi replied:

No way Jose...the mountain is not their recreation. I pity the mountain. It doesn’t benefit us; it’s just the agony of defeat. Go take it someplace else. Leave mountain alone. Put it [telescope] someplace else or somewhere else, on the mainland, China, or Japan. Hawai‘i is small. We don’t need problems.

Regarding the presence of current telescopes on the mountain, Kupuna Mahi stated:

When people come to Hawai‘i, they come to see the real Hawai‘i. We used to talk to the mountain. But now, there is a barnacle on the mountain.

7.3 Kalikokalehua Kanaele

Mr. Kalikokalehua Vernon Kanaele was born and raised in Hilo on July 28, 1949 to Ms. Verna ‘Āina. Mr. Kanaele is a cultural practitioner and activist. Mr. Kanaele has been involved with many of the past issues concerning Maunakea and continues his traditional cultural practices throughout Hawai‘i. CSH conducted an interview with Mr. Kanaele on February 13, 2009 in Pāhoa. When asked what Native Hawaiian Organization he belongs to and their association with Maunakea, Mr. Kanaele stated:

The organization was called Kaulana Nā Pua, it was between 1977 after they killed George Helm. Aunty Edith Kanaka‘ole changed our name to “Kīhāpai o Lono.” From there we went into the Hale o Lono teaching which was *makahiki* [yearly]. Because of the set up of Kaho‘olawe we decided to use Lono. Every other one if you make mistake, you get cracks. Lono going to give you couple slaps but get back on trail and do this, he is not going really give cracks. We are always approaching our issues that way. I would say we have been taking care the first part of our people like the *keiki* [children] and *kamali‘i* [progeny, children or royal children] because we have 8 generations in our whole society, *keiki*, *kamali‘i*, *‘ōpio* [youth], *mākua* [parents, uncles, aunts, etc.] , *kūpuna*, *kua* [generations back], *ka ‘elemākua*, and *ka ‘elemākule* [elder generations]. When you talk about the *maka‘āinana* [commoners], it is *mākua* [parents] and *kua* that is the commoners. That is the PTA or Parents Teacher Association. They are going give you free. What is *mākua*? So you understand that in our society we not talking some feudal nation, we talking *‘ohana* [family]. You confuse us by saying, “You feudal with the other guy, Kamehameha...” It is all kinds of separate jurisdictions within our societies. This is our main society which will take care of all that. So when we look at it that way, then we can understand

"civilization." Those five things that create "civilized nations"; clothing, shelter, health, food, and education—that's prevailing then.

In our family structure they set up their "*hale mua*" [man's eating house] up to their frozen food section and the teachings of our gods and goddesses and the separation of land to "*nā wao*" [the realms] systems. *Nā wao* hook us in where ahupua'a makes borders. *Nā wao* take us through the elevations to the spiral to the very top (referring to Maunakea) and come back down. And they make the wider spiral and finally going around the world. Like how we did in the beginning when you follow the stars and you want to see how everything just comes back to our creation story (Kumulipo).

What our real job in this whole thing is all about and the interruptions that has happened to our people and the other people which is our '*ohana* too. It took us that long, we had to go away from a whole teaching and then go to a Christian story to understand where we are standing right now and what our job is and who everybody is compared to how it was before. It went towards a different kind of creation story, you know, got to watch the movie cause she made us bite the apple and our older brother jealous of us and like kill us, all this kind things. That is not conducive to a paternal kind of teaching to a maternal kind of teaching. The guys only confuse and abuse, so when we look at all of this go back to what they are doing up there on that mountain. To that altar, ka mole, we tap one prayer what we are doing up there. Like try do them one by one down here, lean the heiau, no can because too much. You would need the whole '*ohana* for do that. Everybody who lives there got to understand what they have to do in their area. If you do the prayer from the top you can clean up from going down and this way come up. You clean them that way. When you do them that way, you do assort. Sometimes you have to use rainbow, I call it combined prayers of the four directions.

ʻĪo ka lani nui a maomao, ʻĪlalo ʻole [those that sit supreme in the heavens] those people up there are going to come and give us this *mana* [supernatural or divine power]. The peoples of our '*ohana* are going to come to us. When you come up there when they looked up they going see the rainbow. The culture committee OHA grumble with me taking up *nānā* [observations, attention]...Natives of their...Hawaiians is a political term, *kanaka* is our race. When they make our nationality our race that is where the brain wash is. You can circumvent our whole political system right now defining us as native Hawaiians. There are no such things, like Native Americans. Americans are a bit fiction with all these rules. What? You have to make us one fiction too in order to have jurisdiction of our minds. How they call it? Subject matter, jurisdiction. If you believe that to be true then it is, but if you question that you'll find it's not true.

Mr. Kanaele shared his *mana'o* (thoughts, beliefs, theories) about the early issues of Maunakea and how the native activist would react:

In the 60s, but everybody was behind that. Because it was not polluting and all of that kind of stuff. I can't say everybody was behind it. The *mana* 'o of the activist at that time was it was a sacred mountain. We participated that time in questioning what everything was. In the 70s it is just building this whole mechanism.

I used to live on the University of Hawai'i. My father became custodian in 1955 so we moved up there and we stayed at the University from 1955 I think he retired in the 70s, but during that time they had many things happening. Astronomy was just beginning; you know they had their astronomers' right there by the Gym. They brought down the big telescopes and you set it up there and you look from right there. It was not up Maunakea. During the 60s I think that is when they planned all that [referring to present site of Maunakea]. In those days most of us were pretty well brainwashed. I could not see and understand what was happening around us. Nobody really questioned *aloha 'āina* [love of the land] things. Maybe a few people, like the Auntie Peggy and Auntie Emma, they were always watching at that time. I met them through the *hula* things. I used to dance for my Auntie in the earlier days.

Well, they couldn't at that time because you have to remember now, Christianity, we were just coming out of the Sunday thing. We could just buy liquor on Sunday. What we are talking about here, they probably talked soft kind inside the kitchen [whispering]. The kids could listen but who understood? And then we would come in and then they would speak Hawaiian.

So you know this movement has been going on a long time. Before we were born and back then what happened was only certain people whole them because we talk to loud, you could lose your business, your house could burn, if you had wooden house, you have to watch your house, until the Hawaiians make their own gangs control their own underground things and then started to nail these people back that they created law against that kind of things. Before you could do because never have law at that time.

Finally the *kūpuna* went to Statehood just because of the clinic things they had no control of the diseases that were brought here. So once we became state then we have this whole structure for watch out for our kids. Before never have nothing. But the deal from that day to now they never understand the price they had to pay for that. That our ocean [is] now from a healing ocean was turned into something that can kill you. Not because it gets rough because of the staph and mutated staph on top of everything that they went put there. By us not paying attention to *aloha 'āina*, oh we were too busy working for them that we never understand that! This stuff going come up out 20-40 years from now, they say, "I no care that happened 20-40 years ago." Who is going to be around to say, "Oh that was us." They never even care if it was their kid was the one who catch the staph and die. They never know it was going to be that way. The only guys who knew were the guys who

made something like the EIS, which is why the EIS is good to have it now. They no can pull the wool over your eyes.

They had no means, they had no *mana* [power] until they go over there and make those guys *mālama* [care for] the *kūpuna* bones then they get burial council. All of a sudden they had power. The never had power before. Why you think we had to do that? Because they had no power. Well, we finally blew up! It took us long time. To learn all these things and have our people out there to set up these things to bring us eleven guys over from Big Island for do this stuff. You know how much that cost? Lucky thing we on Kaho'olawe so we can set up and get all the money and jump on the plane. We no care, main thing we show our people you can win that way. When they flew over Kahana Valley, they had enough *kūpuna* and *ōpio* [youth] and the *keiki* [children] over there to stand up and say something. Before they had to fly us around to do that kind of stuff.

But this Maunakea issue is not like that. All our people say, "ENOUGH ALREADY." I don't know which part of enough they don't understand. Enough already! Do good now. Do good with what you get and then maybe later on ask the next generation and then be that good steward you would not have to worry about nothing of this. Questioning your integrity or your honor. We not supposed to do it. UH is supposed to be teaching that stuff. What is going on when it becomes like this? When Ali'i O Nā Moku said, "Education to desecration isn't education at all." That is what we are talking about. Now you are going take them away all the way there to our people, that are not important enough. What is that? This plantation stuff we just finished that, Big Island just finished that going through that whole thing. Some people you going do that to, you going rub them wrong they going smile at you and stab you as soon as they can find one weak spot in you, your dead, and good for you, cause what you got to come see people like us for help heal you.

When asked about his involvement with the Royal Order of Kamehameha, Mr. Kanaele responded:

I just finished doing Kea'au and we was living up in Mountain View. Kealoha came over and at that time this *kahu* was living with me from New Zealand, Rotorangi Kaulua Porangi and she came to see him and talk to him about Maunakea and her experiences up there and what she has seen and her visitations and all kind of stuff she has experienced. She was asking us for help on what can we do about it. So finally, they look at me. The buck stops here, once we going do it there is no turning back. Once we start we cannot stop. The first thing we have to do is join the Royal Order of Kamehameha because up there is sacred. That belongs in the realms of the gods. The only guys I know that really go up there is you got to be chief, *kahuna* [priest, expert, specialist]. Rank your blood get in there and the only people that can rent is your blood is these people. Because from the Kingdom time if you look back there when number 5 put this in he put that deliberately, he not only made the commitments, he brought all the chiefs. Even

the banished ones he brought back in under the order. So all the families now are back in under him, because his great was not through might, his great was through eight generations alive and kept him going until he died, then have the sicknesses. He had control over the sicknesses until he make. As soon as he make, everything just went broke. If you notice in history, the *kapu* was broken. You couldn’t control them that way, but you could understand that this one comes from this area, and that one comes from that area. We are all ‘*ohana* we the Hawaiian race.

When asked about any ongoing Native Hawaiian traditional cultural practices on Maunakea, Mr. Kanaele mentioned:

Ceremony and *kahuna* practices and whatever needs to be done now! In this time with whatever is left for us to use. Our ancestors’ say, “They so happy to see us.” They don’t care how we come...just come!!!! Come home. We your gods!!! It is not scary kind. We no need scare ourselves. This way we all family again, the *kānaka*. Our *kūpuna* had to doom their way in order to save our people from becoming cheating our friends. When we look at this whole thing we look at them as friends who stole from us. When we joined the Order they never know who we were. When I started to explain to them, he goes, “Ah, aaaa...” Then we brought some of the practices back. The Christian all get crazy. I explain no, look at it as a friendship kind of thing.

Mr. Kanaele shares his *mana* ‘o on the myths and legends associated with Maunakea:

To the rest of our ‘*ohana* that is the only mountain. Everywhere or any place you go the highest hill is Maunakea. The second highest is Maunaloa and then you go around the world. That is our sacred mountain. It is a male mountain with many females. If you know already that is good teachings, creation and pro-creation. On the female mountain would have male gods on their mountain for the balance. The way I always look at our culture is as ‘*ohana*. We have to resist when they try to bring that other *mana* ‘o in like the feudal thing. We need to claim our lands and Maunakea all our mountains. Once I went into the Royal Order then I understood the different duties of each office, the *ali* ‘i *okana* [district], he creates the *konohiki* [Headman of an ahupua‘a land division under the chief side], my office creates the security part this is because of my genealogy of Ke‘eaumoku guys, I can actually right title.

Who the god up there? Kāne, but coming up there Kū is around then Lono, and of course and out to the deep blue is Kanaloa. Where as you go up the place then going get *kanahēhehele* [forests] to the *kini akua* [gods and spirits] and then on top of that is Kāne. The priesthood of Kāne and then the dog guys and then all these people. Why they call them dog guys? Because they wear dog skin, cause cold up there.

When asked about any concerns he may have on potential impacts to traditional cultural practices that may occur due to the proposed development, Mr. Kanaele stated:

Before I went up there, it always symbolized everything. When I left here to go to American and came back. That mountain was imprinted up there...*po‘o* [summit, head], when it got lonely or funny, it was there, mean. It brought me home. I could feel myself come home too. That is how heavy that place is. After I went up there then I understood what that experience was all about. Going up there, we went up there like shining nights in white armor we going save the mountain, all we could was go up there and cry and ask talents we never had. So we could understand to do in the correct manner and correct protocol to explain Maunakea. To explain any place we needed to focus on. Then we understood *aloha ‘āina*.

My concerns are in the last EIS, substantial and adverse impacts. You have to falsify some kind of documents in order to kill this. We are dealing with one aquifer and all the waste is going into that aquifer. The mountain itself is a great filtering system; inside of it has a hose that represents rivers underneath and on top. The melted ice and rain, all that seeps right into the aquifers and then down to the rest of the *‘āina*. Maunakea is blue and Maunaloa is red. So you can see where the water goes. They are tampering with the main source of our water.

7.4 Kimo Keali‘i Pihana

Mr. Kimo Keali‘i Pihana was born in a small town of Wahiawā, central O‘ahu on October 22, 1942 to Mr. Eddie Fabian Pihana and Mrs. Keali‘i Pihana. Mr. Pihana and his wife Leila Terouru Tarere Taina Pihana moved to Hilo 20 years ago. He is a retired OMKM (Office of Mauna Kea Management) Ranger and has retired from the United States Army. Mr. Pihana is a member of the Royal Order of Kamehameha ‘E kahi, Māmalahoa, Hilo Chapter, a voting member of the Office of Hawaiian Affairs, a member to the Ruling Chiefs of Hawai‘i, Pu‘u Kohola, and a member to the Kingdom of Hawai‘i #10000138. CSH conducted an interview with Mr. Pihana on February 4, 2009.

When asked about his work as a cultural practitioner, Mr. Pihana commented:

As a cultural practitioner, my title was given to me by the Royal Order of Kamehameha ‘E kahi, Māmalahoa Hilo Chapter, as Kahuna Kuhikuhi Pu‘uoni, caretaker to all of the shrines here in Hawai‘i nei, not only on the Big Island but throughout most of the islands here in Hawai‘i nei.

I have been able to work with all different Hawaiian Groups here like the Nā Ali‘i O Hawai‘i Nei, the *wahine* group [a local chapter of Hawaiian women associated with the Ali‘i of Hawai‘i] and the Ka‘ahumanu Group [‘Ahahui Ka‘ahumanu Hawaiian Civic Club]. I have participated in a lot of Hawaiian activities throughout the years, like Kamehameha Day, the *lei* draping ceremony of the new Statue we have here in Pi‘opi‘o, sponsored by the Kamehameha Alumni Association. Other places throughout the island like ‘Ahu ‘Ena in Kona, the residence of Kamehameha and the place of his death is where we do a yearly retreat and workshops to bring awareness to the general public and to our people. We need to honor our ancestors and be part of a group that is still able to be proud

of [who] they are and yet continue my education by going back to College today; learning who I am and my culture by going into areas like Waipi'o Valley. Doing arts and crafts with our children and general public at Pu'u Koholā. I practice weaving with *ti* leaf [*Cordyline fruticosa*], *olonā* [*Touchardia latifolia*], and *lauhala* [*Pandanus tectorius*]. I learned different *lā'au* [plants] at times throughout my life by people like Papa [Henry] 'Auwai. I still have a lot more to learn and that is one of my reasons for going back to college.

My mentors on this island when I moved here, was 'Anakē Pua Kanahele, 'Anakala Ali'i, Arthur Mahi of Kona, Ali'i Ernest Akoni of Hilo, Papa Akau of Kawaihae, 'Anakē Maile Akim Siu, and 'Anakē Ahuna. Kupuna's here in the Hilo District. Also I have been working with many other elders, throughout Waimea, Puna, and the Ka'ū district.

Mr. Pihana shares his thoughts about his work and association with Maunakea:

Back in 1997 I was already a member of the Royal Order of Kamehameha. We were asked to resolve some of the issues that were being brought to our attention and we needed to find out how we can help as far as being able to bring awareness of protocol and respect to our people of Hawai'i and its culture. We needed someone that would take the initiative to help the University of Hawai'i understand that part of the problem of Maunakea was the cultural area was sort of put in the back seat. So, my first assignment was to of course to apply for a job and as an interpreter, a cultural interpreter. I applied and was hired in 2000 by RCUH Mānoa after about a year as a Nānā 'Āina [one who oversees the land], they asked me how we can make it so that...because they didn't have any job position and stewardship So we came up with the idea of a program today known as their Rangers of Maunakea. It is not federal, it is State [run] by the University of Hawai'i. We are secondary enforcement for health and safety, which is a program I have built from the ground up. We created many new positions such as employment that would bring interest of our local people that are now in high school and college to look forward at something they might be able to get a job in to work up there—a job to work on the mountain. First of all we had to come up with ideas on how can we generate interest in our people because not everybody was happy with what was going on top of Maunakea.

The *kua'āina* are the people of the back land, the original inhabitation living on this island all of a sudden became hurt or you might say angry because they know that there was some restrictions to the mountain and they did not know how to approach the development and the University about the top of Maunakea. My position was to bring awareness to the University of Hawai'i, meet with the board of regions, Chancellor Rose Tang, and meet with newly created Office of Maunakea Management, Kahu Kū Mauna. They are cultural advisors to the University. We can then voice our concerns, because many time people were sort of reluctant because of it being a State position and citizenship. For myself, prior to getting a job on the mountain, one of the last questions was asked to me by the

person who was interviewing me for the job was if I was an American citizen. The answer to that was and is no, I am Hawaiian citizen first and yes I am American citizen also because of the change from territory to statehood, I am in a position to say so. And we have excepted changes today, but we still need to know that our *kuleana* [responsibility] is to remember our ancestors, our genealogy, who we are, where we come from and things like this and how can help even the local people understand what responsibility they have when they go beyond the realm of *wao kanaka* [an inland region where people may live or occasionally frequent]. We need to understand *wao Lono* and also *wao akua* [a distant mountain region, believed inhabited only by spirits, gods]. Many of the scientist and people that I know today have a better understanding of the spiritual connection that everyone has, not only the Hawaiians, but many nations that come to Maunakea have a much deeper respect and learn a better responsibility of leaving their *‘ōpala* or rubbish all over the place, a program which keeps an eye on that. That was part of our creating of this new Ranger Program they have today and also help our visitors and local people so they don't get into trouble when they are up there and most of them understand protocol much better today.

We have created different stages of the mountain so people who cannot get to the top can give their respect to the mountain at Pu'u Huluhulu at Hale Pōhaku at the 9,000 foot level. I think by this way we have satisfied them at least at some part. The other part of my job and my responsibility was to bring the telescopes back down to the level of the people. In the year 2001 I asked a few of the people who had their own personal telescopes if they don't mind coming down and do a star gazing program at the yearly Makahiki festival we have here in Hilo. I had good cooperation from observers and astronomers from Gemini, Canada, France, Hawai'i, University of Hawai'i, and some people from the visitor's station and set them up in Keaukaha at Puhi Bay and we had quite a bit of people. That kind of brought about a new program into the University System of creating another position of people that would contribute their times and efforts doing outreach to the schools. It helps create the 'Imiloa Astronomy Center in Hilo. Today people who are not able to go to the top of Maunakea can enjoy the idea of science and culture right here at this level, here in Hilo at the University Park area, this way people don't feel being left out. We have been able to satisfy all nations not only the United States, Europe and Asia, Hawai'i has made its place in astronomy and science world doing work out there in space and the discovery of new planets and stars educating our people so that we can learn how to utilize our idea of science. Science doesn't really work unless you can apply it especially if you are going out into space and they want to colonize other planets such as Mars and *mahina* [moon], the moon.

So the future generations are very near of colonizing other areas outside of the planet earth. Preparation and engineering and education play a very important role. Today most of the observatories out there are at the edge of the universe utilizing their entire antenna, mirrors, and their data information on how to

discover sounds and asteroids, which there are the possibilities that there may be another impact of an asteroid coming to this planet. If that problem occurs they should be prepared to divert an asteroid utilizing their science, skills, and scientist to divert it so we don't go through another big impact that would create devastation on this planet.

Human's can continue to survive on planet earth and maybe even colonize other planets. Luckily the Ranger Program was in place we were able secure and bring those people back in safely. Without that Stewardship Program in place a lot of people would have gotten injured—people getting hurt needing medical attention or medivac off the mountain. We had two people die out there. All rangers are required to become First Responders. You must attend several special classes on how to be good international interpreters not only local. Hard work and a lot of studies, a lot of care, keep yourself spiritually connected, mentally awake, and you have to be almost like being "Maui" because you are protecting not only Papahānaumoku, but Wākea. You are looking at the heavens everyday and every night. You kind of get to know the real meaning of how it is to be up there. It gets lonely; it gets very close to the Gods and goddess that exist out there. It gave me time to reflect back because this is where the Kumulipo starts. Today I am retired, but I have all my Kumulipo intact. I am still doing more research. I carry one of the biggest charts on the genealogy throughout the islands. It help me grow a little bit better with the understanding on why I was asked to go up there and help the people and the University of Hawai'i understand much better on who we are. I help to create a DVD, "The First Life." I also help create the new "Mauna Kea Guide to Hawai'i's Sacred Mountain." I was asked to share my *mana'o* (thoughts) in the forward of the guide. I was able to help create that book and the film by PBS and today it is one of the biggest selling items on the mountain.

I will share my *mana'o* with you, the following comes from the forward from the Mauna Kea Guide to Hawai'i's Sacred Mountain:

Welcome to Hawai'i's sacred mountain, Mauna O Wākea. Visiting Maunakea is an adventure; one that allows us to step back in time in realm of the gods of the Hawaiian people. In the stars astronomers can trace the ancient history of the Universe, but we Hawaiians go to Maunakea in search of our mana or divine power in a quest to understand our ancient spiritual connections. On the mountain we can feel the close relationship between heaven and earth. People of many nations say that it is a sacred place for them where they experience awe and reverence as we do. As a Hawaiian cultural practitioner and care taker of the mountain I am often asked on how visitors should conduct themselves on Maunakea. I suggest that they say a silent prayer take a general moment for greeting the mountain and then walk with respect on our sacred place of worship. I share how we must *mālama* the 'āina or take care of the land, take care of people and preserve the culture. We Hawaiians are fiercely proud of the accomplishments of our ancestors who navigated the vast Pacific Ocean by the

stars, a thousand years before Galileo first pointed his telescope towards the heavens. Maunakea was a land mark for ancient navigators and is today a center for that revolving science of astronomy as we scope our place in the universe. As a Ranger on Maunakea I have enjoyed working with many astronomers who are generally people of goodwill and from whom I have learned much about the stars, but despite all of their accomplishments I do feel that much more needs to be done to bring awareness of and respect for Hawaiian culture on the mountain. Science does play an important role in people's lives, but it is not everything. A spiritual connection is just as important. This is symbolized for the modern Hawaiians by the humble stone and wooden *lele*, the altar at the summit. I welcome you to Maunakea also known as Mauna O Wākea, the mountain of the God Wākea from whom all things Hawaiian are descendant. Here you may experience and enjoy beautiful sunrises, sunsets, and evening star gazing under the northern and part of the southern sky. Here too are preserved many magical wonders of the Hawaiian Nation we all need to continue to perpetuate and protect this land as well as the legends and mythology passed down through the ages for our own and future generations. We must all continue to be good stewards of this sacred mountain.

When asked about the amount of telescopes now on the mountain, Mr. Pihana stated:

I am not a scientist, but from what I have gathered from all the years of working with all of the top scientist of the world, to include NASA and other exchanging of ideas from other scientist, the bigger the better, but when you look at it from a local Hawaiian perspective living here on this island, again we are going into the womb of what we consider sacred on Maunakea. My idea of no more development is no more development on the mountain period, is my *mana'o*. I might get out-voted, that I know, but if I do at least I have made my testimony so that we cannot curve this idea of development because, one of the things they are saying is they are creating jobs. Not everyone will be able to work up there. You have to be very healthy and conscious with high education requirements.

We have many local people on Maunakea as of now, maintenance, custodians, cooks, security, and at the Visitor's Center we have many young Hawaiian people, and a mixed group of people, but we also have people in the observatories that are engineers, technicians, plumbers, observers, and controllers of the telescopes themselves; many operators that work at the lower levels in Hilo and Waimea. Some of the astronomers don't even go to the mountain. They work from their air-conditioned offices in the lower part of the land and also connected fiber optic to Maui. What it does is it keeps us abreast of what is really going on in space and the progress that is going on today as far as new discoveries of stars, planets, and finding out that Pluto is not a planet.

As a young person when I was growing up we always looked up in the heavens and see the twinkle of the stars, today I look at science and they took the twinkle

out of the stars. They kind of took the romance away. Just imagine, colonizing the moon.

We have a connection to Wākea the heavens; many cultures have spiritual connections to their highest mountain and Maunakea is one of those places. What are we going to gain or what how is it going to help people that live on this planet—if there is something that we don’t know. If there is that they can come back and bring back from out there that could probably replace oil. We don’t know. Science has taken it many steps further and drawing water out of rocks. That is part of their project that they are working on right now.

Other programs are utilizing the use of minerals that could replace fossil fuel here on this planet. We don’t have all the answers yet, but then imagine colonizing another planet. It will not be an easy chore. Many people won’t be able to make that journey and some will fail and of course some will come back. We have already seen that happen in our time where we have lost quite a few of our astronauts.

Onizuka was a local born astronaut is one example. He dared to go out there and ready to lead and of course he did open up a lot of doors bringing awareness to the people of Hawai‘i. From a young boy growing up in Hawai‘i become one of the first astronauts to go out into space many times until that accident.

Mr. Pihana spoke about his cultural associations with Maunakea:

My cultural association with Maunakea is when I first put together the Royal Order of Kamehameha to greet Princess Saiaku of Japan and their emperor to Maunakea. I had to go through the Japanese Embassy in Honolulu to assist her and to recognize her because of her diplomatic and very high position of government with Japan and Hawai‘i relationship. We put a group of people together especially the ruling chiefs and chiefs of Hawai‘i to be present when she arrived at the Visitor Center, at the nine thousand foot level. We were able to greet her and let the University of Hawai‘i witness that the people of Hawai‘i were interested on what is taking place on the mountain. There was a slight indifference on how we were going to do the right thing in protocol and respect to foreign visitors such as the Princess. We have also had visitors from the United Kingdom who visited. There were other dignitaries such as Prince Phillip and other countries that needed to make a presence on the mountain. The people and the chiefs of Hawai‘i are ready and willing to protect this mountain and to help our *kūpuna* understand that we have not forgotten about them [and] to teach our future generations as far as being able to understand. After all the development was already in place and now we needed to get to work and understand on how we work together much better than against each because it is very important that we be diplomatic and be the ambassadors to the people of Hawai‘i and for those who cannot go up there. I have had a lot of *kūpuna* that were afraid to go up there because they believe in the old system. That the mountain is under some kind of

kapu or restriction and they did not want to break that kapu. So, it took a lot of meetings, conferences, and work to finally get the word out to the people of Hawai'i that if you take certain ideas and learn the proper protocol to approach this high mountain not only of science, but of sacredness and the spiritual connection to our Kumulipo and to learn more about the significance of why it is important for us to help in the preservation of this area and leave it in tact and not build another city of some type on top of our sacred mountain. There have been many different articles in the newspaper that say, "There is too much on the mountain, too much rubbish, too much tourist on the mountain, and the foreigners are to blame for all the *pilikia* [trouble] out there." We are all involved in this; astronomy is nothing new to the Hawaiian people. We are navigators of Polynesian; we are on the ocean and on these islands prior to western contact and Captain Cook. So navigation on the ocean, the Polynesian navigators is still one of the best in the world today. This is another giant step if we become involved and become partners then we become of the work that is now available so that our children will become educated. We tell them to go to school get educated; after you get educated you are standing in the un-employment line. We want to make it available so it can reach out and touch many different people even those with disabilities.

I fortunate that I was able to finish up my time on Maunakea with honor. I have been there eight years and have retired from the University of Hawai'i Mānoa system. I received my retirement gathering by all my bosses and I collected all the different ideas of how we were able to come this close. Some of the comments I was given by Ed Stevens. When he first set eyes on me on Maunakea, he was scared. Others said I was very intimidating. That is the role I had to play to bring to the University some kind of awareness, that—hey, we are still alive, we are still here, we demand respect, and we need for you people to understand that we need a plan and better program to bring not only awareness and education, but bringing people from foreign lands to come and visit that the mountain is considered very sacred like all high mountains!

The development that is what there already, we need to understand whatever data collection and information they are getting from all the work being done up there happened a long time ago. Astronomy was introduced into the islands during the time of King David Kalākaua. He had one of the first observatories and telescopes set up for him in Honolulu by Dr. Forbes of the United Kingdom. So here we had another government at the early time, United Kingdom, Great Britain, today that is why our flag has part of the UK emblem on top of our flag. We were subjects to the United Kingdom at one time. Today of course there is a different government in place and we still respect the United Kingdom as part of our government in existence until today, but our citizenship today of course has been changed to the United States of America.

I myself did my testimony for the thirty meter [telescope] development and I have also been accused many of times of being a traitor to the culture and I think I have proved many people wrong, because I lasted all the way to my retirement. I help to create many good jobs and brought awareness throughout the world. Not only in Hawai'i by working with and along side, not agreeing to everything they want to have done on the mountain, but how to better take care of our *'āina* and respect the culture so that we have people just trampling out there and removing some of the *pōhaku* [rocks] that you are not supposed to take off, but then we still do have people and work alongside archaeologist from Bishop Museum, Pat McCoy, and the State Archaeologist who have been working out there for about twenty or thirty years and have collected a lot of good information. We have protected the burial sites much better, we know where they are at and of course we don't want to see any more development up there. That is my *mana'o*. It must go through a process of muster.

When asked about his knowledge of burials and burial practices on Maunakea, Mr. Pihana mentioned:

The burial grounds are much further out than that area, 13 North they call it, but even then it is too close to our *kūpuna* and early caretakers of the mountain have been put up there, some of our *ali'i* are buried up there. It would really be another hurt or you are going to put more salt on the wound so to speak and I don't think our people are going to accept that development. You are going to have a bigger protest than ever because of that, other things, because of conflict of interest out there. When it comes to who we are and employees to the employer that if we were to disagree it would be a conflict of interest, and many of local people of course, even like myself, were threatened with termination if we don't agree. For example, the removal of the *kuahu lele* that sits on Pu'u Wēkiu was a destroyed that didn't like to see that shrine up there at one point. I was responsible for helping and placing that shrine up there. The other part is that once found out, they were probably angry that were wasn't going to be accepting some of the changes out there, the only comment I had when I first comment when I first started working for the University that if they are going to renovate or they are going to improve that they stay within the imprint and footprint they have now and not go any further outside of that. I believe other project failed to come about and that was the Keck [Observatory] who wanted to put outriggers out there, which did not happen.

Early development where one of the observatories was on top of Pu'u Poli'ahu, prior to me working at the university that observatory was removed brought down and taken off Pu'u Poli'ahu I had brought the new established Office of Maunakea Management, Office of Hawaiian Affairs, Civic Clubs, and many other community leader, and other local community leaders to close the road to Poli'ahu. Today there is only a trail and the only way to get up there is by walking. No vehicles allowed on top of that mountain. No vehicles allowed at the Lake. No vehicles allowed into the area where we consider where our burial

grounds are. Pu'u Māhoe and Pu'u Makanaka, those areas are off limits even to hikers.

Yes, ashes are still being taken up there. I have a lot of people, non-Hawaiians also that have somehow got up there and distributed their family's ashes which is, at some time for me, it was hard that have left ashes. People bring all kinds; they even bring their ashes of their pets and animals up there. We can tell by doing the research and looking at the bone and teeth with some of the archaeologist and scientist out there. The biggest one I have seen brought up there by the Visitor's Center was a horse. It is on one of the Visitor's Centers, not the University area, the area that is under the control of Department of Land and Natural Resources. So there are some areas that DLNR has appreciates the fact that we are there and that the caretakers are on board and Stewardship Program is on and the Rangers suggesting they might take it someplace else. I had family members and people bring falling warriors from Iraq, Iran and Vietnam and even going back to Korea.

Hawaiians bring their ashes up and distributing it in areas and holding their vigil. These are some of the things that are hard to control and stop. We don't want to see full body kind of ceremony and ashes goes back to dust. Once it is mixed in with the cinder, soil, the lepo up there we don't see. People today are also doing at point spreading of ashes in the ocean in different areas. So, as myself as a Hawaiian practitioner I kind of look at this that is not being desecration at all it is something that we cannot avoid sometimes and other times we can discourage, but other times we try to bring awareness that the soldier should have been taken to Punchbowl and place where they know, because they are not familiar with Maunakea or maybe a family plot. We have been able to see some of these ceremonies take place and once they are going on it is kind of rude to stop it. We also many nations and leave their prayers or their prayer sticks, their flags and other things and I feel for them.

I had a group come in from Tibet and talked with them. They were a group called a climb for Tibet. So other leaders from around the world have sent some of their people to distribute some of their ashes of their family on Maunakea. Sometimes it is after the fact, they tell us later on, because they don't want to let us know, they know we are going to stop them, but we warn them and caution them.

Mr. Pihana shared his concern about safety on Maunakea:

We have had few people to go out there and get hurt and sick. Luckily the Ranger Program was in place we were able secure and bring those people back in safely. Without that Stewardship Program in place a lot of people would have gotten injured, people getting hurt needing medical attention or medivac off the mountain. We had two people die out there. All rangers are required to become First Responders. You must attend several special classes on how to be good international interpreters not only local. Hard work and a lot of studies, a lot of care, keep yourself spiritually connected, mentally awake, and you have to be

almost like being “Maui,” because you are protecting not only Papahānaumoku, but Wākea. You are looking at the heavens everyday and every night, you kind of get to know the real meaning of how it is to be up there. It gets lonely; it gets very close to the Gods and goddess that exist out there.

When asked about his knowledge of any ongoing Native Hawaiian traditional cultural practices on Maunakea, Mr. Pihana mentioned:

Going back to the times of ‘Umi who had set up his shrines all over this island in celebration. By then the priest were concerned with studying the stars and navigation. Also the time of the year to celebrate the solstice and also the equinox. We were able to bring that practice up to the summit of Pu‘u Wēkiu today. So that we can seek reverence towards the idea of our ancestors leaving behind information that we could go to higher places and do the same type of work they do below.

Umi was navigating the stars. The star chart, the moon phase and also the directional between from here to Hawai‘i. Today teachers, cultural practitioners visit the Lake Waiau, the place where Poli‘ahu would go into her sacred lake and be protected by her *mo‘o*. I was always thought he was a white *mo‘o*, but he is red. I have been able to see that. The placing of the human piko or umbilical cord, an ancient and still a practice of today—the beginning point of our people. I was able to put my son’s piko in Lake Waiau after I started working there and my son participated with me, he was turning seventeen at that time. I was just moved by being able by going out there and see the place clean not being desecrated, very serene. We consider this a tradition to the Hawaiians. It keeps it as a safe place for our future longevity of our family. There are many other families, generations that have done the same. Larry Kimura has his family up there; the Lindsey Family is up there. So those places need to be more and more protected and still witness in today in their life time that the practices of old still go on, do their *hula*, practices, and walk in the footsteps of their ancestors without getting overwhelmed by the development on the mountain.

We need to protect the environment up there, the animals, insects and all natural resources. We are conscious about that. The idea of being able to look up into the heaven and still be able to learn the old names of stars and constellations such as those we use in navigation. People like to go and practice at the night time too. They also need to learn to respect it more.

Practices we have established in the year 2000 until today is a yearly gathering of people to go up and pay tribute to the mountain first, by going through the proper protocol from the Naha Stone in Hilo from there we stop at the Kaūmana Caves and then we go to Pu‘u Huluhulu area where we conducted the practices of setting up a *kuahu*, the center part to the island to rest and acclimate. They can leave *ho‘okupu* [tribute, gift or gratification], they can do practice there *hula*, and then we *kāhea* [call, greet, name, summon] from there and after that we mount up in

vehicles today and drive up to the Hale Pōhaku where we set up another kuahu lele where the Silver Sword plants are located, so people again have another place to offer *ho'okupu* and give prayer and reconnect themselves. They are going through the different realms as they come up to the summit.

People come to do their practices in the Pu'u Līlīnoe area and other places. I have been able to work with other people who set up areas where they can go and pay their respects to Līlīnoe. In Pu'u Līlīnoe there is no shrine, but we have seen others come and make shrine for today. Ed Steven, which is his favorite area to sit down and make himself ready to continue his way up the mountain.

Then we head up to the top and from there they can see the rest of the *pu'u* as they go up, Pu'u Haukea, Pu'u Kea, Pu'u Hauoki, Pu'u Pōhaku, Pu'u Poli'ahu, Pu'u Wēkiu, Pu'u Kūkahau'ula. From there they prepare themselves to take their journey out to the top of the summit known as Pu'u Wēkiu. They have protocol to approach the shrine; they have protocol to ask permission to be in reverence to the area. As they gradually climb to the top of the summit they are in full reverence in respect to the elders and the idea of being able to accomplish their quest. To go up there to see what our ancestors seen and the only obstruction is the people don't like to look at the observatories so they look towards Maunaloa, Hilo, and Hualalai. They have to come back off, when we come off the summit area, we close with prayer, mahalo, forgiveness, and all the other things so that we don't get overwhelmed and many do once they make that connection. It can be exhausting and at times we need to get oxygen to them. At one point, being overwhelmed and gathered we are just glad that some of the kūpuna that I met, Leinala'ala was one that called herself Līlīnoe in some places and Poli'ahu, the snow goddess and before she passed we had a short gathering together and she said, "You know if I pass, I would like to be on Maunakea, which is where Kealoha comes in and she put Auntie up there.

Mr. Pihana speaks on his knowledge of the reverence to the *pu'u* and *akua* associated with Maunakea:

I think it is idea to give reverence to all the *pu'u* that is place names up there in recognition of their existence and their connection to the Kumulipo, because in the Kumulipo all of these areas on Maunakea are mentioned.

As far as we can see today, most of it looking at Poli'ahu, the snow goddess, she comes along almost daily even though you don't see the snow, she is there, because of *hau*, the cold, the winds, *makani*. The senior of the male side are very powerful ones, other gods and goddess that reflect thunder and lighting, Kāne. Those ideas of recognition of acknowledgement. I have done many ceremony where out of the clear sky while doing our prayers and giving our thanks to Maunakea and all of the gods and goddess that reside in this area, that are the guardians of this mountain actually appear by snowing, hail, thunder which is to me an acknowledgement from a higher stratum.

We assemble the gods. The god of lightening, Kahekili, Ku, the stratum is straight up, Kāne, Lono all the gods. They all come to an essential point of the mountain.

Their idea of marriage and birth it is also being recognized because without marriage there wouldn't be any birth so have to continue understand that a little bit better on the creation part of man and the creation of the birth of the islands. Things like this is why cultural practitioners that go up there acknowledge all of this that was put forth before them, passed down from generation to generation, by the their ancestors. People even come from faraway places such as Borabora, Tahiti, Nuku Hiwa, Aotearoa, around the world, the Pacific Region center on the top of Maunakea. We have had other Polynesian Nations come and do their testimony, from Samoa, Tonga, and Fiji. Today we get out there coming up other Polynesians that have never been to the islands and they go up and give reverence and respect by hearing that some of these practitioners have brought down that it is okay to go up there and acknowledge your ancestors and share the mountain because of the highest temple today in the world. I am just glad that I was part of helping to create that program and bring it forward again. We are having visitors and astronomers to the mountain acknowledging what we have set up as proper protocol to come to this mountain.

When asked about what concerns he may have on potential impacts to ongoing traditional cultural practices on Maunakea, Mr. Pihana stated:

I been in 13 North, this is the area that they have set up to put a portable station to collect data. I was one of the first practitioners to have that power to remove and close the road to the 13 North. The only reason I had closed the road was to make sure that public scrutiny and public quorums be held so that everybody's *mana'o* can get on the table that if we allow it we really have to think before we say, "Yes," to this development. We look across the island to Maui from the area and Maui and Kaho'olawe is looking back of what the people of Hawai'i is going to do and if they allow it to happen, the only thing I could say is, "Good luck and have the best of my respect and hope that you do a good job and that it would benefit the world." And you have show proof that you can do well by your words, "One up, two down." You cannot have it all. I think in the beginning of the Master Plan even though the 30 meter was already on the table that they had promised to remove some of their other telescopes because this is joint venture and I think the first one that would be removed is Canada, France, Hawai'i and the people there are going to lose their job. The other part is that you cannot replace what you already removed in that area. Another one that was said to be removed is property of University of Hawai'i 88, but then we got other plan that comes forward by the Air Force and probably even NASA, so the Government place a big role in decision making, "Put them up, money talks," everything else walks. Having the TMT up there will bring a bigger impact, the more visitors, and a major impact.

My main concern is that it is going to hurt the Hawaiian people again. It will hurt their eyes and spirit. It hurts the eyes already. I have not been up there since I have retired. I need time, after giving my testimony at the 30 meter; I made a promise to myself that I really don't want to see the 30 meter developed up there. I told them in Canada, France, and Hawai'i, because it was like saying, "I re-nig I went back on my word as a Hawaiian." Not only the practitioners, and if it does develop, like I said before sometimes we can come to agreement and sometimes we cannot satisfy everybody. I received a word from one of my old uncles that live on Kaua'i, one of the high Chiefs, "It is okay to discipline." I took that statement seriously, but there are always disagreements in everything we do. I have been told many times and called many different names when I went up there and try to bring awareness, to all sides. It didn't stop them to overdevelop O'ahu or this island also. Population growth, jobs are very scarce and very demanding. Education is very demanding. What are we going to do with our people? If it is going to create good work for the majority of the people, as a whole, then you might say it is a good to build up here. There are other areas in the world that can use the jobs and the moneys, not necessarily Chile, countries like Mexico who need the jobs, but here we already have enough telescopes.

Mr. Pihana shares some knowledge of the myths and legends associated with Maunakea:

Then the myths and legends will become very scarce; it will all focus on the observatories. The myths and legends I know about is the night marchers, and they are constantly at work. I had many visitors and employees that have had many spiritual experiences out there and unexplained happenings and have recorded it on film, because these guardians that are still on duty are showing themselves that they are asking, "Who are you? What are you doing up here? Where are you from? Go home, you don't belong here." I had a Japanese film crew and I was escorting them from 8 o'clock in the evening to 3 o'clock in the morning just to get a shot of the moon and the camera man and soundman noticed giants walking across the valley between Subaru and Cal-Tech. They stopped work and came down to ask me to escort them back down to Hale Pōhaku which I did. Their question was, "Are their giants on the mountain?" Yes, these are guardians to the mountain and area, they are known as the night Marchers, not only walking below lands, but up here too. They show themselves because they don't really want to be exposed. They want everything up there now to be left alone.

The myth of Poli'ahu lives and when she comes home everybody stops working because she closes the road.

7.5 Mr. & Mrs. Burt and Shiela Okin

CSH interviewed Mr. Okin via telephone on Jan. 23, 2009. He and his wife are residents of Waimea. Mrs. Okin is Native Hawaiian. She is a retired teacher. Mr. Okin is a retired air pollution meteorologist. Both are active volunteers in several community projects. When informed about the proposed Project changes involving a staging area and electrical transformer,

Mr. and Mrs. Okin did not have any additional comments. When CSH asked if they wanted to share their *mana‘o* regarding cultural sites, resources and practices in the proposed Project area, Mr. Okin stated that they did not feel they had anything to add.

Regarding the proposed TMT Observatory Project itself, Mr. Okin noted the following:

I am neutral about it. There is a cultural imperative that has to be acknowledged and respected. There is also scientific information that we need to gather in the long run that may aid us in how we look at the universe. We eventually may need to know what goes in our universe, because in the long run, who knows what information we need to understand the expanse of the universe, our place in it, and how it will affect our long-term survival.

Mr. Okin stressed that respect has to come from the two parties involved, those who are against and those who are for the Project. He stated that it is his hope that there will be some kind of process that can be put in place so that worthy projects can be done while respecting the Hawaiian cultural imperative.

It has to be done with both sides. Nothing can be done with disrespect. We have to find some way before projects go forward, and we need to explore the culture with those who know it best.

In a follow-up email to CSH on Feb. 2, 2009, Mrs. Okin wrote the following:

I have learned that several of the companies who have placed telescopes on Maunakea have not lived up to their agreements re: caring for the area on the mountain that they use. I don’t think that there should be any further development until those issues are rectified to the satisfaction of Native Hawaiian groups who also care for the mountain. Every group using Maunakea needs to come together and take responsibility because you cannot act as an individual entity when it comes to caring for a sacred place or any place. Everyone is affected by what one group does.

7.6 P.F. “Ski” Kwiatkowski

CSH contacted Mr. P.F. Kwiatkowski regarding the proposed Project and he replied via email on March 6, 2009. Mr. Kwiatkowski is part Polish, Portuguese, and Hawaiian. An expert on Hawaiian petroglyphs and Hawaiian tattoos, he has written two books, *Na Ki‘i Pōhaku: A Hawaiian Petroglyph Primer* and *The Hawaiian Tattoo*. Mr. Kwiatkowski was raised in the Kapahulu area of O‘ahu. He has lived in Hawai‘i Island for 30 years, and by his own estimate, he has walked and hiked about 80 percent of the island. Mr. Kwiatkowski is a supporter of astronomy, but he questions the way that Maunakea has been “managed” by the University of Hawai‘i and the State of Hawai‘i, as well as the proliferation of telescopes through the years.

I will let you know a few things that have always been on my mind regarding Mauna Kea. Firstly, it is a very beautiful and inspiring mountain, not only to the Native Hawaiians of these islands, but to all who view her for the first time. To the Hawaiian, it is a place of awe, silence and reverence. A place filled with story

and myth and one of the greatest resources of quality adze material in the entire Polynesian triangle.

Now let's back up a few decades. When the State of Hawai'i (read: the people who run the government, not the people that actually comprise the State) decided that they would allow telescopes on the top of Mauna Kea, there was no cohesive Hawaiian group or organization to voice a Hawaiian opinion on whether or not there should be anything on the mountain but what nature put there. So, with no opposition, telescopes miraculously appeared at the summit.

When I first saw this, it was a fairly sad sight to see, as the unblemished view of Mauna Kea had suddenly sprouted a pimple, and then another and another and another. My lone voice would not have been sufficient to stop this from happening and many other Hawaiians and non-Hawaiians alike felt the same way. Opposing government was unpatriotic and likened to being a hippie protester.

Fast forward to just a few years ago....The University of Hawai'i, the entity that "manages" the mountain, now has the authority to do pretty much whatever it wants on the mountain, not taking into account that much of the land it "manages" is actually ceded lands from the Kingdom of Hawai'i. Whether or not that makes a difference is a moot point, as the will of the people is supposed to be manifested through the State Government, when, in actual fact, it is not.

I am an avid fan of astronomy, have been from the time I got my first plastic telescope at age 9 and saw the craters of the moon for the first time. I have a small 8-inch telescope that allows me to explore the universe from my front yard in the Kohala Mountains. I am not against astronomy or the wonderful results it produces in research. I cannot change the past; the telescopes were put there without any opposition. It is a sense, thought, that the State of Hawai'i and the University of Hawai'i will see additional telescopes up there, come hell or high water and "public" opinion be damned.

I do not care to see more of Mauna Kea turned over to PRIVATE use, and I use the word PRIVATE because no one of us is allowed into any of the facilities there unless there is an "open house" where they give people the dog-and-pony show to keep resentment of the existing facilities to a minimum, and even then, not many people take advantage of this once-a-year event. In the past, everyone was allowed access to the recreational winter aspect of Mauna Kea and to a degree that continues, although in a more whimsical way. I say whimsical as sometimes, for no apparent reason, there is a Mauna Kea ranger at the closed gate at Hale Pōhaku telling people that they cannot go up to enjoy the snow as it is not safe. And then, in the very next minute, the ranger allows a small caravan of vehicles (with no special equipment of any kind) to proceed through the gate and up to the summit. When questioned, the ranger responded that they were "scientists" as if to imply that they had some mystical power over the elements that we mere mortals did not have. That is like rubbing it in, that the University of Hawai'i can

pick and choose who enters and that we can do nothing about it. Now it comes down to environmental and cultural impact statements and studies, and guess who is going to make those assessments? The fox that guards the henhouse, the University itself is going to make its own assessments!! The fix is in, how blatant can anyone entity be?

Anyway, I have ranted long enough, I have made my position known and I have but one post script. A few years ago some well meaning, but uninformed, Hawaiians erected an ahu, altar, at the summit of Pu'u Kahau'ula, the highest point, presently, on Mauna Kea. I researched why they would do such an inappropriate thing and the response I got was "To show the Haole that we were here first." That particular response showed me that they didn't realize they were doing the very thing they are against. Pu'u Kahau'ula is a sacred spot on a revered mountain. Didn't they realize that if the Hawaiians of long ago wanted to put something up there they would have? That site was left alone to leave it pure and unblemished, untouched by man, and then these uninformed people try to make a statement doing the very thing they are against, disturbing the sacredness of that high place. Auwe !!

7.7 Kealoha Pisciotta

Ms. Kealoha Pisciotta was born on the island of O'ahu. Her *mo'okū'auhau* or genealogical line comes from the island of Kaua'i. Her ancestral lineage is of the Oniha 'Ohana originally, but they were *lawe hānai* (traditional adoption practice) to the families of Ka'anape'a and Kamahukilani, Kaua'i lines. Ms. Pisciotta is the founder of the Native Hawaiian organization Anaina Hou, a group of Native Hawaiians and supporters who advocate for the protection of Maunakea. On March 14, 2009, Ms. Pisciotta provided written testimony for the proposed TMT Observatory Project on Maunakea. Her written testimony is included in Appendix C CSH conducted an interview with Mr. Pihana on January 19, 2009:

CSH: Let me start by asking you to share your past history and association with Maunakea?

KP: I worked for the British government for 12 years and I lived and worked on Maunakea for 12 years. My job title was telescope systems specialists, which is a name for the people who run the instrumentation and the observing for the visiting astronomers. The telescope I specifically worked for was James Clark Maxwell Sub millimeter Radio Telescope. It is jointly owned by the British Dutch and Canadian government, actually British Canadian, Dutch in that order and ran by the Royal Observatory of Edenborough. I also work for a little while for the Cal-Tech Sub-millimeter Observatory as a Technician. I have familiar genealogical ties to the mountain and some of the *iwi* [bones, remains] there, actually ancient and modern. I feel it is important to mention modern because that is still in ongoing cultural practice continuing today. Famous people of today have their *'ohana* there.

CSH: Okay, what about burials up there? How will they be impacted?

KP: Burials are in the *pu‘u* and along important astronomical alignments. Burials are hard to talk about, on the one hand you need to speak to it to have them protected on the other hand culturally the different levels of *kapu* on speaking to it. One of our greatest concerns is that there has been no actual burial treatment plan. The one plan that the Hawai‘i Island burial council basically said is the best treatment is no development, because the burials include not only important national figures, but also important spiritual figures. So, the question is what is the burial treatment for Līlīnoe? The problem has been is that there have been reports. Mr. Patrick McCoy and Holly McEldowney have done extensive work on the burials, but they never got to finish their work. Also Pu‘u Makanaka, of course it is listed only as a burial, but really it is a burial complex, hence the name Makanaka. The problem is to not list it as one when it has many. The *kūpuna* have testified extensively in the past as eyewitness that on Pu‘u Makanaka that there is so many *iwi* that you can see them through the cinder. So they immediately know better not go over there.

So destruction of the cinder cones and the landscape itself is the danger to *iwi*. They, University of Hawai‘i, also mistakenly put a whole bunch of burial information on the web, which they realized was bad after the burial council complained about it, so I think one of the big concerns is the generalized disrespect for that fact that we have burial complexes that Maunakea is a burial ground and no one seems concerned about that. A good example on how it still continued is when the families brought the personal artifacts of their sons who were killed in the Iraq war. One of the father’s is Hawaiian. Kupuna Clarence Ching helped to facilitate the bringing of them up there. Through protocol he placed all of these personal artifacts inside the *lele* on the summit. And now there was *ahu* that formed underneath it from years of people placing the *pōhaku*, and the burial artifacts were placed inside of it so their personal items were put inside. When that was desecrated the second time someone had used a hatchet to hack down the legs of the *lele* and then just threw all of those *pōhaku* around and these boys artifacts came out and tourist found them. The state is supposed to protect these things.

At my own *ahu* site, it is hard for me to say is my own, it is where I go from time ago. Many people go there. The reason why I tell them to go there is because it is a place where they can go and [not] disturb historic sites. My Auntie Kamakahukilani, she asked to be placed in certain places and that was one of them. When the University personnel (tour guides and rangers) destroyed it, they destroyed her remains (ashes). That is more than desecration. It never ends. And you know how? We just went up to collect medicine in the big snow for water and it was gone again. That one was put up by Paul Neves of the Royal Order of Kamehameha, me and Keomailani. If we do it again we are going to file because initially when it was first taken by the University tour guide, Hugh Grossman in

1998, when it was discovered that he had taken the *‘aumākua* stone of my family. He had taken it to the dump. Then I recovered it and I put it back. I tried to file a claim when he had taken it, but DOCARE [Division of Conservation and Resources Enforcement] actually investigated me instead of him. My family worship sight has been desecrated and destroyed seven times now this year is the eighth time.

CSH: What does the acronym stand for?

KP: Department of Conservation and Natural Resource Enforcement, I think. We have actually a good relationship and we would like to see them supported because they are the actual lawful enforcement arm of the state that is legally able to cite people for violations on historic properties. The DOCARE investigated me because they were told by someone at the University that I should be cited for having my *‘aumākua* stone in the natural area reserve. So I went to find out if they had investigated the desecration and they said, “We found you innocent.” Who actually helped me was Holly McEldowney as the SHPD at that point. She had Mark Smith write a letter on my behalf confirming that I had not destroyed or desecrated or impacted any historic sites within that area and kind of to affirm that I have a right to continue my practice. Nobody got cited in the end, but the University did force Mr. Hugh Grossman to apologize and the head of the Institute for Art wrote a letter saying, “It would never happen again.” The problem is it has happened seven times. The fifth time the stone that was given to me to replace my *‘aumākua* stone which was originally taken; I don’t know where the original or the second *pōhaku* is they have never been found. Auntie Leina‘ala Apiki McCord gave me one of her family stone from her family of Auntie ‘Iolani Luahine. She said, “You bring this until you can find another one from your family.” So that was placed there and it is no longer there too. Both stones have been taken.

My controversy with that is two-fold. As a matter of fact, when I called the police to report it, I said, “This is probably going to sound really strange, but there is a man who has taken my family *pōhaku* and it is in his car and I need you to help to get it back.” Because he was outright caught with it in his car, the brother, a Hawaiian police officer, said, “What! They take your *pōhaku*?” He then said, “Sister, you go and ask him first, politely, for it to be returned to you and if he does not return it, you call us back and we will come and assist you.” I had to explain to him it is my *pōhaku*, but it is dedicated. I gave it as a gift because I am giving myself as a gift as part of my contribution to help *mālama* the mountain. So, yes it is of my family, but yes it is that I needed a place to go every day when I went to work. That is why it is there and nobody touched it for 12 years. Holly McEldowney also wrote on this—that our practice is a continuance of a traditional and cultural practice. I gave my *ho‘okupu* because I work there and to ask permission.

The other thing is, when I spoke to the University about it they said, "Well it is modern and it doesn't belong on the mountain." I said, "Well, what is modern, how old is the *pōhaku*?" So I said, "Well, how are you determining what is modern and what is ancient? Who do you have that is qualified to determine that? Are you going to measure the age of the stone, well that won't help you? Are you going to measure the size, does the size matter here? What metric do you use to determine what is old and what is new?" Our *pōhaku* is old. How am I to know that they are not touching the ancient sites, because you believe they are modern? Who? The University is not the judges and jury of our practices. Neither are they politically appointed. They need to follow the law which is to protect our rights to continue our practice. It is not the UH's right to tell us what to do on our own *'āina* [land]. Sometimes the archaeologist would call me and ask me to look at a site because I have seen it [a] long time. So, they think that something was different with it and they would ask me, "Do you think was this a half circle or a complete circle site, Kealoha?" I would say, "I will go look." The other thing too is that sometimes there is clear evidence that a *pōhaku* is missing because of the rain shadow. Like if you look at many of the adz flakes, many of them have that shadow. So you can tell it is like a finger print left. I want to know who at made the University the authority to determine who is *pono* [proper, correct, moral] and who is not, who has a right to do something and who doesn't. It is not that I don't recognize we want to be careful; we don't want to interfere with the ancient sites in which we need to preserve them in their natural form.

CSH: What about the possibility of sites within the Project area?

KP: Yes, let us look. Oh, sure, that is part of the problem.

CSH: Are these sites, still cared after by our Native Hawaiian organizations, like yours?

KP: Yes, and many others too. Like Uncle Clarence Ching, individuals as well and families linked to Poli'ahu's Family.

CSH: Of the many issues on Maunakea, what about the past and present land use on Maunakea and that relationship to what is proposed for this Project?

KP: The State Land Division which is now the DLNR, it was called something different in 1968, but when they issued a lease for what is now known as the Science Reserve. I think it is everything above eleven thousand feet except for the pie shape of the Natural Area Reserve. The UH has no jurisdiction over the Natural Area Reserve. I don't know why there is no Cultural Reserve only a Science Reserve, because the mountains significance even way back then it is eligible. It is a national landmark the lake, then it is eligible for National Historic Register as a historic district, but all of those things were because of the geology, the archaeology, the cultural traditional properties and the fact that it is watershed a principal watershed for Hawai'i Island. So, we have this big area designated

conservation, the natural area reserve is that big pie shape. The University was given the lease to build an observatory and so that what was the original lease was for.

CSH: Was that 1968?

KP: Yes, 1968.

CSH: For one observatory?

KP: Yes, and support structure, that is when they put in a diesel generator and stuff like that.

CSH: What observatory was that?

KP: I think it was the Air Force. That one is now down replaced by the Gemini Telescope which is substantially bigger than the little Air Force one. This [is a] breach of the lease, by the way.

CSH: So they have taken down and used those areas for new ones?

KP: Yes, the difference though the Air Force one is very small. The Air Force shared it with UH. So, they did take it down and then they erected the giant Gemini. So the footprint is still bigger. That is one of our problems is that the size keeps getting bigger. You can conceivably see that happening depending on the project.

After being given the lease to build this observatory people were already upset because they really didn't want to see the mountain changed. Many people, they are always saying, "Well, Hawaiians weren't objecting then." Well, Hawaiians didn't actually identify themselves as Hawaiian at then we couldn't speak our own language then, but the hunters were Hawaiian, along with other ethnicities. They were also environmental people and groups who supported like Mae Mall; she was a major player in that; fearful of the 'ua'o bird [an endangered seabird, *Pterodroma phaeopygia*, considered to by some as 'aumakua]—she was a bird person. The other species those are unique, so unique that they are not found in anywhere else on the planet. In the 70s, they [built] several, let me say a number of telescopes, I think it is three or five, without permits which just aggravated the initial public concern. So, public outrage broke out and in the 70s people think we are the only ones who were upset, no. In the 70s they marched on the capitol and they carried signs that said, "Maunakea belongs to the people" principally because they were concerned that the astronomy community was taking over the mountain. Was not their concern real? So, what happened was this fact was brought forth that UH had built without permits illegally. The University had just been saying, "Yes, we can do what you want." So, the State had to intervene and

it was actually Governor Ariyoshi at that time who ordered the BLNR to do a plan that would quell public concerns and protect Maunakea and its resources.

CSH: BLNR or DLNR

KP: Well, I think it was DLNR it became a board a little bit later (BLNR). It is the Land and Natural Resource Division. He ordered them because they are in charge of the conservation district and only those to do a plan that would help accommodate the multiple uses on the mountain. In that plan they established a legal limit on the number of telescopes that are allowed to be on Maunakea. That limit was thirteen including those six initial telescopes that had already been put up, so they didn't ask them to tear them down. They said, "You can't do that anymore." And now there is a limit. Now what is an agreeable reasonable number that the science community can live with and the people can live with? The people obviously didn't want to live with anymore. The science community said, "Okay, we will agree to 13." They actually integrated the science at the time, the biological science, and the cultural ethnographic studies. In the 1983-85 Plan they said, "Look, the caring capacity is thirteen," because that is a huge resource. Now the Smithsonian can build up to twenty four? So we are way beyond thirteen which means the UH continues to violate their lease. Not only was it in number, but it was a limited size and height. It is mostly the Institute for Astronomy; they are the arm of the University that is doing it. So, we now are beyond thirteen, not only is the number, but they size and height, only 125 feet max, height and diameter. That 13 limit is actually eleven major telescopes and two minor. So they included the Air Force and the NASA. So they removed the Air Force and put in the Gemini, which is significantly bigger. They put in Array, the Smithsonian Array [reference to the Submillimeter Array, funded by the Smithsonian Institution and the Academia Sinica] and that has as many as 24 pads covering I think an area of ½ mile in diameter. So that footprint is huge. They have all underground cable with no studies. They have this giant telescope mover that lifts the telescopes up off those pads and moves them around. It is a huge complex, a huge infrastructure going on there. So, then when NASA wanted to build the 4 to 6 more outriggers in a five acre area where the Keck I and Keck II are which would really increase that density it was too much. So the latest set of people came forward and argued, Native Hawaiians, Royal Order of Kamehameha, our group, Hank Fergerstrom, Ka Lāhui and many organizations came forward, KAHEA and Sierra Club, Life of the land. They said, "Wait a minute..." because they remember the legal limit was set to 13. There is no legal justification for building more. Here is the thing the University is not accepting as a reality for them, they are claiming, "Well, that plan only went to the year 2000. So that limit is over. We can exceed the limit now." And that is why they did that second plan, the 2000 plan we all had to testify for over and over again. We missed an important feature back then and that feature was the University is not the one who can do the plan. So the 2000 University Plan is not a legal document and that has been confirmed now in the courts. The Court said, "The UH 2000 MP has not

been approved by BLNR and is not a legal plan." The Court said, "That is not a document that is legal." So we must fall back on the last legal plan. The last legal plan said, "13 only." It is still legal because it just said, "At least the 2000." It didn't say only to 2000. It is open, because the deal is what they were trying to say was, "In 2000 we should probably reassess the condition of the environment to see how much impact we can sustain?" All the data we have today came from 1982. Hydrology, bug studies, cultural studies, there is a couple new ones for the *wēkiu* [summit, peak] because they made it worse for the University, 99.7 percent reduction in population.

When the University was doing this next plan, we looked at and realized it wasn't a Conservation Plan it was a Development Plan because they just want to build more. It is not a plan for conservation it is a plan for development. And we knew that, but we did submit to them, "If you must do this plan, you need to implement this structure, because it is not just that a plan needs to be done, but who does it?" We continuously told them, "You are not the agency, DLNR are the ones who controls conservation." The way we tried to explain it is to say, "If I am a police officer, then I am empowered by the State to be armed and use deadly force." I cannot take that gun and give to a civilian and say, "Shoot that criminal." Only I am empowered by the State to shoot the criminal as Police Officer. So we kept saying, "What is happening here is you are shifting the legal authority to the University claiming that you can do it. You may not do it because you are not BLNR. BLNR is the only ones that can do it." So eventually we had to challenge that in court. The problem with the Maunakea Management Board is that most were appointed by Senator Inouye and now they are just appointed by the University itself. That is not okay they are all political appointed that serve the community and not the people. That is one problem, the second problem is that they are not a legal body, well they are not a body who can tell people what to do that is for sure, because they were created in that 2000 Plan. It is not a plan contemplated by the rules of DLNR, so he threw it out. He also said, "The 1995 Plan that was approved by BLNR did not mention anymore development." So there is a limit.

CSH: Can we talk about your knowledge of cultural sites within the Project area and the mountain?

KP: Yes. [Looking at maps] Trails...there are *ahu* all over the mountain.

CSH: How has your past work helped you in your efforts to both understand the need of astronomy and the need to keep the mountain sacred?

KP: I think it is unfortunate and I have been coming out a little bit more on this now because I am tired of it. I feel that the astronomers are there to do astronomy and we don't object to astronomy. The astronomers are not there to hurt anybody; they are not there to offend the host culture, maybe there are a few who don't care, but most are good. They are not there to hurt the environment. Most

astronomers want to be environmentally conscious. The problem is and this is what I am telling the astronomy community is, if you continue to listen to the University lawyers and only the University's side of the argument you are going to get in trouble, because you are going to come out and say things that already have been decided in a court of law. The difference between the political arguments and legal arguments is that in court you have to prove what you claim. In politics people say all kinds of things but they don't have to provide actual evidence, the University making arguments that they lost in court. That means that they cannot introduce evidence to contravene our evidence. Our evidence is 10 thousand documents of hazardous materials used on the mountain and no record of UH removing them. Our evidence is that hazardous waste can go directly in the ground because they have no proper waste containment. If the community's water becomes toxic, where do we go? On the other hand they can fix that. It is completely fixable problem, but the University continues to manipulate everyone involved. So we have come out to say, "Look, we are not going to let you keep saying that Hawaiians or the environmentalists are against astronomy." Because we have stated publicly and in written form that astronomy is a noble endeavor that should be support, however, not at the expense of everything else and good science should include environmental science, the geology, hydrology, the ethnographic studies, archaeology: all of it is science and our cultural tradition is science.

The lake is a significant site because it is like a *wai ea* [*Lit.*, aerated water, water used for purification], which was significant for marking time, seasons, even a mirror to the stars above. Many of the *ahu* around the lake are markers for directionals. So there are directionals not only of the primary four pillars, north, south, east, and west, but also the solstice, so you have the 8, the *he'e* [octopus] *nanana* [spider], the *pe'a* [bat].

The Ahu-a-Umi is in between the three great *pu'u*. I have spoken with Auntie Kawena Rubillite Johnson because she has done significant work on the trigonometry of our *heiau*. I grew up with her youngest daughter Līlinoe and so I have known her for years. Years ago she asked me to look for Ahu-a-Umi because I called her to say, "Auntie...." So I said, "Auntie I am working on Maunakea." The first thing she asked me if I could see Ahu-a-Umi. I said, "No....I am in the telescope." So she said, "Go outside and see if you can see it." And she directed me to look for it and what it looked like and everything. So I had never gotten to go until Uncle Clarence [Ching] made a *huaka'i* [trip, voyage] and we went then. It took us two days to get in there. Amazing! So I called Auntie Kawena and I said, "What would you like me to do?" She said, "Go measure the alignments from Ahu- a-Umi to Maunakea. Especially look for the one relating to Venus." So I said, "Okay." Because I had measured the alignments from Maunakea and they just went to Ahu-a-Umi. So we have the alignments both ways on Maunakea. The *kupuna* told me to find the solstice equinox alignment because those are kind of critical for things. So I struggled with that. I couldn't

make the initial alignments because I didn't know where they were standing. I struggled and struggled. The story I was being told was you need to know them because the alignments established on Maunakea become the baseline alignments at the other places and you'll see them if you can establish that. I had a dream and the dream kind of shook me up because it was an *iwi kupuna*. I was looking at the *kupuna*(s) back and he was pointing in this direction and he had this beautiful *hulu* [feather] cape on the bottom of it had a big black iridescent feather star. Where he was pointing I had no idea what that was meant for. Is there something going on I started to look around. I asked Auntie Kawena and went to see her about this dream. I had two significant dreams in a row. One the *iwi* grabbed my ankle when I was standing on a *pu'u* and it was a *pu'u* that Subaru and that is Pu'u Koholā the back of the *koholā* [whale] which is the alignment with Pu'u Koholā that was leveled in order accommodate Subaru. Auntie asked me, "So, you have this vision, where were you in the dream? Where you in the dream? Where outside of the dream looking in? And where was the *kupuna* in relation to you?" I said, "I was standing behind and he was pointing in this direction." And then I told her about the star pattern and she said, "How many points did the star have?" I said, "I cannot remember, Auntie." So she went from there and then she said, "Maybe you need to ask for clarification." So, I forgot about it for awhile about a month later it came. I saw it all clear. I called her up and said, "There is eight points. He's pointing north because he is standing on a ridge and I can tell is because I can feel the wind." I know the direction. She said, "That is very significant." Then she gave me that the number 8 is a magical number to the Hawaiian. So, I took the directional and I made the alignments based upon where the *kupuna* in my dream was standing, where I was. Then I drew the lines just for our summit area first. Then I said, "Okay, if this is correct, if this is establishing where I am supposed to look from." If this is correct then exactly on the solstice of December 21/22 I should see the sunlight and the crack of dawn hit this *pu'u*. So that is how I made my vision become scientific. And if that was true then these were correct because you cannot mess up after you get the first data point. So I waited that morning for sunrise it happened. Then I drew all eight lines out all the way to Poli'ahu Heiau on Kaua'i. So that is a view plane. These solstices and equinoxes are of one view plane that must be protected.

I went to Kaua'i to test my theory too. If in fact I was at Poli'ahu Heiau and I measured the alignments and they are completely aligned to the Maunakea alignments. When the navigators for our recent canoes came up to the mountain, some wanted to go to the lake, some wanted to go up to the summit to the *lele*, because the *lele* is aligned. We gave them snow water to take with them, but they needed to go to the lake to see the sky reflected in the lake. They are codifying the alignments in their mind's eye. That is how the *kūpuna* could see the pathway, see in the lake hold it in their minds and follow it on the sea. Some people say, "The navigation is all about the ocean." But it is really all about the sky. That is where the difficulty is on finding the *mo'olelo* on Maunakea. It isn't just under Maunakea it is under all the navigational lore. I remember Kapa Maly talking

with me years ago, and I kept saying, "You know what you see on the ground Kepa is only the reflection of the heavens? This is our connection. When you are looking you have to look for those things over head." Mrs. Johnson told me that too.

Our *kūpuna* could tell and some say that this is a modern myth that modern science taught us the idea of the procession the 26,000 year cycle. It is not true, the ancient Magi, the Egyptian Priest and the navigator chiefs of Polynesian all knew those things, and they made the alignments in accordance with that. Twenty six thousand years, we are basically being able to plot the motion of the heavens over a 26,000 year cycle. So that means that motion is really small, so small that in one humans life it would take them 70 years or so to detect it. They set up the *pōhaku* and they are watching the same star and that same star is moving slowly over time and they caught that the nautical sign. Then they knew that is found they found their seasons and that is how they led their lives. Again I called Aunt, I said, "We found this chant and this chant is saying that Canopus and Vega are the pole stars." But that was 12 thousand years ago. So I am saying, "How can that be, 12, 000 years ago we aren't recorded as being here." She said, "There is any easy answer, perhaps it is proto-Polynesia." That is a really exact measurement because we know when Canopus and Vega were there. Because of that movement of the 26,000 and where it comes in is in our *Kumulipo* because the number of *wā* [epoch, era, period of time] are broken down into the epoch periods. So, it is not just like everything just happened in days, it was here is and as we progressed in time. So, that our cultural things are antiquated and not science. [That] is not acceptable. Because our ancient knowledge is repeatable and it is measurable and that is what is required in science. Nainoa Thompson, before Papa Mau, they demonstrated that our ancient knowledge has relevance today, that by using the same ancient knowledge we can still go and find all of Polynesia. We populated 10 million square miles of islands, I mean if you are off by only a degree you are off by hundreds of miles on the earth. It was an acute observation. So our ancient *kahuna* had the same skills. I am not saying that we are better than the scientist today, I am saying give credit where it is due, and that we were able to circumnavigate the globe millennia before western science. So science would do well to recognize our star knowledge as science and stop calling it myth.

CSH: What are the cultural practices you have witnessed and participated in on Maunakea?

KP: Burials, contemporary and historic. Contemporary burials though I am not going to say that it is only limited to, but it tends to be more of the ashes, not all because people are still fighting the health department on the Hawaiian burial of bone. I have personally participated in a number of them. Other families have called me to help them and I have. This has involved their personal affects and belongings or things people would otherwise bury with their *iwi*. It is still done

today. Sometimes people bury it or sometimes they leave it at the *ahu* or *lele*. In doing that they are placing it in the hands of the ancestors and for the benefit of those who have past and now to come.

CSH: You were talking about collection or gathering of ice, water, and snow?

KP: Yes, it is an old practice. There are reports of the *ali'i*(s) travels to the mountain and bringing the ice down in big blocks on horseback, even contemporary times. They would use it for medicinal purposes, temple ceremonies, and other kind of cultural protocol. The water that is collected from Maunakea is water that is used for bringing life back or taking it. I only work on the side of bringing back life. We were blocked before at one point from gathering. For example sometimes we want to collect it while snow is falling and we were blocked, the road was blocked. Not because it was a safety hazard, I mean after working twelve years on the mountain I can tell the difference if it is a burial stone or not. Anyways the practice wouldn't live very long if all the practitioners died doing it. We were collecting it for Uncle Genesis for example, he had the lung cancer and then he drank all the water and it went into remission. For five years. So we still go and collect it for many people. A few years ago, Papa Auwai said, to his *haumāna* [students] who communicated it to me, because I often get for them and Auntie Margaret, they don't want to use the lake water anymore. So, that is what has caused us a lot of concern, we want to know is the lake clean? Is anything going in there? So why don't the authorities want to know if the sewage is hazardous material has contaminated the water or not?

Ceremony at the lake...there is a lot of that. All different kinds, Queen Emma went there to *hi'u wai* [bathe for water purification] before her election and to demonstrate her worthiness and *mo'okū'auhau* or genealogy. We found her *ahu* site. We have the GPS of it because we knew where it was. But they got the actual meets and bounds from *mo'olelo* that was found on the east coast and then Kepa brought it back and then him and Uncle Clarence guys did a *huaka'i*. There [are] *pūnā wai* [springs] that you can collect from. There is the lake *pu'u*, Waiau, but there is another one, *pōhaku* I think. Uncle Clay is the one who knew all the names of all the *pu'u* from *paniolo* days. *Pōhaku* and *Māhoe*...they collect water. Perhaps it is because of the cinder cone it has ice plug. The other things is the fossil ice and the ice from the last ice age which still exist on the mountain maybe just 4 feet if you go below 2 to 4 feet you can hit that in certain spots. So, there is the collection of fossil snow and ice. The underground ice is important for some *lā'au* [reference to *lā'au lapa'au*, or medical practitioners] people. There is actually water from Maunakea that is collected in the ocean.

CSH: What about the summer and winter solstices?

KP: Well you have the winter and summer solstice and then you have the equinoxes. They are conducted by the Royal Order of Kamehameha specifically can handle the temple kind. I know other people who go up at different times for

doing different kind of ceremony. Then there is the navigational uses of lakes and other *pu'u*, because of the *pu'u* being markers. That is important because the landscape is the environment of our belief, so changes to the landscape alter the belief, they can take away or they can enhance it. Obviously placing the *lele*, Kaliko Kanaele was so clear about it. We need to re-center the focus. After I had done the alignments, we re-done some of those and then watched to verify that what I had seen was true. Once I re-did the alignments for the ceremony that I realized the *kua*, the backbone has been leveled. So if that would be the central place directly looking north where you would start it, but we cannot do it because there is the University telescope so we did it over here. So it has been changed. There is perfect demonstration of this. It is a beautiful picture taken by Richard Wainscot; it is a picture of facing the Southern Cross, which is significant for navigation because it is used for keeping time. The Southern Cross is used for keeping time at night on the sea. You can perfectly keep time of the 24 hour clock just using the southern cross at night time, so the rising and the setting of the southern cross. Before obviously you can see the view plain was clear, but when they built the Gemini they took that view plain out and that view plain, so when you are standing in the traditional setting you can no longer see the Southern Cross. The picture we have has the glow of the volcano on one side, and Gemini in the forefront, but Gemini did not put the whole dome on, so the southern cross is right in the middle of dome structure, so now with the dome on it the view of the Southern Cross is obstructed. Then you have the other type of ceremony which is for deity.

CSH: Who are the gods associated with Maunakea?

KP: There all the male pantheon gods, then the eight females. The story throughout Polynesia is the story of the god Kāne. For example in Aotearoa they speak about him bringing the three baskets of knowledge down. There are our own stories where they talk about Kāne not wanting to do it, told to me by my Auntie Kamaka. He was told that you have now go up to Maunakea and take care of your responsibility after the floods mentioned in the *Kumulipo*. He did not want to go, but the *kupuna* who used to go before could not go anymore. So the moral of the story is that Kāne had to go because of the *kupuna* told him too. It was his love for the *kupuna* is what made him willing to break through the limits of not wanting to do something or feeling that is not my *kuleana*. The main stories of Kāne are about the creation and also of him asking Poli'ahu to care for the *kupua* children. The other story identifies Mo'oinanea [legendary serpent goddess] as the one to do it, those stories are actually in the book called Moku'ula on Maui. Maunakea is featured in this book through the Mo'oinanea story. Because Mo'oinanea has three principle places that she is always at; one is Pu'uloa, Kaimanahila, and the lake. The other stories of Kāne and Kanaloa, they say Maunakea is where they meet. That is where the fresh water and salt water meet, that is also where the *pō* [darkness] meets. The deepest *pō* is the *pō* of the sea and the *pō* of the heavens, right there is the lake.

Papa and Wākea, Wākea as Orion is super significant for navigation because Orion's belt rises due east and sets due west, so you must know Orion and of course Orion comes winter and there was a time that I really got it because some say the sword is the *'ule* [penis], so at certain angles you can see right over the summit how they are touching is loving embrace. Papa is clear when there is no snow and then is Poli'ahu when there is snow. And those alignments are significant and major. There are different levels of each story as there are the levels of heavens. Papa and Wākea come to meet here in the *Kumulipo*. Bringing it all through their names will tell it all.

There is Līlīnoe, the sister of Poli'ahu, her *iwi* are recorded to be there. Fornander also have some of those Kāne stories. I read this one that describes Poli'ahu being able to see Poli'ahu from Paliuli. Is it a state of mind that they are referring to or it is a place? and then one day I walked out and the snow had been perfect and there was a cloud bank, a typical cloud bank that always is on the mountain, and right there you could see her whole body, her face, her hair, her shoulder, and her arm, her *nene* [nipples of a woman's breast] and then of course the telescopes are right there by her *'ōpū* [belly, stomach] and her *nene* and then you go down and then two *pu'u* on the mountain that if you look from Hilo side, like looking from Moku'ula is a good way to see, and then you can see her two feet. Then what happens is that she floats like a cloud of the tree line. So when I saw that it is a state of mind too because you have to be open to it. Because when I went out I was thinking about her and then all of a sudden I saw here, and once I saw, I could not see her anymore, so her *kino lau* [different forms taken by a supernatural body] is codified and to be seen especially during solstice, her *kino lau* manifested herself so that you can see her in the snow time. The legends tell of her adorning her *kīhei* [shawl, cape], or mantle. Yes, and the telescope levels the *pu'u*, her image and *kino lau* on the top of Maunakea.

Let me just say something about the later stories of Pele and her sister Poli'ahu. You hear it usually framed in a conflicting way, but this is what I think. That there were probably some battles between the *malihini akua* [foreign or non-native god, often referred to as Pele who traveled to Hawai'i from Kahiki] and the older one, possible water and fire, *mo'o*, fire, but in truth I think it is also a story that is telling us that you have to have both, because without them we cannot have those elements or the *wai*, which is Kāne *ka wai ola* [the life giving waters of Kāne]. The fires and ice make the water. In one of the things we submitted to the court also as to demonstrate the traditional use and the cultural *mo'olelo* is as our *kūpuna* told. We had a satellite photograph from NASA in infrared and you can see Maunakea with no snow now is blue in color and Maunaloa is really a brilliant red. What it is showing because it is an infrared is that Maunaloa is hot even underground it can penetrate and you can see the heat coming through Maunaloa, but Maunakea doesn't have any heat. It is all brilliant blue and what that is showing is the fossil ice underneath. That fossil ice is perpetually re-circulated with the freeze and frost cycle of the mist, which is the deity Līlīnoe.

Everyone always talks about exactly watching the lunar arise and she shows herself in the evening and morning, those are the primary times to see her. She comes right over it looks like a waterfall made of mist because the changes in the temperature cause the mist to drop really fast, and I have watched her come around the telescopes of the summit. Where I worked was in the valley so I could watch it drop down like a big waterfall of mist coming down. Then Namakaokaha'i comes on Pele's journey's here. Then she has to advocate for her sister who gotten herself in trouble and was frozen. I think it tells us the story that even the *malihini akua* have to abide by the *kānāwai* or 'law' of every 'āina that may precede them. Every 'āina has *kānāwai*. The significance of Maunakea is because the higher you go the farther back you go to the point of creation to ascend into. Below is the land root and heaven above, so it is principle spot that touches the two that brings the *lewa* [levels of heaven explained in next sentence] together. The *lewa* are the levels of the heavens. The Papa and Wākea come together there, they are significant in relationship to the mountain, for here is the *mo'olelo* of their relationship to or navigation. Our navigation is hinged upon our ability to understand what we now in modern terms as celestial equator. All that is means that our equator is expanded out so that we have an understanding of a dome of the sky.

The story of the connection between Papa and Wākea through the *aka* [shadow] that holds them together (the *piko*), when they separated when the gods and Kāne lifted up the pillars, the four directions of the heavens, they propped them up to give them space to live and flourish and for man to come into being. That is the *wao akua* [realm of the gods] and they were given the *wao kanaka* [realm of men]. When they separated they were connected by the by the *aka*, which is the *piko* and when they come together we see that. That also was the demonstration on how we drew our celestial equator, because once you have one direction if it is north, south or east or west, we have the southern cross in the south, so we got that one and then we Hokupa'a [North Star or immovable star] in the north we need an east and west, and then that east and west is set by Wākea. Orion transverse east and west you always know where you are especially the three stars in the belt is due east and west and never changes. So it records that as well so Maunakea sits in the middle and that is what the early kilo to see and assess. From that then they can set all along the whole archipelago the base line. Different heiau for different reasons but obviously the ones that have any kind of relationship to the deities related to Maunakea also their alignment.

CSH: What are the resources that may be impacted?

KP: Water. Let us talk about the lake in the context of cultural practices. As home of Mo'oinanea, the Royal Order of Kamehameha feels they have specific duty here is because Mo'oinanea, when you go back into the genealogies. It is pretty much a mystical realm, Mo'oinanea comes through and her first descendant is Kihawahine is the one who gives birth to the entire *mo'o* clans in Hawai'i. Their

birth place being at Waikīkī and Pu'uloa and that is why her *kino lau* is the mother of pearl shell. The story in the 1800s Pu'uloa is raided along with the northwest Hawaiian Islands. Pearl and Hermes reef were pretty much fished out of all of our pearl shells, but about the same time a *mo'olelo* came out where it is said that she was angry because a chief severely punished one of the *kama'āina* for taking the pearl shell when it was *kapu*, but the *kama'āina* was starving so Mo'oinanea became angry and took the pearl shell to Tahiti, so if you see a pearl shell, right at the time that *mo'olelo* is gone, and the pearl shell has gone to Tahiti and what today the pearl shell is flourishing there; which is beautiful so it connects of *kua mo'o* [the back of the *mo'o*] and it is all through Mo'oinanea too. The navigator has her with the pearl shell I on their *wa'a* [canoe]. She is significant because she is also is the caregiver of the *kupua* [demigod or supernatural being] and other *ali'i* children. When the sacred chief Keopuolani is the bearer of the Kiha [supernatural lizard] and because of that Kamehameha had to marry her. Her lover was Wahilani. Kiha was her *kino lau*. I know that there are some people that go up to give ceremony for Mo'oinanea, that is their primary deity. The ones I know that are of the *mo'o* clan.

The resources up there are one of the earliest ones is the *'ua'u*, the dark rump petrel, a bird. It is a high altitude bird that flies hundreds of miles out to sea to feed and then comes back to Maunakea to nest. They are always in the high altitude. One of them was making a noise one time and went out to look for it, but I could not find it, but I could hear it. I was looking and looking that is when I found one of the water caves with the water shooting down. So there is a lot of water flow up there. The *'ua'u* was there before because during the times of the *ali'i* there were a lot of remains, it is interesting question, what does that mean or lead, they must have been eating them. The *'ua'u* were reserved for the *ali'i* to eat and there are many remains found of the *'ua'u*.

The *wēkiu* bug was not the first concern, because there is eleven other species of plants and animals that are also threatened. Some of them are lichen species, grass species, bugs, and tree species. Palila [native honey creeper *Loxioides bailleui*] is another. I have personally seen *'io* [the endemic Hawaiian hawk, *Buteo solitarius*], and *pueo* [Hawaiian owl, *Asio flammeus*] too. Why we saw them that high up is a question. I can understand the *'io*, but not the *pueo*. During the dedication of the Smithsonian there was an *'io* flying higher than normal. The tree line is very important because it is the home of our native bird species and realms, no more mosquitoes.

CSH: Let us close with what are your concerns about the potential impact to traditional cultural practices?

KP: First I think there has been enough built. This telescope is going to be so huge; the size of modern sports stadium, there is just no way won't it impact some kind of resource or traditional cultural practice. We have compromised so much already. Our traditional ways, our customs and beliefs, customs never change

tradition may evolve. We have to adapt, for example we have to put the *lele* over there because we cannot put it on the *kua*, because it is gone and a telescope is in the way. Don’t forget the Kūkahau‘ula riding the sunbeam to court Poli‘ahu every morning—significant telling of the story. Ahu-a-Umi and the alignment with Venus. These are impacted with more construction and destruction of the landscape.

Our traditions are not antiquated, they are ancient, but that does not mean they are useless in the world today and their science. They are not just religious belief they have practical use to us every day. Many of the scientist learn about certain things because of the *mo‘olelo* not because of the science. They would not have learned to look for unless someone communicated to them, “Well, did you look for this? Because this happens.” We did not have any NASA satellite pictures of the two *mauna* but yet we know all the elements about them. We have a continuous base of knowledge that spans millennium and indigenous people is critical to the world because of the fact that it is continuous. It is unbroken knowledge and observation from generations, therefore modern science should actually learn to utilize it in a better way. Modern science is young compared to the ancient science. We don’t want to eliminate native knowledge. The idea that astronomy is somehow superior to this knowledge because what astronomy does is good in which we support that, but it is not fulfilled. You cannot look one way and not the other. The fact is astronomy is flourishing on Maunakea and what is not flourishing is the practices being repeated because of the destruction of the landscape our ceremonies are impacted.

In the end good science is science that learns from the past and protects knowledge as well as collects new knowledge.

Mahalo no.

7.8 Leningrad Elarionoff

CSH interviewed Mr. Leningrad Elarionoff in Waimea, Hawai‘i, on January 31, 2009. Mr. Elarionoff comes from a Hawaiian-Russian background. His father, Gregorio, left Russia with his family in 1910 when he was 10 years old. Mr. Elarionoff’s grandfather had worked for Czar Nicholas II who was later assassinated along with his entire family in 1917. When his grandfather, Evan Elarionoff, realized that his allegiance to the Czar would probably get him sent to Siberia under the new administration, he fled the country with his family.

In San Francisco, the grandfather of Mr. Elarionoff learned that Parker Ranch was searching for employees to farm the lands of Waiki‘i, Hawai‘i. A.W. Carter was the ranch manager at that time and he controlled the ranch with an iron fist. The grandfather settled in Waiki‘i with his son Gregorio and other Russian immigrants. At a young age, Gregorio was put in charge of the Parker Ranch farming operation at Waiki‘i. Eventually, he met and married Ms. Nancy Awaa‘a, a Hawaiian with a little bit of Irish and Chinese who was born in Kawaihae *uka* (uplands).

During this period of time, Parker Ranch maintained a huge population of sheep and regularly harvested the wool. Then with the introduction of synthetics in the 1930s, the market for wool diminished. Gregorio Elarionoff was assigned to reduce the sizable sheep population by getting rid of the sheep by the thousands. The method employed required channeling the sheep into a narrow, single file, with a chute on the edge of a ravine. As the sheep ran through the chute, men on each side would then stab the sheep with long bladed knives. As the knife was withdrawn, the sheep would run down the embankment and eventually die far away from the area without blocking the chute. Gregorio Elarionoff complained to the authorities about this Project in that it was cruel and they were prohibited from recovering some of the meat for home use. He was subsequently fired and relocated his family to Honu'apo (*lit.*, "turtle back"), at the southeast side of Hawai'i, in Ka'u. Gregorio was hired to work on the Honu'apo Landing operating the crane that loaded sugar pallets onto boats called launches which ferried it out to large sugar ships which transported the raw sugar to refineries. Between sugar ships, Gregorio was assigned to the fishing detail that supplied fish for the community. It was during this time that Leningrad was born and raised along with his four brothers on property that they had bought in Kioloka'a, Ka'u.

After attending Pahala High School (now Ka'u High School), Mr. Elarionoff worked for the Hutchinson Sugar Plantation in Ka'u, and the Satellite Tracking Station at South Point before attending college in California. Upon his return to Hawai'i, Mr. Elarionoff joined the Hawaii Police Department and retired as a Police Captain, District Commander in 1994 while residing in Waimea. At retirement, he became an active politician and was elected as a county council member. For the past four years, Mr. Elarionoff has been a Hawai'i Island Burial Council member. He currently is a volunteer on the Waimea Trails and Greenways committee working to establish a trail through the town and he also does volunteer work to maintain and enlarge the Waimea Nature Park. In his spare time, he grows 'ōhi'a trees with a variety of *lehua* (flowers of the 'ōhi'a tree) colors. He asked that this interview be considered his *mana'o* as a private citizen, and not as an official burial council member.

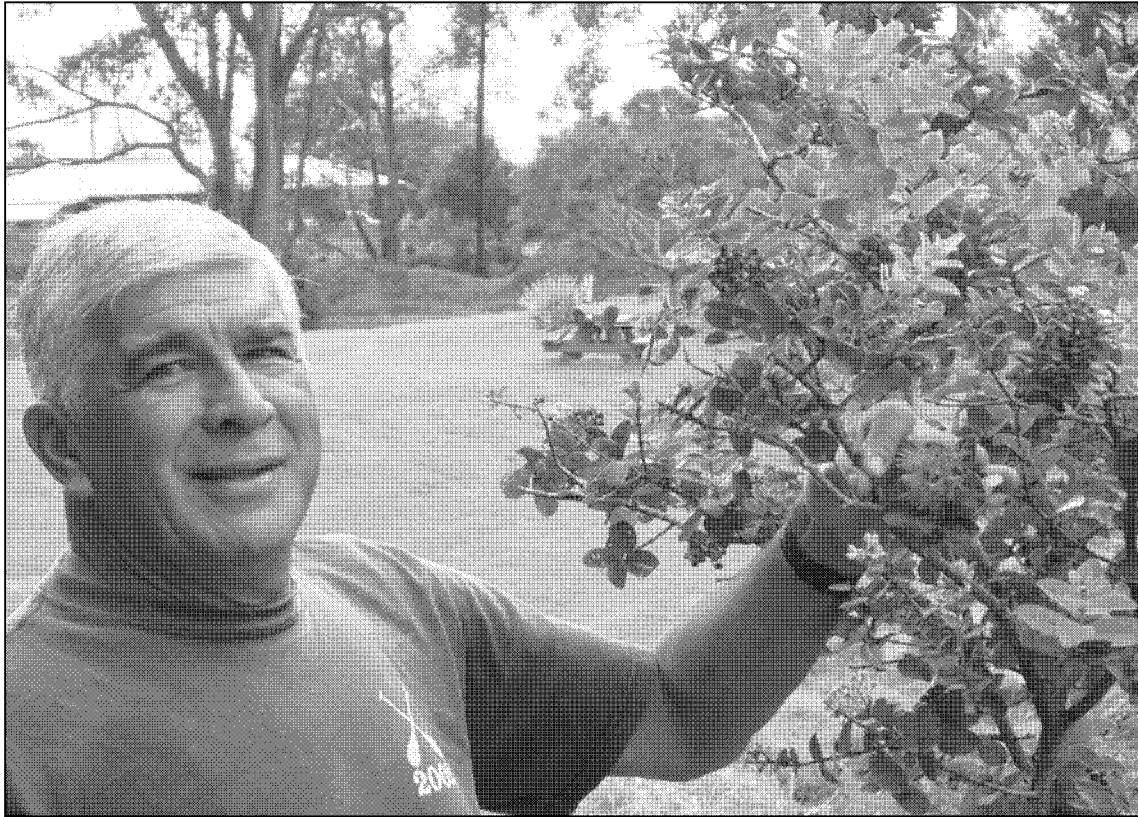


Figure 23. Leningrad Elarionoff shows the *lehua* from one of the ‘ōhi‘a trees he has grown.

While giving CSH a tour around the nature park, Mr. Elarionoff told a *mo‘olelo* about the meaning of the place name “Waikoloa.” Pointing to the dry Waikoloa Stream bed that flows through the town of Waimea, he related that because the stream bed is covered with rocks of every shape and size; when the stream flows, it causes the rocks to tumble. The sound of the tumbling rocks is referred to as “koloa” (Hawaiian duck, *Anas wyvilliana*) in the Hawaiian language, and is similar to the sound a duck makes while filtering underwater in search for food. Mr. Elarionoff points out that the word for water in Hawaiian is “wai,” and when combined with the word describing the sound of the tumbling rocks, the complete word would be “Waikoloa” which has been incorrectly interpreted by some to mean “duck water.”



Figure 24. Salmon-colored *lehua* on an 'ōhi'a tree tended by Mr. Elarionoff in Waimea Nature Park.

When CSH asked what he thinks about the proposed TMT Observatory Project, Mr. Elarionoff began with a story about his mother's family. He noted that his mother's maiden name was Awa'a (*wa'a* means "canoe or boat"). According to Mr. Elarionoff, family history hints that his grandfather on his mother's side was related to skilled canoe travelers who came to Hawai'i from some distant land.

Imagine traveling by canoe on an open ocean with no pre-knowledge of a destination. The only drive being the need to explore and the belief in a land destined to be called home, guided by fate for three thousand miles over uncharted waters with limited supplies of food and water. Their motivation is beyond understanding, their determination unwavering and their success a testimony to what a true explorer is capable of accomplishing. Their explorations were limited by their abilities but today, technology has expanded explorations to beyond our physical world. Given the opportunity, I believe that our ancestors would have explored outer space. Maunakea is a gift preserved for eons for just such a purpose.

The proposed TMT Observatory Project has his support, in part because of the history of Hawaiians as avid explorers of the world around them and beyond. Mr. Elarionoff stated:

For me, Maunakea is the logical place to continue the explorations my ancestors began many years ago. Now that we have basically conquered the world,

everything that is above the water anyway, where else is there to go? My cultural upbringing is full of respect for our ancestors who conquered the earth, understood and managed the resources available to them. They treated the island as a gift, not as a god. I feel that if my mother's side of the family had the opportunity to shoot off into space, they would jump at the chance. They would view Maunakea as a launching pad, a monument preserved for explorations beyond imagination. Until a few years ago, the mountain was uninhabitable, a very harsh environment. That harshness has preserved it for us today. It provides an opportunity so we, like our ancestors, can still explore. I think that our mountain is a fantastic gift. Whether it is God-given, nature-given, or whatever, it is still a gift. So let's make the best use of it. If we need to worship, let us worship the Giver, not the gift.

According to Mr. Elarionoff, the worshipping of the mountain is something that he likens to the Old Testament story where the Israelites were wandering in the desert and venomous snakes bit them. To heal them, God instructed Moses to make a bronze serpent and place it on a pole so whoever looked at it would be healed. As time passed, the bronze snake became the object of worship when in reality; it was just a piece of bronze.

I take issue with the guys who talk about worshipping the mountain and wonder how they are able to associate worshiping of the mountain with the Hawaiian culture. I have never heard any old-timer or family member ever speak about stuff like that. They treated the mountain with great respect and honor and believed that it had *mana* [divine or supernatural power] but not to the point of being worthy of worship. It was always looked upon as something majestic, a Ku Pa'a [immoveable foundation], something that we could depend on. We may not know what is in it, we may not understand why it is there, but it is there.

In my Christian upbringing...I'm thinking of my mother's side...we were taught that God is all powerful, you don't have to go up the mountain top to meet him. He comes down to you, and he meets you in your heart. So when I hear people talking about worshipping the mountain, it's really hard for me to comprehend why...

To me it's going backwards. It's what God has given us to enhance island living, to provide direction as in *mauka*, the opposite of *makai*, but some chose to worship it instead...

As far as he is concerned, Maunakea is meant to be put to greater use.

Maunakea is the anchor that secures our island to the ocean floor. It is a product of time during the formation of our islands. It didn't appear by some miracle---floating down through the mist and landing on the ocean. No, it came up from the middle of the ocean. It took eons and eons for the mountain to build up to what it is today. So as far as I'm concerned, the best use of the mountain would be for us to explore it and explore from it. I don't see it as being sacrilegious or anything close to that.

When CSH asked if he knew of cultural resources, sites and practices in Maunakea, Mr. Elarionoff described his first visit to the top of the mountain where he saw the famous large basalt adze quarries. The rock piles were up to 15 feet high, he estimated.

It was many years ago, I don't remember who the first person is that took me up there...We explored the adze factories. It was fascinating, fascinating. You go up there, and you see these rocks. The rock piles are taller than these trees. There were five [of those piles] with hundreds of adzes in various stages of completion just lying around. It was obvious that to chip the rocks into rough finish implements, the craftsmen used other rocks, [as] they didn't have metal. The chips that were broken off fell to the ground and just piled up and piled up until it covered the side of the hill in a slope 30 to 50 feet long and who knows how deep. The amount of rock chips was amazing. If they brought the rocks down here to the warm area to work on it, it wouldn't chip. It couldn't. Basalt is hard and in the cold, it gets really brittle. So that's the most productive place to chip and rough shape it...when you get to the halfway finished product, you bring it down to the warm, comfortable climate and you finish it, sand it down then polish it on another rock to make it smooth and sharp.

Mr. Elarionoff finds the dedication and hardiness of ancient Hawaiians to be admirable and intriguing.

To me it is fascinating...we sit here today and it is cold. Can you imagine what Maunakea was like? What did they wear to keep from freezing?—*ti* (*kī*, *Cordyline terminalis*) leaf? They couldn't walk from the warm area to the top of the mountain in one day's time and go back home after dark. They had to have slept up there and worked up there. In that harsh environment, some of them may have died and remain buried.

It is feasible that some of the burials that are present in Maunakea may be related to the adze makers, said Mr. Elarionoff.

Because of their dedication to adze making and their craftsmanship, it is fitting that they be buried up there. The same honor afforded fisherman. A fisherman is buried in his canoe in a cave down by the ocean. The principle is the same. To have burials on the mountain is not a mystical thing like some strange god came down and got buried there. It's a normal thing. People die, and when they die, they rot. So what do you do? You bury them to hide the stench and protect the deceased from scavengers. The craftsman's life dedication to the culture was to make adze which earned him the right to be buried where he labored.

Another notable cultural feature that Mr. Elarionoff remembers about his trip to Maunakea is the presence of a rock slide where the millions of chips allow for a safe slide down to the bottom. "We used to go down there and slide down the chips...it's like a water slide only comprised of rock chips." He also discussed the ways Hawaiians in the past must have broken down big boulders into manageable-sized rocks, asking "How do you suppose they managed to break the rocks into manageable pieces for chipping?"

A family member explained to the young Elarionoff that Hawaiians probably found cracks in the boulder and used water to widen the cracks until it split. The tricky part was to keep the water within the crack until it froze and expanded. He noted that once thawed, the process would be repeated. "The process sounds very slow and time consuming but there is no other explanation and they had no means of cutting the rock," Mr. Elarionoff admitted. "Fortunately, water was available."

Mr. Elarionoff also described seeing Lake Waiau and its pristine, glacial waters. "It's clear water, but [is] cold, cold, cold. It's fresh water." He stated that he drank from it at the time, but doesn't know if it would be possible to drink from it now. As a young child, he grew up knowing that it was forbidden to step into the lake or swim in it. "We were prohibited...and found it prohibitive for two reasons; one, the water was too cold to be comfortable and two, out of respect for the lake and future explorers who utilize the lake as a resource for drinking water."

Although he supports the proposed Project, Mr. Elarionoff emphasized that the dignity of the mountain should be respected and maintained.

The thing that I wanted them to do, the thing that I'm not happy about, is that they have detracted from the majestic-ness of the mountain. By that I mean the road itself is a big scar caused created when the bulldozer came in and cut the road. They pushed the rocks off the side and left them there. They could have cut the road and then removed the excess material. It's extra work and extra expense, but it would have allowed the mountain to maintain some of its dignity...If you just had a road without all of the extra rock-calling attention to the scar lying around, I think the mountain would look so much nicer. That is something that can and should have been done; it's not impossible.

He also stressed that old telescope sites should be recycled, rather than constructing new ones on unsullied ground.

I think we should recycle the sites. If an outdated structure is identified and there is a need to build another telescope on the mountain, tear down the old structure and build the new one on the same footprint. The Mountain is valuable and respected by us. Do not sacrifice our cultural monuments for expedience or budget concerns. Another structure can be another unnecessary intrusion that detracts from the beauty and majesty of Maunakea.

When CSH later contacted Mr. Elarionoff regarding the addition of a construction staging area and electrical transformer, he did not have any further comments to add.

7.9 Ku'ulei Keakealani

CSH interviewed Ms. Ku'ulei Keakealani on February 19, 2009 at the Ka'upulehu Interpretive Center located in Kalaemano, where she is the curator. Ms. Keakealani has been a cultural activist and Hawaiian traditional practitioner for years, and has worked with cultural historian Kepa Maly on several projects including one regarding the *ahupua'a* of Pu'uwa'awa'a.

When asked about her thoughts on the proposed TMT Observatory Project, Ms. Keakealani stated the following:

I think my first and foremost thoughts would be that it doesn’t need to be done. Not because more research isn’t needed or anything along those lines. The latest technology and research helps educate all of us, but at the same time, it’s about the location...My question is when is enough, enough? I pose that question on many levels to many individuals. Looking at archaeology, when is enough data recovery enough? Do you have to, as an archaeologist, take everything that exists in a particular site to make the most accurate assumption, or prediction about what that particular site was? When is enough, enough?

And so for me, for the summit of Mauna a Wākea, looking at what exists right now, that I do being a resident of Waimea see on a daily basis—open my eyes and it’s there, close my eyes and it’s still there—when is enough, enough? That would be my initial comment.

Ms. Keakealani emphasized that the stories of a place such as Mauna a Wākea are critical to understanding the place itself. Knowing the *mo‘olelo wahi pana* of a certain area can often change the way one views the place:

If we went to another layer...or dimension, for me, the stories of a place are something that I almost don’t even have words to describe. Sometimes, all I need to know, all you need to know, is the story of a place that’s hundreds and thousands of years old that can change my perspective or your perspective of a place.

As an example of how a *mo‘olelo wahi pana* of a place can change one’s perspective, Ms. Keakealani gave the story of a pond she once frequented as a teenager in Waimea. At that time, she knew the pond as “Anna’s Pond” where teenage parties were held:

Now years later, hearing this story about that place tells me there is a *mo‘o wahine* who lives in this pond. This is her name, and here is the story that talks about this stream, this pond, this woman. It changes my perspective about that place. Had I known that—when I was 12, 13 and 16, if my friends and I, at that time the youth of Waimea—had we known and been told those stories, I know that we would have had a level of respect. Whether different ones of us deemed that a true story or not a true story, that wouldn’t have been what was important. It would have been, we know this about this place, there is a *mo‘o wahine* who lives here, her name is Manua. I don’t know that we would have carried coolers back there, and drank, and had all of this...raging teenage parties that are probably no way close to the raging teenage parties of today. But that changed my perspective. I now knew the name of the pond...it’s actually called Kohākōhau. It’s not Anna’s Pond; Anna’s Pond is just a nickname. A common name maybe, that everybody calls it. But its name is Kohākōhau. There is a *mo‘o wahine* who guards this water, and her name is Manua and she does come down into Waimea town; this is the rock that she loves to come and sunbathe and warm her body.

And when she is done, she retreats back up to her home at Kohākōhau. So in that lake, and in sharing that story, a wonderful individual Kepa Maly and prior to Kepa, my grandfather, open this whole new world of stories for me. With Kepa, we find native accounts and native traditions of Maunakea, or Mauna a Wākea.

Ms. Keakealani shared her favorite Native Hawaiian traditional account, concerning Poli'ahu, the snow goddess. Whenever she tells it to children or adults, she stresses that it is her favorite *mo'olelo*:

And so it says that Poli'ahu is going to be taken, reared and raised, in our language we say "ho'okama"...raised by Kāne as if she was his own child. And he loves her so much. And it is because Poli'ahu was so beautiful that her father Kāne places a *kapu* on her. This *kapu* that Kāne places on Poli'ahu is this: she must live and dwell on the summit of Mauna a Wākea. Kāne knows that if any man were to see Poli'ahu, they would just be enraptured by her beauty. They would be so taken by her beauty that perhaps they would take Poli'ahu away as their wife. And Kāne, being the protective, loving father as he was, said, "I can't have that. So I placed this *kapu* on you, Poli'ahu, and this is where you will live."

Kāne knows that Poli'ahu is going to need attendants, people who are going to care for her, and be with her, and be companions and attendants to her. So in this account, he is first and foremost giving her a nurse...Līhau will be Poli'ahu's nurse. Līhau will never ever leave Poli'ahu's side. Wherever Poli'ahu goes, Līhau will go. When we look at translating, or the elemental form of the word Līhau, she is the dew or the frost, first thing in the morning when it's still cold. So when you see that dew or that frost, that is what Līhau is. So a second attendant that is going to be given to Poli'ahu is going to bear the name of Līlīnoe. Līlīnoe...when you look at what her elemental form is, she is this fine misty rain, almost kind of like a fog form. That is Līlīnoe. So she is the second attendant that is given to Poli'ahu to live out her days on the summit of Mauna a Wākea. There's going to be a third attendant that is going to bear the name "Waiau."

Kāne is going to dig for, and create for Poli'ahu her own swimming pool, her own bathing pool. Because yes in fact, Poli'ahu loves to swim in these cool and very chilling waters. So Kāne is going to dig for her, her own bathing pool which will bear the same name as her third attendant...Lake Waiau on top of Mauna a Wākea. So with her attendants in place, with her bathing pool, that's all Poli'ahu would need. Kāne as her father sees to it that she has all these things, the necessities...

At this point, the *mo'olelo* is going to pull our story to a faraway place, never named. But there's going to be a man. And this man is going to dream and dream and dream; every night he dreams. He is going to see this area, this place, mountains. And it is what's called, *kupaianaha* [surprising, strange, extraordinary]...it has a weird notion to it, but it's also kind of intriguing. Because what in fact is this white stuff on these mountains. And so the man is

going to dream it and always sees the place...he sees various, a few mountains that are white-capped. And again it intrigues him...

So not only does he see these particular mountain ranges, he also sees a woman. The story will tell us that with this dream, his desires will grow. And it is going to propel him to come and search. And it says his *wa'a* is prepared and he is going to come. And lo and behold, yes, once his *wa'a* reaches the horizon, what his eyes will behold, he will have confirmation. So he sees potentially Haleakalā, Mauna a Wākea, Maunaloa, Hualālai—all snow-capped. He has confirmation. "This is the place that I have seen in my dreams." He knows that if he is to proceed forward, what else will he find but the woman? He will find her too.

One place name is given in the *mo'olelo*. It says Kawaihae. His canoe is landed. He is going to come to the second place named in the story which is Waimea. So he is going to be at Waimea and he will look to the expanse of Mauna a Wākea with just excitement. You could almost feel it. The excitement is going to overwhelm him because he knows he is going to find the woman, the woman of his dream. And so he will ascend. He climbs to the summit and what an incredible sight does he come across. There is Poli'ahu and she is bathing at Lake Waiau. He is just beside himself.

Well, her three attendants will rush out. They approach the stranger and they tell him, "What are you doing? Do you not know where you are at? What has overcome you to come here? You are at the sacred, the *hālau ali'i o Poli'ahu*." And he is trying to tell them, "I have come from so far away, and I have seen this in my dream." And they are telling him, "You must leave."

The translation of the story actually says that they drive him away. He is going to descend. But it says he is not going to give up. He will return. A second attempt is going to be made. So this man from a faraway land is going to climb again, once again to the summit of Mauna a Wākea. And comes upon virtually the same scene. Poli'ahu engaged in her favorite past time, which is to lie at the waters of Lake Waiau. The three attendants rush out and they tell him, "You must leave." He again tries to plead his case. They tell him, "Listen, Kāne her father, has placed this *kapu* on Poli'ahu. We upkeep and we uphold this *kapu*. Listen, you must leave." And so it says he does.

Like we see very common in our culture, there are water guardians, half-women, half-lizard, if that's what your mind believes they are; they are called *mo'o wahine*. Well, Lake Waiau is no exception. There is a *mo'o wahine* and she is named in this story. It says Mo'oinanea has watched all of this happen and she is actually going to call to Kāne. She says to Kāne, "Come, we must talk." So Mo'oinanea will sit with Kāne and she is going to tell Kāne, "It is in the interest of your daughter, Poli'ahu, if you let her and this man love." Kāne is a little bit *pū'īwa* [startled, surprised]. He is taken by the words of Mo'oinanea. And he's going to tell her, "Are you telling me that I should lift this *kapu* from my

daughter?” And Mo‘oinanea said, “No, no, no, no. I’m not asking you to lift the *kapu*. What I’m asking you to do is to allow them to love. Because Kāne, I have discerned the nature of this man, and you will not, cannot, find any man who is going to love your daughter like this man can.”

Kāne will then call his daughter and call this man before him and he’s going to say to them, “Mo‘oinanea has spoken. And what she says is that I should allow you two to love. And you, this man, this stranger, that only you can love my daughter like no other man can, well, what do you think about this?” So the man is actually going to tell Kāne, “Well, she was right. There is no other man who could love your daughter like me.” And Kāne says, “Is that right?” He says, “Yes, I tell you the truth.” So Kāne says, “Well, this is what I will allow: As Poli‘ahu’s father, I will allow love to happen two times, everyday, from *no na kau a kau*, forever and ever. You can love my daughter at sunrise when the sun first comes up. And the second time you love my daughter everyday is at sunset, when the sun goes down. This is what I allow. Let it be known.”

So for us, we bear witness to them, to this loving. Sunrise and sunset, Mauna a Wākea is going to turn colors. You’ll watch certain time for a distinct amount of time, it’s going to turn hues of pink and purple; some say red. But when you see Mauna a Wākea turn these colors, that is what we are watching. We are watching Kūkahau‘ula, who is this man who has traveled afar and seen this dream and comes in search of this woman. So Kūkahau‘ula is embracing and placing his love like no other man could, as he loves Poli‘ahu two times, everyday, *no na kau a kau*, forever and ever.

Referring to the *mo‘olelo* she narrated, Ms. Keakealani listed the reasons why she is opposed to the proposed Project:

These are the sorts of things in all the identity molecules I have in my body, that identify me and my people. If we still have these stories but no longer have the places, I would definitely say that a large part of that *mana* [power] is gone. But how much more wonderful for us, for all people—it doesn’t just have to be the Hawaiian people—that not only do we have these stories, but we have the places too, they still can remain in existence. The story says *no na kau a kau*, when you translate that, that means, forever and ever.

And I just think that, that Thirty Meter Telescope and all of those observatories up there have just overstepped the bounds of going into what is a sacred realm. I don’t know how many people can go to the summit of Mauna a Wākea and not acknowledge that you are in a different realm. That truly is the realm of the goddess Poli‘ahu and of all these other incredibly stronger forces above and beyond us as humans. And you know, in one way or another, you are so aware that you are in a different realm up there.

At the same time, I honor science. My grandfather, my mom's dad...he was a guided missile creator. My grandfather actually made and created...he was one of the top engineers for the Johns Hopkins Space Center, and on contract with NASA and all of the top, leading people in missile making. He made guided missiles, I cannot even imagine that. So I totally honor...I honor that learning and that teaching and all of that information that we can get from there, from that study and that discipline. But to me, the summit of Mauna a Wākea is almost off limits, it is. I don't even know a better word, because I think the word "sacred" is kind of used, overused nowadays. But you go there, and you know, you just know.

And for me, sometimes, I don't know if you have interviewed Uncle Ed Stevens, but he does have an extreme love for Mauna a Wākea, and he is a person who is really linked to the other side as well. For me, it jolts my heart when he says stuff like, "Poli'ahu is so sad because she feels everybody has forgotten her. And Līlīnoe is sad and Kūkahau'ula is sad." If you look at any map, these are all the names of those top *pu'u* up there, the summit of Mauna a Wākea. You have Pu'u Līlīnoe, Pu'u Kūkahau'ula, Pu'u Poli'ahu. To have an elder be telling us these things, and I know he has a direct communication line—for me. I go back and I say, "Uncle, I haven't forgotten. And I will tell these stories as long as I can, and let their stories be heard and known." Hopefully, at least some of the people that hear their stories will become the storytellers and they will speak it and carry it when I am gone. And that is something I hope will never stop. A hundred fifty years from now, those stories are still heard, and said, and told, and felt and known.

Ultimately, Ms. Keakealani urged for the TMT Observatory Project to be located in Chile instead of Hawai'i.

My bottom line recommendation is to not have it [TMT telescope]. At the same time, there is a harsh reality for some reason that's on my heart that says, if this already has been stamped with a seal of approval that this is going through...if we are there at that point and that is the game we are in—again that is just a reference because I know by no means is this a game—then what are ways...It's beyond having the Hawaiian people recognized or heard or they sit on the board, that's all wonderful and we need all these things, but then how true have the people, how much have they listened to us? If the majority of the testimony is "No, don't put that TMT there," and it still goes in anyway, did it just not matter that we all said "no, no?" What about the other site, is it Chile, that there was another potential site for the TMT to go? As far as I know, the people wanted it there. And the people are okay with having it there. If I am wrong, I so stand to be corrected. But as far as I know, it was all good to go on that other site. I would like to revisit that. If there is another option on the table, try to look at Chile than here, than our mountain.

7.10 George Van Gieson

CSH interviewed Mr. George Van Gieson by telephone on February 11, 2009. Mr. Van Gieson’s father is a community activist Hobie Van Gieson and as a young boy, he became active along with his father in helping preserve Hawaiian culture. He is half-Hawaiian and currently works as the Fire Captain of the Volcano Fire Station as well as being the coach for Kamehameha Schools’ air rifle girls’ team. In 1976, he was one of the members of the non-profit Hōlua Project Information whose mission was to record and safeguard *hōlua* throughout Hawai‘i.

Mr. Van Gieson is quite familiar with Maunakea. At 5 years old, he accompanied his uncle, an avid bird hunter, and his aunt to spend all day on top of the mountain. He still regularly visits the mountain to direct firefighters in containing bush fires set to eradicate the invasive gorsebush:

As a kid, I spent a lot of time on the mountain. There were no four-wheel drive cars up there, just military jeeps. My uncle lived on O‘ahu but came over the winter months for the bird season. We caught ring-necked pheasants [*Phasianus colchicus*], chukars [*Alectoris chukar*], and Japanese [*Coturnix japonica*] and Chinese painted quail [button quail, *Coturnix Chinensis*]. It was beautiful; a whole different world with snow and frost...peaceful and quiet.

When Mr. Van Gieson grew older, he became a bird hunter as well and he would take his own sons, Jonathan, 27, and Jonah, 23, up the mountain along with their friends:

These were real special outings; the kids loved it away from traffic and buildings, a very special place on the island. A lot of times you were above the clouds and you could look at Maunakea, and sometimes Haleakalā. When you go hunting, you go before sunrise. So you have a view of the sunrise, absolutely outstanding.

He is aware of the cultural resources, beliefs and practices regarding Maunakea and its environs, including the practice of putting the *piko* of infants into Lake Waiau:

When I was researching the *hōlua* sledding, we went to the adze quarry to see where it was made and what materials it was from. We also went to the lake, which was smaller than I thought. People said it had healing powers, so they went and got water from the lake. And people put the *piko* of babies into the lake...

It was very sacred. People spoke of the lake with great reverence and the mountain in its entirety. It was a religious site for a lot of old people.

Mr. Van Gieson also discussed the Kumulipo, the creation chant of Hawaiians. “The mountain was the birthplace of the Hawaiian people. That was my understanding.” He feels strongly that the TMT Observatory Project should not be put on the mountain, as it would definitely be an act akin to desecrating the Egyptian pyramids:

I think it would be like putting an escalator on the pyramids. It would take away from it [Maunakea]. I hope they take the...[other telescopes] down when they are done with it.

Regarding the lease agreement University of Hawai'i has with the Board of Land and Natural Resources (BNLR), Mr. Van Gieson said:

This whole thing where the university leases the land for \$1, I don't see the benefits of what they are accomplishing. It just destroys the mountain. If this telescope is as powerful as they say it is, they could put it anywhere. If it's 10,000 feet, they could put it in California for that matter.

He questions the foundation that is responsible for constructing the telescope, stating:

Something is not right. They are funded by a non-profit foundation, but that foundation expects to profit from their investment. What are the objectives of this TMT group? They are saying they are a non-profit, working with a couple of universities, funded by a school and this foundation.

Do they expect to profit from their investment? If they generate income, why is it not going to the state? Why is the university leasing for a dollar? It's not up to the university anyway, it's up to DNLRL. I don't like them; I don't trust these people; I don't believe that what they're doing offsets the damage they are doing to the mountain.

Mr. Van Gieson believes that such projects as the TMT Observatory Project will benefit only a few, and not the majority of the population. He thinks that the proposed Project will lead to further commercialization and to larger and larger telescopes, with no end in sight:

I believe these astronomical projects are largely projects of the wealthy and they do not benefit the general public. At this point in time, there are countries selling tours into space. And that bothers me. Is this where this is going to go? What's going to be next? Germany has a 100-meter telescope. The TMT telescope is 30 meters and will they want to move to a 100-meter and get bigger and bigger?

I know some people say it's good for university kids, good for the economy. I don't think we should sell our mountains for a couple of jobs.

CSH again phoned Mr. Van Gieson on March 20 to inquire if he had additional comments on the changes and the proposed TMT Observatory Project. Mr. Van Gieson began by emphasizing that before any project is done, there must be a study of the cause and effect. Stating that he was a paramedic for 18 years in the fire department, he noted that the training taught him and fellow paramedics not to administer a medication that would require another medication to counteract it:

You have to think things out, look at the cause and effect at what you're doing before you do them. A lot of people have pet projects that they would like to see personally done, and they haven't looked at the cause and effect...I wish I knew more about what's going on, and what the benefits are of having all these telescopes and continually putting more and more. You would think at this age that they could share their information and not need to each have their own telescopes. I'm just wondering what the motives [are] behind having to have their

own separate telescopes...It bothers me they are saying that it is so much more powerful [the TMT telescope], so if it is that much more powerful, why do they have to put it on the mountaintop? Why couldn't they put it in the middle of a desert somewhere? The Mojave Desert is over there on the mainland.

Acknowledging that he has heard that Chile is the other potential site for the proposed TMT Observatory Project, Mr. Van Gieson further explained his opposition to the telescope being in Hawai'i:

I guess it's cleaner air, but it's almost like they are looking at Hawai'i as a place where they can build it, use the place...and leave a mess behind. Historically, they have done that. The sugar plantations have done that. They've come in, they've had their sugar business and when they left, they left a whole bunch of trash and junk behind. The exit strategy has got to be in there too, and it has to be set on a timeline that if they put the thing [telescope] up, it's going to have to be dismantled and everything put back the way it was. The major funding behind it is a private foundation. Even though they say which funds are from a university in Canada, and I think University of Southern California is the other university but there's \$200 million that's been put in as seed money by a private foundation in San Francisco.

Mr. Van Gieson noted that it would be better if the proponents of the TMT Observatory Project would make an effort to disclose and reach out to the community about the findings of the telescope, something that astronomer Carl Sagan did. Stated Mr. Van Gieson: "He [Sagan] did a bunch of shows and expos...showing everybody what he was doing, the pictures he was taking and what he was finding. I thought that was great."

When CSH asked if this meant he would be supportive of the proposed TMT Observatory Project if it would do something similar, Mr. Van Gieson said the following:

It seems like they came in and they did the Canada one and the Keck. Nobody knew exactly what was going on. The next thing you know NASA has a telescope up there. All of a sudden there was a bunch of telescopes and nobody knew exactly what they were doing.

He challenged CSH to ask any three people on the street what is happening on top of Maunakea and if they could explain the benefits of the telescope:

Most people don't know, they don't understand... That's where the first telescopes were lacking. They weren't giving information as to what they were doing up there. The military has a whole bunch of stuff in, and nobody really knew what they were doing. The sugar plantations put out a whole bunch of pesticides and chemicals that they were using, which transferred to the ocean. People weren't sure unless they were working hands on what was going on. Then the telescopes came in and they were doing things and for years, nobody really knew what they were exactly doing and how it benefited people here. UH received a dollar a year from these telescopes. How does it benefit anybody?

As for the proposed changes in the Project description which involves the installation of an electrical transformer and the construction of a staging area to house both equipment and materials needed for the construction of the TMT Observatory Project, Mr. Van Gieson said:

I’ve got to see more benefit for the people than a dollar a year, and I’ve got to see an exit plan where they take everything with them. And a limited time for them to be there. I drive home every morning and I see six telescopes up there from my road. And I’m thinking why do they have to be there? What’s going on and how is it benefiting us? How many of our kids are going into astronomy? What is the intent there?

Mr. Van Gieson compared the installation of the TMT Observatory Project on the mountain to other ventures, such as volcano monitoring, to underscore what he believes is the not-so-clear picture as to why such things are needed:

A lot of the science thing now is very political. There’s a \$140 million in Obama’s plan for volcano monitoring. What I hear from volcanologists is “there hasn’t been a large eruption recently and we can’t tell you when and we can’t tell you where but there will be large eruption.” For me, that’s a real stupid thing to do, we all know that. You can apply that to hurricanes, tsunamis, and asteroids striking the earth. In terms of volcanologists, they’re all crawling around on the field and taking extreme risks, and if and when they get into trouble, guess who has to get out and get them? Our fire dept. has to go and get them. I don’t know what benefit they are getting from walking around active lava flows. A lot of college kids come in because they’re all into volcanology and stuff and it’s hard for me to see what they are learning out there. We know it’s hot, we know it smells bad and they shouldn’t be allowed near it. We can’t tell when the next eruption is coming and we can’t tell where it is going to come. So don’t put our firefighters in danger by putting yourself out there where you may get into trouble and we have to go and get you...

According to Mr. Van Gieson, in the end, it is not clear how or what benefits the general public is receiving from such projects as the TMT Observatory Project. “The amount of effort and money invested...it seems to benefit the scientific community, but what do they do with all that?”

7.11 Mr. Isaac Harp

Mr. Isaac Harp was born 50 years ago in New Orleans. His father was of Native American Cherokee and Irish descent, who met his mother Agnes Puakalehua Nihi-Harp, a pure Hawaiian, in Honolulu while he was stationed in the Navy. In 1963, the young Harp arrived in Hawai‘i. Mr. Harp was involved in commercial fishing from the mid-1980s to the mid-1990s, and he is knowledgeable about traditional fishing practices, thanks in part from knowledge shared by many of his relatives, including Uncle Val Ako. Mr. Harp married his wife Tammy on Kamehameha Day 21 years ago. He has five children: Isaac “Ikey” Chun, 36; stepson Chad Neizman, 30; Samson Harp, 27; Jacob Harp, 20; and Cherish Harp, 19. Mr. Harp remains active

in the community and is a Hawaiian cultural practitioner. On January 17, 2009, Mr. Harp shared the following statement via email to CSH.

In regards to your inquiry for consultation with Native Hawaiians on the proposed Thirty Meter Telescope, please see the attached Resolution from Na Kupuna O Moku O Keawe adopted November 15, 2008 (see Appendix D). The resolution reflects my sentiment as well as the sentiment of other members of Na Kupuna O Moku O Keawe, elder representatives of descendants of Hawaiian Kingdom nationals residing on the island of Hawai‘i.

Under International Laws of Occupation, when a sovereign nation such as Hawai‘i is lawfully or unlawfully occupied by a foreign nation such as the United States, the occupying nation must apply the laws of the occupied nation rather than fabricating their own laws and applying their fabricated laws within the occupied nation.

In relation to the statement above, under International Laws of Occupation, when the governing body of an occupied nation is absent, the elders of the citizenry of the occupied nation represent the lawful authority of governance.

It is well-known and documented that the United States’ Newlands Resolution approved by a simple majority of the United States Congress on July 4, 1898 and signed on July 7 by President of the United States William McKinley, purporting to annex Hawai‘i to the United States, was an illegitimate action having no basis in law beyond the borders of the United States.

Additionally, it is well-documented that the large majority of the citizenry of the sovereign Hawaiian Kingdom opposed the United States’ desire to annex Hawai‘i as witnessed in several anti-annexation petitions that were submitted to the United States Congress. The anti-annexation petitions clearly blocked any annexation attempt by the United States to annex Hawai‘i. Regardless of the fact, the United States Congress selected to ignore the will of the citizenry of the Hawaiian Kingdom by proceeding with their unlawful attempt to annex Hawai‘i with no Treaty of Annexation. Clearly, there was never a lawful United States annexation of Hawai‘i.

Finally, in 1959 there was a pathetic and unlawful attempt by the United States Congress to establish Hawai‘i as the 50th state of the United States. The statehood ballot that was created for this charade was illegitimate at first because the only choice was statehood, and secondly because United States citizens living in Hawai‘i and United States military personnel stationed in Hawai‘i were allowed to participate in the 1959 vote, which thrice invalidates the statehood process.

Therefore, lacking the support of the lawful governing body, Na Kupuna O Moku O Keawe, the proposal to construct a Thirty Meter Telescope on the Sacred Kanaka Maoli Temple known as Mauna Kea should be gracefully and

quietly withdrawn. Na Kupuna O Moku O Keawe further suggests that telescope proponents read the attached resolution (See Appendix D) to gain an increased understanding of why Na Kupuna O Moku O Keawe has taken the position that is expressed in the resolution.

In response to the proposed changes in the Project description involving the electrical transformer and construction of the staging area, Mr. Harp provided the following statement to CSH via email on March 23, 2008:

It appears that the proponents of the proposed Thirty Meter Telescope Observatory Project (TMT) had planned their release of information for their proposed TMT in segments rather than in its entirety in an attempt to minimize the appearance of the full impacts that would occur by their proposed project. All aspects of the TMT proposal, including supporting utilities, supporting areas, supporting structures, and supporting activities on our sacred mauna must be disclosed and viewed in its entirety from a cumulative perspective rather than from a fractionalized section-by-section viewpoint. This intentional practice of deception is nothing new to the people of Hawai'i when it comes to the University of Hawai'i, in particular their Institute for Astronomy and their astronomy partners. The people of Hawai'i have been lied to time and time again by the University of Hawai'i in their quest for world fame to attract prestige and funding from the international community.

The greed of the University of Hawai'i is insatiable and this appetite is an ongoing threat for all of Hawai'i and its people regardless of race. Why would the Research Corporation of the University of Hawai'i voluntarily conduct research activities to enhance the killing power of the war machine of the United States government? What would drive what is supposedly an educational institution to conduct experiments on chemicals and biological agents of warfare? The answer is quite clear: the University of Hawai'i would do whatever it takes to boost their incoming funding regardless of the source, and boost themselves into the international spotlight regardless of the risks or consequences placed on Hawai'i and its people.

The University of Hawai'i has supported and continues to support the unlimited desecration of more and more of our sacred and religious sites on Haleakala and Mauna Kea to quench their yearning for recognition by the international astronomy community. Astronomy interests from around the world have come to Hawai'i by invitation from the University of Hawai'i to forever destroy sacred and religious sites, and volcanic landscapes that can never be replaced. To allow and even support such destruction to quench a curiosity for knowledge about the universe is unforgivable.

Hypocrites within the University of Hawai'i Institute for Astronomy have continually abused the host culture by ignoring expressed spiritual and religious concerns, then they selectively use the host culture to falsely portray themselves

as sensitive to the host culture as witnessed on their website <http://www.ifa.hawaii.edu/haleakala/cultural/>, which is related to the Haleakala observatories. Here they use parts of the maoli kumulipo and go so far as to include on their website:

“Hawaiian Protocol for Sacred Places:

E Ui No Ka Ae

Ask Permission,

E Mahalo Aku

Give Thanks,

E Komo Me ka Hoano

Enter With Reverence,

I Ka hele aku, e hoomaamau i ka wahi!

When you leave, return it as you found it!”

Hawai‘i’s sacred and religious sites that have been desecrated and destroyed in the name of astronomy can never be returned to how they were before the astronomy community took aim at them.

Who owns Haleakala and Mauna Kea? It is well-documented and widely recognized that the lands astronomy facilities in Hawai‘i occupy are not owned by the State of Hawai‘i, who are merely custodians of the land under the belligerent United States occupation of Hawai‘i. As custodians of these lands, the State of Hawai‘i is responsible for insuring that these lands are preserved unmolested for the eventual return to the rightful claimants, descendants of Hawai‘i nationals regardless of race.

Although the State of Hawai‘i and the Federal government of the United States pretend that these lands were ceded by the Republic of Hawai‘i to the United States, who ceded these lands to the State of Hawai‘i, the charade has been exposed as a farce. The self-proclaimed Republic of Hawai‘i had no authority to cede anything to the United States; therefore, the United States had nothing to cede to the State of Hawai‘i .

By this testimony, I hereby charge the State of Hawai‘i, as custodians of these sacred and religious sites, with gross negligence and intentional mismanagement of these sites. By allowing the University of Hawai‘i and their global astronomy partners to desecrate and destroy these sacred and religious sites to build their telescopes and supporting utilities and facilities, the State of Hawai‘i is guilty of the acts of intentional desecration and destruction of sacred and religious sites of Hawai‘i .

Therefore, I demand of the State of Hawai‘i, the University of Hawai‘i, and all nations

with astronomy facilities upon Hawai‘i’s sacred Haleakala and Mauna Kea to remove all evidence of your presence from our sacred sites, and to repair to the fullest extent possible the original condition of these sites as they were before “...you found it!”

There is also the matter of restitution to the many concerned who have worked hours, days, weeks, months, years, and in some cases, decades on efforts to prevent the desecration and destruction inflicted on our sacred mauna by astronomy interests. Perhaps the State of Hawai‘i could acquire a few billion dollars from the congressionally approved economic stimulus package to provide restitution to these concerned individuals, groups, organizations, and cultural practitioners.

Finally, there is no restitution that can heal the decades of pain felt by thousands of Hawai‘i’s people, pain that was caused by the actions of insensitive foreigners. The best remedial action that can be taken is for the offenders to clean up their messes, restore to the fullest extent possible the sites that have been desecrated or destroyed, and pack up and go home to their ancestral lands and do what they will there.

On April 3, 2009, Mr. Harp added the following cultural concerns via email:

Besides what I have already shared with you, my “cultural concerns” regarding Mauna Kea astronomy development includes fear of unintentional disturbance of kahiko burials on Mauna Kea, some of which are hundreds of years old or older. Many of these are burials of persons from the highest ranks of maoli society whose iwi (bones) were carried to Mauna Kea from all corners of Hawaii for interment on the summit, the realm of Wakea and Papa.

Were excavations for existing astronomy facilities, roads, utilities, etc. overseen by cultural monitors? If not, perhaps iwi, moe pu [*lit.*, ‘to put to sleep with’, referring to artifacts placed with the dead], and cultural artifacts have already been disturbed by previous astronomy related development and gone unreported.

I am concerned that the many toxic chemicals used by and the sewage produced by the astronomy industry have the potential of polluting of the sacred healing wai (waters) of Waiau. My concern also extends to the health and safety of the wai from our aquifer that maoli and non-maoli alike depend on for life. Perhaps the wai has already been polluted. Was a baseline study of the wai of Waiau and of the aquifer been conducted prior to astronomy development?

The wekiu is almost gone and further disturbance of their habitat could eliminate them altogether. Who is responsible for this, and what is the plan for wekiu population recovery?

I am concerned that there may be further desecration of this sacred site from continued astronomy development. How does one go about stopping the destruction of one's place of worship? Would the astronomy industry build facilities on sites of religious importance to their culture?

I am concerned that the astronomy industry is robbing maoli, and non-maoli who respect maoli culture, of their enjoyment of life. In what seems like a never ending cycle, we must put our lives aside to defend and protect our sacred mauna. When will it end...

7.12 Kelly Greenwell

CSH interviewed Mr. Kelly Greenwell on December 10, 2008. He belongs to the fourth generation of the Greenwell family who has been involved in agriculture and ranching since the 1840s. His great-grandfather was William Henry Greenwell, who was the father of Frank Greenwell, the founder and owner of Palani Ranch. Frank Greenwell's son Robert was also a well-known *paniolo* and the father of Kelly Greenwell.

Recently elected as a member of Hawai'i County Council, Mr. Greenwell has been active in the community for the last 30 years. Along with Louie Kahanamoku, Herb Kane, Stan Zurin, and Mary Jane Kahanamoku, Mr. Greenwell helped established the Keauhou Canoe club. He also co-founded several other parks, including the Old Airport Park with Mrs. Kunitake. He is a member of the Kona Young Farmers, a well-respected organization whose members are long-time residents and farmers of Kailua-Kona.

Mr. Greenwell considers the TMT Observatory Project as an important project that would bring back the cultural importance of consulting the heavens. He stated:

If you were to look back 500 years, and if you were to look at the ...lifestyle and beliefs of people who lived here then, and realize that it was tied in to what we call science today, tied to how you ran your life and how you ran your society, the most important element in their belief system is the heavens...They are able to find direction in something that is constant. Something constant is all important and the heavens are a constant. So they used it as a tool of discovery. It's not only [Hawaiians] that did this, almost all ancient people did it. If you were then able to have a tool that allowed you to see the heavens in a much more advantaged way, a telescope for instance, that can actually look at what you're looking at, see what you're looking at, it would be hugely embraced. It wouldn't be thought of as a bad thing; it would be thought of as a miracle almost...

If you move forward today, what's happened to that whole cultural process is that it's been lost in the day-to-day way people ran their lives; it's no longer significant what the heavens are doing because we have other means of predicting

the future. So the heavens have lost their import, so they're fading from the cultural processes. There's not the same degree of respect, there's not the same degree of wonder.

He noted that Hawaiians in the past would have supported a project such as a telescope which could provide a window to peer into the heavens.

I think [Hawaiians] were a much more fluid people...Consequently; we have the same similarities in language all over the Pacific because they interacted with each other to a much greater degree. Therefore, from a navigational standpoint, the heavens were so important to them. They had to know what it was. If they had a tool that would make that more doable, it would be celebrated, rather than rejected.

Pointing to the flexible nature of Hawaiian culture, Mr. Greenwell cited the history of Hawai'i when Captain Vancouver showed up with guns and cannons that were integrated into Hawaiian culture, the same as when Christianity was introduced. He stressed that it is the fluid Hawaiian cultural process that needs to be preserved, not just the artifacts.

If you go back and say we want to be culturally responsible at what we're doing in Maunakea, what you really want to revere, respect, preserve is the process, not the artifact. The artifact may give an indication of what went on, but it's not what went on. It's a tool, a guide.

In the example of Hōkūli'a, a private residential development in Kona, stones that have been moved are being given undue attention, according to Mr. Greenwell. The focus must instead return to the Hawaiian cultural process, and what the culture can offer the world.

Somebody picked up those stones and moved them. Yes, it is an artifact because it can demonstrate somebody was there and picked up the stuff. But is it meaningful and worth saving? Or is it an insult to the people that you're saying these people aspired to piling three stones on top of each other? What you want to do is to focus on who were these people and what it is they had that we need today to save the world. Hawaiian culture is so vitally important because it's different. It's different because of the fact that it's accepting, it's innovative, it's imaginative, and it accepts other things from other cultures and other happenstance. They take advantage of [it]... You couldn't survive if they didn't include into what they were doing, opportunity. And this telescope thing is an opportunity. It's an opportunity to see the heavens more clearly, more succinctly in a way so they can understand why the moon goes around one speed and why the stars go around another. You don't say, "Over here, we only use spears, we only use that kind of stuff." That's where we're going right now. That's very European, that's very American. "We have our way of doing this and we don't want to be disturbed." That's totally and completely opposite from what the Polynesian culture, Hawaiian culture was all about.

Mindful of the past issues and projects that have led some in the community to object against the treatment that Maunakea has been subjected to, Mr. Greenwell emphasized that the right attitude of respect needs to be present. There has to be a willingness to listen from both sides.

If they went in there with a degree of respect and understanding for those issues...it's like building any temple, you have to bless the land that's its built on. You cannot violate the land that the temple is built on. These stargazers, if you will, are akin to a series of temples. And they have to be appreciated as such, and all that's involved in creating them has to be appreciated. But it's not an issue of "no, we're not going to do this." It's an issue of who we're doing it for, and why we are doing it. Who we're doing it for is very important...When it comes to actually sitting down, and deciding how we are going to build these structures on this mountain, the attitude has to be "we want to listen." And that is said from both parts. It's not just the people who are speaking who have a future up there...we're going to have to think for everybody. It's a big responsibility.

Mr. Greenwell believes that the Project's importance is not limited to the here and now, but it is eventually tied to the future of the planet.

Why is it important to look at the stars? What are the opportunities that this presents to the future? What's the responsibility of the Hawaiian culture? Is it just going to become a list of artifacts, which is where it is headed right now? Artifacts are fine for museums, but the future is where the next generation of humanity is going to reside. And it's not just our kids and the Hawaiian kids, it's everybody's kids. What's the role of Hawaiiana going to be? What's its future? What's the future of this planet? I'm extremely strong believer that if the concepts of the Hawaiian culture are not re-activated, then this place is going to fall apart. I just don't mean Hawai'i, but the whole planet. There's too much antiquated religious thought that is dictating what is going on in the world today...

For Mr. Greenwell, what is needed is a process that will respect what the community wants but at the same time, enable the continuance of projects that are needed. He pointed to a current highway project as an example.

We're having a problem now with the highway. We can't move a couple of graves so the highway has to go around it. And I don't know whose graves those are. I don't know if the circumstances of them being buried there are for, and I don't know if anybody does. But I do know that there is a distinct need that we have a highway system for the future. And there's also a distinct need to have a responsible process put in place for when this occurs, that's in compliance with everybody who is involved. Can this be done? And the answer is yes, it has to be. Otherwise, everything just stops. And that's where we are right now. We're at the place where everything is stopped.

As a young man who was born and raised in Kailua-Kona, Mr. Greenwell could remember the changes that occurred after World War II, and how life had to change.

Hawai'i has to be part of the future rather than defending its position in the past. Things will change...I can remember going places and having to pack the mules. And then you got a hold of an old jeep and that was revolutionary. You can go up the mountain with a load of whatever, and you couldn't do that in the past. You'd have to go on horseback. You'd figure in Thomas Jefferson's time, the fastest thing at the time as 3½ miles per hour. That was a horse. Compare that with going to the moon, in a relatively short amount of time...We're thinking about building all of those new highways. I would venture to say that in 50 years, we won't be using any cars. The technology would have evolved, so that you could either get your body from place-to-place or at least get your message from place-to-place without having to go there. It's like we are going to spend \$150 million dollars right now to build this West Hawai'i Civic government office. There isn't a thing that goes on in government that can't be done with a fax machine...and a computer.

Mr. Greenwell considers the government office building project as an unnecessary, expensive one because nothing physical is taking place except the distribution of license plates. His mission as a county council member is to look for sources of funding for community projects that are worthy of being funded.

I'm right now looking at how we can get two to three billion dollars from the Federal fund monies. There's three hundred billion dollars allocated for things happening in the farm industry. Three hundred billion! That's a lot of money. But [it] is a lot of tools, a lot of enabling. You have to view money in a different way. Money is not a sign of wealth. It's a process of getting to wealth.

The building of the TMT Observatory Project is a worthy project than the building of a civic center, Mr. Greenwell stated. Instead of a civic center, it would make better sense to build a hospital.

It's just a matter of priorities. Is the telescope center a matter of priority? I believe it's more than a priority; it's an essential element to establishing a cultural tie to who Hawaiians were 500 years ago. In a very real way, it's a living artifact.

He called for a process of constructing the telescope that would respect the aesthetics of the mountain. One way that could be done is to not paint it white and to bring it down to a lower level. Respect needs to be woven all throughout the process of building the telescope.

I want to see it built...to see some respect for what is [being] built. I don't think it needs to impact the aesthetics of the mountain itself...To me...respect for nature is not to deface it. You can enhance it, but not deface it...When it comes to the bottom line, the only thing that really counts is that it is done in an appropriate manner, the alternative of that is inappropriate and this is not religious or any other than mechanical. What I have against windmills, they're ugly and I don't like them whirling about. It's the same as solar panels, if we can come up with a way that's not obtrusive, then I might warm up for it.

To get a clear understanding of how the community will respond to the TMT Observatory Project, Mr. Greenwell recommended that CSH speak to everyday, ordinary people. Also, he stressed the importance of making decisions with the future in mind.

We're making decisions based on a very limited vision and it's most important to know what that vision is. We don't spend enough time researching answers for the future. I think that's our biggest problem.

I like to think in terms of 1,000 to 10,000 years from now. We may not be physically here anymore, but there will be a planet here. It's so hard to let go of a little fingernail hold of what we think of as forever... Something like the telescope to broaden our view of the future rather than remembrance of the past cannot be set aside. We have to know as best as we can what's in the future. In the same way, why it's important to know what's in the past.

The grievances that people have about past projects and events on Maunakea do not have to be repeated with this new project, said Mr. Greenwell. He understands, however, why some people are against it.

One of the things that we have to remember is that the mountain belonged to the old ancient Hawaiian culture. But now it belongs to the living, it belongs to the future. The mountain itself does not care who it belongs to. The concept is almost foreign to those claiming ownership. If the mountain does not belong to anybody, the mountain has a future just as much as it has a past. There's a way to build a relationship and it's going to come out of the culture of this place but has to be respected by people coming here. And that's what it boils down to. You are moving into an environment that's been fortified by a lot of grief, a grief that has come from theft. And this is an opportunity to show it doesn't have to be that way.

CSH sent revised Project changes on February 2, 2009. On March 25, Mr. Greenwell called CSH and stated the following regarding the Project changes:

Frankly, I don't know if there is anything that we can do. We're going to have to have support facilities. I don't see a problem there, other than to say I'm hoping that whatever is envisioned is what we have already discussed.

7.13 Daniel Akaka, Jr.

CSH met with Mr. Akaka Jr. on Feb. 24, 2009. Mr. Akaka Jr. is the Director of Cultural Affairs at Mauna Lani. A *kahu* (minister, guardian) and historian, Mr. Akaka Jr. is also a Hawaiian cultural practitioner and active in the community. Born and raised in Nu'uuanu and Pauoa Valleys, Mr. Akaka Jr. is the son of U.S. Sen. Daniel Akaka. In 1995, he participated in Hōkūle'a's voyage to the Pacific Northwest and in 1999; he traveled to Mangareva (French Polynesia) as the voyaging canoe's protocol officer. Last year, Mr. Akaka Jr. also traveled to

Japan on the Hōkūle‘a. He and his wife, Anna, have five children. They are Kaleihikina, Kahikina, Kapihenui, Kalā, and Keānuenueola‘akea.

Familiar with the cultural history of Maunakea, he related one of the most well-known *mo‘olelo* which pits Poli‘ahu, goddess of the snow, against Pele, goddess of fire:

You know Maunakea is known for its snow. And the goddess of the snow is Poli‘ahu. And the most well-known of the stories of Poli‘ahu is a battle between two physical forces, fire and ice: Pele representing the fire, Poli‘ahu representing the ice and snow. In this *mo‘olelo*, this story, there was a chief from the island of Kaua‘i, ‘Aiwohikupua, who was betrothed to the legendary Lā‘ieikawai of this island. So he prepared his voyage, his journey to meet his fiancée on this island on Hawai‘i. But on this journey, he went to the island of Maui and he was enchanted by this very beautiful woman riding the surf. Because of this mutual interest, they both consented to having an affair while on Maui. Following this brief interlude, he left Maui to seek out Lā‘ieikawai here on the island of Hawai‘i.

But as he approached the island of Hawai‘i and gazed at the beauty of Maunakea, he saw the beauty of Poli‘ahu in the mantle of white snow. And he fell in love with Poli‘ahu. They immediately connected with each other. And ‘Aiwohikupua took Poli‘ahu back to the island of Kaua‘i where he was from. He prepared for marriage and little did the chief ‘Aiwohikupua know that the surfer girl he had the affair with on Maui was none other than Pele in the guise of a beautiful woman. And so Pele, jealous [of] the relationship of ‘Aiwohikupua and Poli‘ahu, intervened and broke up their ceremony of betrothal on the island of Kaua‘i. The two forces of nature, Pele and Poli‘ahu, returned to the island of Hawai‘i to battle on the great mountain of Maunakea.

It was a great battle. Pele would cause Maunakea to erupt, Poli‘ahu would release her snows and at one point in time, Pele seemed to be winning the battle as the snows would be melted by the fires. But then, Poli‘ahu with renewed strength caused a great snowfall that covered the mountain and covered the lava and solidified it. So Poli‘ahu won that battle. Pele took leave of Maunakea and the relationship that she had with the fickle young chief ‘Aiwohikupua, who left empty-handed. And because of that Poli‘ahu reigns over Maunakea. Maunakea’s never erupted since that battle, not until Pele tries to take over the mountain again. Pele moved over to Mauna Loa and Kilauea where she activates the mountains on occasion. That’s the story of these two eternal opposites of nature, Pele and Poli‘ahu.



Figure 25. Mr. Danny Akaka Jr. stands in front of one of Mauna Lani’s fishponds.

When asked about his *mana‘o* regarding the proposed TMT Observatory Project on Maunakea, he stated the following:

I’d like to first of all say that education is primary to the future of not only Hawai‘i and the Hawaiian people and the rest of the community, but to the nation and the world. Education comes in many forms. So we have to constantly educate ourselves, always knowing that we’re not always educators, but many times...students. We get our education passed from what we’ve learned at home and at school. Things that were passed on from our *kūpuna* as a foundation of the things that we need to carry with us into the 21st century and beyond that even with the new technology knowing that modern technology can be very beneficial.

We also need to be aware of the cultural foundation as well and to find a sense of balance and harmony in that. For our ancestors were very innovative, creative and resourceful, and if they had things like this, they would’ve used it. They were scientists in their own right. They looked at the night sky to use that knowledge to create star paths so they could travel to places where their ancestors came from. So they understood the world that surrounded them through their vast knowledge of the night sky, the many different stars, the moon and the sun. These things are all part of a great creation that was created by God, the Great Spirit who is known as ‘I or ‘Io. And then everything that surrounds man, all things of nature come through this Creator.

So with that understanding, I always like to try to look through the eyes of the ancients to see what is best, what is best for our community, for our children, and

the children of the future. Whatever we teach them, whatever we pass on to them will affect their decisions, which may affect the whole world and the universe.

In response to the question whether he has any concerns about cultural practices that may be affected by the proposed Project, Mr. Akaka Jr. said:

It has to work in harmony with practitioners. That's the way it will work best. It is through the knowledge of the practitioner that can help the astronomers as far as how to do things up there, how to take care of the place, their understanding and connection with nature and that you have to become a part of the place. You can't just come up and feel that this is a place you can desecrate or trash out. It's a very sacred place. The mountain top is the highest physical point that a man can achieve. Maunakea is the highest mountain on earth. So, the Hawaiian at the summit of Maunakea reached his highest physical achievement for man. Beyond that is the spiritual aspect, the heavens.

We need to instill that understanding to people who are going to be up there and who are going to work there. They need to have respect for this very sacred place. It's kind of like working on the grounds of a church, you don't want to be *kāpulu* [careless, slipshod, untidy, disgusting], you don't want to desecrate it. Maunakea is also a resting place for many of the ancients. So it's a very hallowed, very sacred place. So anything that is constructed up there not only has to fit into the nature of the mountain, but it has to be something that can also compliment Maunakea. One needs to understand that it's a place that at one time, not all Hawaiians were privileged to go to because it was the abode of the gods and a place that was greatly respected.

The future of Maunakea is that yes, it can serve as an educational center and a place for man to view the stars and the universe but it has to remain a sacred and holy place. It's like stepping into a sanctuary, a very sacred place of peace, a place that one can learn the things beyond what man knows now. There are many secrets, some of which the ancients knew but was never all passed down. So it needs to be a blend of the ancient knowledge and modern knowledge and it needs to be treated as a church would be treated, as a sanctuary.

As for other concerns, Mr. Akaka Jr. stated:

When you look at the mountain now, you see all these different observatories which kind of detract from the sacredness of the mountain. And if we truly feel this knowledge that we gain from learning about the universe, from the heavens will be one that's beneficial to the world, then all the nations need to work together, need to unite to have one observatory that will represent the world and one that everyone can use. And all of the other observatories should be removed. But it should be a united effort between all the nations. All nations should work together, not in separate facilities, but all in One [Mr. Akaka emphasized that the word "One" should be capitalized]. And maybe this is the theme that all nations should work together in harmony and unite as one.

Section 8 Cultural Landscape of Maunakea

8.1 Overview

Discussions of specific aspects of traditional Hawaiian culture as they may relate to the Project area are presented below. This section examines cultural resources and practices identified within or in proximity to the subject Project area in the broader context of the encompassing Ka‘ohe Ahupua‘a landscape and the summit of Maunakea. It also provides a sense of the cultural attachment that Native Hawaiians have for Mauna Kea. As defined above by Maly, “Cultural attachment is demonstrated in the intimate relationship (developed over generations of experiences) that people of a particular culture share with their landscape – for example, the geographic features, natural phenomena and resources, and traditional sites etc., that make up their surroundings. This attachment to environment bears direct relationship to beliefs, practices, cultural evolution, and identity of a people” (Maly 1999:27). Excerpts from talk story sessions from past and the present cultural studies are incorporated throughout this section where applicable. *Please note that parts of this section are still in draft form and will be revised for the final CIA report.*

8.1.1 Gathering and Hunting Practices

Maunakea’s unique geographic features and relative isolation have combined to make it a place of special resources that have long attracted Native Hawaiians and other *kama‘āina* seeking to partake of its abundance. For example, both traditional and archaeological evidence illustrate that there are numerous *ana* and *lua kā ko‘i* (caves and quarries from which stone was harvested for making tools) (see Maly 2005) where Kānaka Maoli have gathered stone for their tools. Perhaps the most well-known is the Mauna Kea Adze Quarry, also known as Ke-ana-kāko‘i, “the adze-making cave” (Pukui et al 1974:103). Recognized on both the State and National Register of Historic Places, the basalt found between approximately 11,000 and 12,400 feet elevation on Maunakea is reputed to be among the finest. At 4,800 acres, the quarry itself is one of the largest of its kind in the world, certainly in Polynesia (also see Kirch 1985: 179-180; Langlas et al. 1999; McEldowney 1982: A8-A9).

Speaking about the adze quarry, community contact Mr. Leningrad Elarionoff noted:

The rock piles are taller than these trees. There were five [of those piles] with hundreds of adzes in various stages of completion just lying around... The amount of rock chips was amazing. If they brought the rocks down here to the warm area to work on it, it wouldn’t chip. It couldn’t. Basalt is hard and in the cold, it gets really brittle. So that’s the most productive place to chip and rough shape it...

Some rock shelters, including one at Hopukani Spring (10,400 foot elevation), the Hopukani Rockshelter (10,160 foot elevation) and an open camp site at Liloe Spring (8,921 foot elevation) bear witness to the traditional use of such camps for procuring water, food (primarily birds) and fuel, besides being used for acclimatization (see McCoy 1986). Bird walls or bird hunting blinds have been documented by Maly and Maly (2005) as existing “in the form of single, double or tri-sided stone walls” which are meant to keep the hunter hidden from the birds (also see McEldowney 1986 and Langlas et al 1999, for more accounts of bird hunting).

Mr. George Van Gieson, a participant in this CIA, confirmed the cultural practice of hunting birds on Maunakea. At 5 years old, he accompanied his uncle, an avid bird hunter, and his aunt to spend all day on top of the mountain. He still regularly visits the mountain to hunt for birds as well as to direct firefighters in containing bush fires set to eradicate the invasive gorsebush:

As a kid, I spent a lot of time on the mountain. There were no four-wheel drive cars up there; just military jeeps. My uncle lived on O'ahu but came over the winter months for the bird season. We caught ring-necked pheasants (*Phasianus colchicus*), chukars (*Alectoris chukar*), and Japanese (*Coturnix japonica*) and Chinese painted quail (*button quail*, *Coturnix Chinensis*). It was beautiful; a whole different world with snow and frost...peaceful and quiet (see section 7 for full interview).

Another participant, Ms. Kealoha Piscotta, mentions the 'ua'u, "the dark rump petrel, a bird. It is a high altitude bird that flies hundreds of miles out to sea to feed and then comes back to Maunakea to nest... The 'ua'u were reserved for the *ali* 'i to eat and there are many remains found of the 'ua'u" (see section 7 for full interview). Birds were also caught for their feathers, in particular, the *o'o*, whose feathers were valuable (Foster 1893: 456). Historically, some cattle hunting and sheep hunting were also done, but at lower elevations such as 5,000 feet (Langlas et al. 1999).

Because the vegetation at the summit of Mauna Kea is almost non-existent with the exception of small lichens and moss, gathering of plants did not appear to be as prevalent as bird-hunting or the use of basalt for tools. The Alpine Scrub Zone which ends about 11,300 feet elevation is the highest major vegetation zone, with the tree line occurring at around 9,000 feet. Plant life is more abundant around the Hale Pōhaku Project area including endemic *māmane* (*Sophora chrysophylla*), *pūkiawe* (*Leptecophylla tameiameia*) and the endangered endemic, *ahinahina*, also known as Maunakea silversword (*Argyroxiphium sandwicense*). The gathering of fuel on Maunakea (i.e. *māmane*) was noted (McCoy 1986) as was the acquisition of hardwoods and sandalwood in the region (McEldowney 1982: A-8, A-9).

Ms. Piscotta stressed that the tree line is critical as it is home to native bird species, including the Hawaiian owl (*Asio flammeus*), the *palila* (native honey creeper, *Loxioides bailleui*) and the 'io (endemic Hawaiian hawk, *Buteo solitarius*)

8.1.2 Freshwater and Marine Resources

Maunakea is a major aquifer for Hawai'i Island. It represents the integrated system of Hawaiian culture where the surrounding environment is connected to people, as evidenced by the mountain's role in providing the life-giving waters known as "Kaneawaiola" due to its ability to stop the rainclouds (see OHA statement in section 6.2). Kāne and Kanaloa are said to meet in Maunakea, with water from Maunakea being collected in the ocean (see Kealoha Piscotta interview in section 7 above).

Stated participant Mr. Kalikokalehua Vernon Kanae: "The mountain is a great filtering system; inside of it has a hose that represents rivers underneath and on top. The melted ice and rain, all that seeps right into the aquifers and then down to the rest of the 'āina" (see section 7 for

interview). Other community participants such as Mr. Isaac Harp and Ms. Kealoha Piscotta also emphasized Maunakea’s role as an aquifer.

The mountain is home to the highest permanent alpine lake, Lake Waiau, which contains melted glacial water. Community contact Arthur Mahi noted that Lake Waiau is a pristine alpine lake that was reserved for the *ali‘i* and is now being used by people who wrongly believe that it is for healing and cleansing. He stated the lake should be kept free from contamination as it is a source of pure drinking water:

Cleansing is only for *ali‘i mui*, not for anybody cleansing. No healing the water will bring them. It only dirties the water. We know when people use the lake to clean themselves. It’s not good because it’s people’s water. The water goes down to the ocean, and it is clean water. All the mountains water comes from up there (see section 7 for full interview).

The use of Lake Waiau for drinking water was discussed by CIA participant Mr. Leningrad Elarionoff, who recalled drinking its clear but “cold, cold, cold” fresh water as a young child (see section 7). He stressed that it was forbidden to step into the lake or swim in it, due to its cold temperature and “out of respect for the lake and future explorers who utilize the lake as a resource for drinking water.”

Considered sacred by Hawaiians, Lake Waiau is reputed to hold special healing properties according to community contact Mr. Isaac Harp. Water from the lake is collected by visitors and hunters who bring it to their families to “drink for good health” (Nā Maka o ka ‘Āina 2008) as the water is believed to be the sacred water of Kāne or “*ka wai kapu o Kāne*” (Maly and Maly 2005 A-3). Ms. Piscotta noted that Queen Emma bathed in the lake to purify herself (*hi‘u wai*) “before her election and to demonstrate her worthiness and *mo‘okū‘auhau* or genealogy” (see section 7 Kealoha Piscotta interview; also see Nā Maka o ka ‘Āina 2008).

For Ms. Piscotta, Lake Waiau also marks time, seasons and the constellations which are reflected in its waters.

The lake is a significant site because it is like a *wai ea* [*Lit.*, aerated water, water used for purification], which was significant for marking time, seasons, even a mirror to the stars above.

The waters of the lake also was also used to as a receptacle for the *piko* (umbilical cord) of newborns, as it assured “long life and safety” (Maly and Maly 2005: A-3). Cultural contacts Mr. Van Gieson and Mr. Kimo Keali‘i Pihana discussed the practice (also see Nā Maka o ka ‘Āina 2008). Said Mr. Pihana:

The placing of the human *piko* or umbilical cord, an ancient and still a practice of today—the beginning point of our people. I was able to put my son’s *piko* in Lake Waiau after I started working there and my son participated with me...We consider this a tradition to the Hawaiians. It keeps it as a safe place for our future longevity of our family. There are many other families, generations that have done the same.

Fresh water could also be gathered not just from the lake but in certain *pūnā wai* [springs], said Ms. Piscotta. There are *pōhaku* such as Māhoe that collect water, “perhaps it is because of the cinder cone it has ice plug.” In addition to the water, fossilized ice or ice from the last ice age

can be obtained by digging 2 to four feet. Collecting this underground ice and snow is essential for *lā'au lapa'au* (curing medicine). It is an ancient practice, according to Ms. Piscotta.

There are reports of the *ali 'i*(s) travels to the mountain and bringing the ice down in big blocks on horseback, even contemporary times. They would use it for medicinal purposes, temple ceremonies, and other kind of cultural protocol. The water that is collected from Maunakea is water that is used for bringing life back or taking it. I only work on the side of bringing back life.



Figure 26. Photograph of the snow-covered shoreline of Lake Waiau by CSH (2009)

8.1.3 Cultural and Historic Properties

Numerous cultural studies on Maunakea have documented a profusion of natural and cultural beliefs, practices, and resources associated with the mountain, resulting in one study calling for the entire Maunakea summit down to the 6,000 feet elevation to be classified as a Traditional Cultural Property or TCP (Maly 1998). To date, SHPD has named three places as TCPs, specifically the summit Kūkahau'ula made up of a cluster of cones (Site 21438), Pu'u Līlinoe (Site 21439), and Site 21440 which refers to Lake Waiau (see PHRI 1999). In addition, the Mauna Kea Adze Quarry, known also as Ke-ana-kāko'i "the adze-making cave" (Pukui et al

1974:103), was listed on the National Register of Historic Places in 1969, and the Hawai'i State Register of Historic Places in 1981. CIA participant Mr. Elarionoff described seeing the large basalt adze quarries, and he estimated the rock piles to be 15 feet high.

...It was fascinating, fascinating. You go up there, and you see these rocks....It was obvious that to chip the rocks into rough finish implements, the craftsmen used other rocks, [as] they didn't have metal. The chips that were broken off fell to the ground and just piled up and piled up until it covered the side of the hill in a slope 30 to 50 feet long and who knows how deep. The amount of rock chips was amazing (see section 7 for full interview).

Other places that qualify as traditional places include: Maunakea itself, which has several meanings, one being white (*kea*) mountain (*mauna*). It is also known as Mauna a Wākea, the eldest son of Wākea and Papa, ancestors of the Hawaiian race. It is the *piko* of Hawai'i Island, linking the heavens to the land (Maly and Maly 2005: A-3); Pu'u Poli'ahu, named for the snow goddess of Mauna Kea and literally translated as "Bosom goddess" (Pukui and Elbert 1986); Hale Pōhaku which refers to the two stone cabins constructed by the Civilian Conservation Corps in 1936 and 1939 at an elevation of 9,220 feet on the southern slope of Maunakea; various *heiau* and *ahu*; *ana* and *lua kā ko'i* (caves and quarries used for harvesting stones); *ilina* or burial features, trails, shelters and habitation caves, historical features from the mid-1800s such as walls, fence lines and pens, stone and wooden houses, water collection, storage facilities and other resource collection sites (see Maly and Maly 2005: A-2 to A-4).

Although a more recent tradition, the *lele* at Pu'u Kūkahau'ula which is the summit of Maunakea is a place of spiritual worship by Hawaiian cultural practitioners. Translating to "sacrificial altar or stand," the six-foot-*lele* (see Figure 27 below) was constructed by the Royal Order of Kamehameha in 1997, "as a place for spiritual ceremonies and as a monument for peace" (Ka Wai Ola, March 2006:6). CIA participant Mr. Pihana stressed the "spiritual connection" people feel for Maunakea, which for the Hawaiians of today is represented by "the humble stone and wooden *lele*, the altar at the summit" (see section 7 for full interview). For Ms. Piscotta, the *lele* at the summit is "aligned" with the sky and people have brought and buried their personal belongings inside or around it. She noted that there are other *lele* that have been built in different areas of the mountain such as at Hale Pōhaku where silver sword plants can be found," so people again have another place to offer ho'okupu and give prayer and reconnect themselves" (see section 7 for full interview).

Ahu has been defined as "stone mounds as land markers" and like *heiau*, can also mean "ceremonial sites, shrines, and places where *mele* (chants and offerings were presented)" (Maly and Maly 2005: A-3). Community participant Halealoha Ayau described MaunaKea as "the largest ahu in all of Hawai'i which contributes to it being a sacred place" (see table 6). Ms. Piscotta, who has her own personal *ahu* on the mountain, also discussed the practice of leaving personal artifacts in numerous *ahu* on Maunakea. Ahu-a-Umi, located between the three great *pu'u*, is one of the important *ahu*, she said. In addition, Ms. Piscotta pointed out that *ahu* around Lake Waiau function as "markers for directionals."

So there are directionals not only of the primary four pillars, north, south, east, and west, but also the solstice, so you have the 8, the *he'e* [octopus] *nanana* [spider], the *pe'a* [bat] (see section 7 for full interview).

Besides *ahu*, there are shrine sites where the way offerings are placed or rituals held “appear to be intentionally directed away from Mauna Kea,” suggesting astronomical concepts at work (see McCoy 1982). The 22 sites including an open air shelter and 21 shrine sites were reported to be between 12,900 to 13,100 feet elevation, implying that these shrines “request for permission to pass over the summit” and their distribution may relate to “the lower margins of snow fields” which may well extend to the goddess Poli‘ahu (McCoy 1982: A-37). Other structures such as *heiau* have been also been confirmed by Ms. Piscotta to be navigational alignments, connecting Poli‘ahu Heiau on Kaua‘i to the summit of Maunakea, for example (see section 7 for full interview). *Heiau* have also been specifically built as places to honor deities, such as the four ‘Umi made in honor of Halulu, the god who gave him power (Maly and Maly 2005:28-29).



Figure 27. Lele at Pu‘u Kūkahau‘ula on the summit of Maunakea built in 1997 by the Royal Order of Kamehameha.

8.1.4 Burials

The subject of the presence of burials in the Maunakea summit region is a topic of considerable disagreement between the scientific, archaeological perspective, on one hand, and Native Hawaiian perspectives, on the other. In short—and the details are presented in full above (see Section 5.4.1), the archaeological evidence until recently, was relatively limited concerning confirmed human burials in the summit region. While historic accounts and *mo'olelo* tell of the presence burials on Maunakea (Maly and Maly 2005), archaeological evidence is relatively minimal concerning confirmed human burials in the summit region. Early documentation of archaeological sites in the upper reaches of Maunakea was somewhat anecdotal and ad hoc. McEldowney's (1982:A-11) summary of the ethnographic background of the Maunakea summit region notes:

Although most accounts speak in general terms, those that specifically locate the presence of human bones, “graves,” “burial caves” or mortuary features indicate that burials are “not uncommon” between 7,800 ft and 13,000 ft elevation along the northern and eastern slopes of Mauna Kea

William D. Alexander described a trip up Maunakea with a surveying party, and observed ancient graves:

That same afternoon [July 25, 1892] the surveyors occupied the summit of Lilinoe, a high rocky crater, a mile southeast of the central hills [the “summit”] and a little over 13,000 feet in elevation. Here, as at other places on the plateau, ancient graves are to be found. In olden times it was a common practice of the natives in the surrounding region to carry up the bones of their deceased relatives to the summit plateau for burial. (cited in McCoy 1999)

Prior to 2005, archaeological authorities on Maunakea, including Pat McCoy, had documented only one confirmed burial site (with multiple burials) and four possible burial sites in the summit region (McCoy 1991). Pu'u Mākanaka, northeast of the subject project area, is the only documented place in the uplands of Maunakea in which human remains have been confirmed—although McCoy makes reference to “the well-known burial center at Kanakaleonui” and also to “a small group of cairns on the eastern rim of Pu'u Waiau that are also believed to be burials” (McCoy 1999).

However, McCoy (1999:28) also comments:

There is good reason to expect that more burials are to be found in the Science Reserve on the tops of cinder cones, either in cairns or in a small rockshelter or overhang. The basis of this prediction is that all of the known and suspected burial sites on the summit plateau are located on the tops of cinder cones and, more particularly, on the southern and eastern sides. No burials have been found on the sides or at the base of a cone, or on a ridgetop amongst any of the shrines. There in fact appears to be a clear separation between burial locations and shrine locations.

His comments have proven apt as current in progress work by McCoy and Nees has documented 28 sites designated as burials and possible burials (McCoy et al 2008).

Past ethnographic studies about Maunakea have noted the presence of burials:

Maly's 1999 archival study included a reference in border testimony to burials within Ka'ōhe Ahupua'a:

[Pu'uokihi] it belongs to Kaohe and above that is where people were buried in old times, when people used to make fishhooks from the bones. [Testimony of Kahue, 1880, BCB, Hawai'i, B:444] (Maly 1999:D-4).

The participants in this CIA also state that there are burials in the area. In a CSH interview with Kealoha Piscotta, she offered her concerns regarding burials located on Maunakea:

Burials are in the *pu'u* and along important astronomical alignments. Burials are hard to talk about, on the one hand you need to speak to it to have them protected on the other hand culturally the different levels of kapu on speaking to it. One of our greatest concerns is that there has been no actual burial treatment plan. The one plan that the Hawai'i Island burial council basically said is the best treatment is no development, because the burials include not only important national figures, but also important spiritual figures. So, the question is what is the burial treatment for Līlinoe? The problem has been is that there have been reports. Mr. Patrick McCoy and Holly McEldowney have done extensive work on the burials, but they never got to finish their work. Also Pu'u Makanaka, of course it is listed only as a burial, but really it is a burial complex, hence the name Makanaka. The problem is - do not list it as one when it has many. The *kupuna* have testified extensively in the past as eyewitness that on Pu'u Makanaka that there is so many *iwi* that you can see them through the cinder. So they immediately know better not go over there.

She also adds:

I have familiar genealogical ties to the mountain and some of the *iwi* [bones, remains] there, actually ancient and modern. I feel it is important to mention modern because that is still in ongoing cultural practice continuing today. Famous people of today have their *'ohana* there.

When asked about the cultural practices she has witnessed or participated in she says:

Burials, contemporary and historic. Contemporary burials though I am not going to say that it is only limited to, but it tends to be more of the ashes, not all because people are still fighting the health department on the Hawaiian burial of bone. I have personally participated in a number of them.

It is feasible that some of the burials that are present in Maunakea may be related to the adze makers, said Mr. Leningrad Elarionoff:

Because of their dedication to adze making and their craftsmanship---it is fitting that they be buried up there. The same honor afforded fisherman. A fisherman is buried in his canoe in a cave down by the ocean. The principle is the same. To

have burials on the mountain is not a mystical thing like some strange god came down and got buried there. It’s a normal thing. People die, and when they die, they rot. So what do you do? You bury them to hide the stench and protect the deceased from scavengers. The craftsman’s life dedication to the culture was to make adze which earned him the right to be buried where he labored.

When asked about his knowledge of burials and burial practices on Maunakea, Mr. Keali‘i Pihana mentioned:

The burial grounds are much further out than that area, 13 North they call it, but even then it is too close to our kūpuna and early caretakers of the mountain have been put up there, some of our ali‘i are buried up there. It would really be another hurt or you are going to put more salt on the wound so to speak and I don’t think our people are going to accept that development. You are going to have a bigger protest than ever because of that.

Mr. Harp added the following cultural concerns about burials:

Besides what I have already shared with you, my “cultural concerns” regarding Mauna Kea astronomy development includes fear of unintentional disturbance of kahiko burials on Mauna Kea, some of which are hundreds of years old or older. Many of these are burials of persons from the highest ranks of maoli society whose iwi (bones) were carried to Mauna Kea from all corners of Hawaii for interment on the summit, the realm of Wakea and Papa.

There are widespread perceptions among many Kānaka Maoli, some of which are backed by various types of documentary evidence, that the area holds or once held many more burials than archaeologists have been able to document. Further accounts regarding burials on Maunakea can be found on a website maintained by Nā Maka o ka ‘Āina (see Section 3.8).

8.1.5 Trails

As depicted in Figure 6 (above), there are several trails traversing the Maunakea summit region including, from the west, the Waiki‘i-Waiiau Trail leading up to Waiiau; from the northwest, the Makahālua-Kemole-Waiiau Trail also leading up to Waiiau; from the northeast, the Mauna Kea-‘Umi Koa Trail, leading to and from the Hamakua area; and, from the south and leading to the Mauna Kea Adze Quarry, the Mauna Kea-Humu‘ula Trail.

There are several historical references to the trails of Maunakea:

In Fornander’s “Story of ‘Umi: One of the Most Noted of Hawaiian Kings (*He Mo‘olelo no ‘Umi: Kekāhi Ali‘i Kaulana o ko Hawai‘i Nei Pae ‘āina*),” the ruling chief ‘Umi-a-Liloa leads a war party out of Waipi‘o, Hāmākua, to attack Hilo using the trail of Poli‘ahu:

Up through the mountains of Mauna Kea and right back of Kaūmana, running towards Hilo, was a short cut over the mountains to the trail of Poli‘ahu and the well of Poli‘ahu at the top of Mauna Kea, the trail leading down to Hilo. It was an old trail for those of Hāmākua, of Kohala and of Waimea to take when going to Hilo. Therefore, preparations were made and the army ascended the Mauna Kea

mountain and descended on the upper side of Hilo...(Fornander 1919: Volume IV:224-225)

In his retelling of the Story of 'Umi-a-Līloa (the 16th century ruler of Hawai'i), Kamakau describes the time when 'Umi was mistreated by his in-laws at Hilo, and names a trail and a spring at the summit of Maunakea called "Poli'ahu":

As soon as they were released in Hilo, 'Umi and his companions returned to Hamakua and went down to Waipi'o. There he conferred with his chiefs and his father's old war leaders. It was decided to make war on the chiefs of Hilo and to go without delay by way of Mauna Kea. From back of Ka'umana they were to descend to Hilo. It was shorter to go by way of the mountain to the trail of Poli'ahu and Poli'ahu's spring at the top of Mauna Kea, and then down toward Hilo. It was an ancient trail used by those of Hamakua, Kohala, and Waimea to go to Hilo. (Kamakau 1992:16)

Fornander (1919) provides an account of "Famous Men of Early Days (*Po'e Kaulana o ka Wā i Hala*)" he tells a story of Uma of Pūehuehu, Kohala, who lived in the time of Kamehameha I and has a number of adventures dispatching brigands and muggers as he proceeds from southern Kohala to Kapia to upper Hilo. The account notes that at the time "there was much robbery amongst the people in lonely places (*he mui loa ka pōwā ana o nā kanāka 'oia wā ma nā wahi mehameha*)," and certainly suggests that the trails around the north slope of Maunakea were among such lonely places (Fornander 1919: Volume V:500-501).

W.D. Alexander, Surveyor General, ascended Maunakea along the Waimea-Waiki'i trail in 1892. His description of the route is as follows:

A wagon road made by the owners of the Humuula Sheep Ranch leads from Waimea around the western and southern sides of Mauna Kea. On the western side of the mountain it passes through a region which only needs more rainfall to make it a superb grazing country. The ancient forests here, as at Waimea have been nearly exterminated, but a fine grove of mamane trees still survives at the Auwaiakeakua Ranch. The manienie grass is gradually spreading and will in time add immensely to the value of the land. At the half-way station, called Waikii, water tanks and a rest house have been provided for teamsters.

There have also been references made to the trails in recent studies on Maunakea:

In 1936 the Civilian Conservation Corps carried out improvements to the old Maunakea-Humu'ula Trail from near the main base of the sheep station at Kalaieha to the summit (Bryan 1938). It was recorded that "the summit road only extended to Hale Pōhaku in 1938" (Bryan 1938:38).

In Holly McEldowney's 1982 Ethnographic Background report for the Maunakea Summit Region for the Research Corporation of the University of Hawai'i as part of an EIS for a Mauna Kea Science Reserve Master Plan states that guides and informants were often familiar with land features but traveled from landmark to landmark rather than on trails. She notes that access to the mountain in the second half of the 1800s appeared to utilize ranching establishments (Humuula

Sheep Station, Umikoa Ranch) and may not have related to pre-Contact approaches (McEldowney 1982). Many Hawaiian place names were noted to be modern.

The botanical components of the Lei-o-Poli'ahu, including *nohoanu*, *liko*, *mu'o of 'ōhia*, *pūkiawe* and white *limu*, can be found “along the eastern segment of the long trail in the saddle between Mauna Loa and Mauna Kea that connects Hilo and North Kona” (McDonald and Weissich 2003:72).

Documented in the PHRI study, SHPD identifies the Kūka'iau-'Umiko Trail, and the Mauna Kea-Humu'ula Trail as traditional cultural properties.

When CSH asked about Maunakea's cultural resources and sites, Mr. Pihana states:

Early development where one of the observatories was on top of Pu'u Poli'ahu, prior to me working at the university that observatory was removed brought down and taken off Pu'u Poli'ahu I had brought the new established Office of Maunakea Management, Office of Hawaiian Affairs, Civic Clubs, and many other community leader, and other local community leaders to close the road to Poli'ahu. Today there is only a trail and the only way to get up there is by walking. No vehicles allowed on top of that mountain. No vehicles allowed at the Lake. No vehicles allowed into the area where we consider where our burial grounds are. Pu'u Māhoe and Pu'u Makanaka, those areas are off limits even to hikers.

Ms. Pisciotta, discussing cultural sites within the Project area and the mountain also mentions trails, “all over the mountain.”

8.1.6 *Wahi Pana* (Storied Places)

The project area is associated with a wealth of *mo'olelo*, (stories, narratives) and *mele* (chants, songs) about its sacred cultural landscape. In native lore, it is known as Mauna a Wākea (The Mountain of Wākea), “the first-born mountain son of Wākea and Papa, who were also the progenitors of the Hawaiian race” (Maly and Maly 2005: A-3). It is also the dwelling of snow goddess Poli'ahu who is the rival of Pele (the fire goddess) and the residence of other deities such as Līlīnoe and Kūkahau'ula. The mountain represents the *piko* (umbilical cord) of the Hawai'i Island and is the link of the land to the heavens (Maly and Maly 2005: A-3). Located near the summit at 13, 020 feet, Lake Waiau is named after Waiau, the mountain goddess who is the one of the attendants to Poli'ahu who is said to bathe in its cooling waters. The name “Waiau” translates to “swirling water,” and it is guarded by the powerful *mo'o* Mo'oinanea. Many contributors to this CIA such as Mr. Halealoha Ayau emphasized the *mana* (power) of Maunakea and its *kapu* space, with Mr. Pihana and Ms. Keakealani among many emphasizing its sacredness.

There is also a wealth of *'ōlelo no'eau* (proverbs or poetical sayings) describing the ethereal qualities of Maunakea. Two examples are “*Mauna Kea, kuahiwi ku ha'o i ka mālie* (Mauna Kea, standing alone in the calm)” and “*Poli'ahu, ka wahine kapa hau amu o Mauna Kea* (Poli'ahu, the woman who wears the snow mantle of Mauna Kea)” (Pukui 1983:234, 294).

The terrain of the mountain, including the many *pu'u*, is also the subject of traditions and stories. It is said that Pu'u o Kūkahau'ula, the summit cluster of cones and named for a form of the god Kū, is where people took the *piko* of their newborn children "to insure long life and safety," a tradition that is still ongoing (Maly and Maly 2005: A-3). Lake Waiau is also another place where the *piko* of newborns were placed, and from where some people collected the sacred water of Kāne or "*ka wai kapu o Kāne*" for its healing powers (Maly and Maly 2005: A-3).

Pu'u were also named for goddesses, such as Pu'u Poli'ahu, Pu'u Līlinoe, and Pu'u Waiau. As CIA contact Ms. Ku'ulei Keakealani mentioned, the deities would like to be remembered and have their *pu'u* respected (see section 7 for interview). Accounts of burials placed in *pu'u* such as Pu'u Mākanaka are also reported (McCoy et al 2008). In addition, ceremonies that mark life's rites of passage take place in the numerous *heiau* and *'ahu* which also double as navigational markers. There are also stories connected to important *heiau* like the four sites that Umi-a-Umi-a-Liloa constructed to honor Halulu, the god who provided his power (Maly and Maly 2005:28-29).

Maunakea as a navigational guide is also mentioned in the *mo'olelo* of community participants, with Mr. Arthur Mahi emphasizing that the mountain is a *kupuna* who guides the people of Hawai'i, especially when one is in the ocean and needs direction. *Pu'u* not only contain burials but are critical astronomical alignments, stressed Ms. Kealoha Pisciotta. With help from *kūpuna*, she shared how she found the solstice equinox alignment and her discovery of how one view plane linked Maunakea to Poli'ahu Heiau on Kaua'i and vice versa. Canoe navigators often climb up to Maunakea to consult the alignment of the *lele*, and of Lake Waiau. The navigators could then consult the reflection of the sky on the lake. She stated:

They are codifying the alignments in their mind's eye. That is how the *kūpuna* could see the pathway, see in the lake hold it in their minds and follow it on the sea. Some people say, "The navigation is all about the ocean." But it is really all about the sky. That is where the difficulty is on finding the *mo'olelo* on Maunakea. It isn't just under Maunakea, it is under all the navigational lore. I remember Kepa Maly talking with me years ago, and I kept saying, "You know what you see on the ground, Kepa, is only the reflection of the heavens? This is our connection. When you are looking, you have to look for those things overhead." (see section 7 for full interview)

According to Ms. Pisciotta, ceremonies observing the winter and summer solstices and the equinoxes are held on Maunakea by the Royal Order of Kamehameha. But she indicated that many others come up at other times to use the navigation of the lakes and to check the *pu'u*. Anything that obstructs a view plane on the mountain is bound to destroy the navigational purpose of that particular area by interrupting the alignment.

Then there is the connection of deities and their appearance to navigation, as pointed out by Ms. Pisciotta.

Papa and Wākea, Wākea as Orion is super significant for navigation because Orion's belt rises due east and sets due west, so you must know Orion and of course Orion comes winter and there was a time that I really got it because some say the sword is the *'ule* [penis], so at certain angles you can see right over the

summit how they are touching is loving embrace. Papa is clear when there is no snow and then is Poli'ahu when there is snow. And those alignments are significant and major. There are different levels of each story as there are the levels of heavens. (see section 7 for interview)

Since Orion is always travelling east and west, and Mauna Kea sits in the middle, the whole archipelago can be set on a base line, said Ms. Pisciotta. She added that some *heiau* built on Maunakea that are related to the deities are also aligned with their astronomical appearances.

The goddess Līlīnoe, whose name translates to “fine mist,” can be seen when the right weather conditions are in place. Again, her figure can be drawn out with the help of the terrain of the land.

I walked out and the snow had been perfect and there was a cloud bank, a typical cloud bank that always is on the mountain, and right there you could see her whole body, her face, her hair, her shoulder, and her arm, her *nene* [nipples of a woman's breast] and then of course the telescopes are right there by her *ōpū* [belly, stomach] and her *nene* and then you go down and then two *pu'u* on the mountain that if you look from Hilo side, like looking from Moku'ula is a good way to see, and then you can see her two feet. Then what happens is that she floats like a cloud of the tree line. (see section 7 for full interview).

The different forms of Līlīnoe or her *kino lau* can be discerned especially during the solstice, when there is snow. Ms. Pisciotta notes that “the legends tell of her adorning her *kīhei* [shawl, cape], or mantle.” Because of the leveling of the *pu'u*, however, the physical manifestations of deities such as Līlīnoe and Poli'ahu are being destroyed.

Another level of the desecration is the leveling of the *pu'u*, or the cinder cones. The cinder cones are sacred in and of themselves because they make up some of the *kino lau*, or the divine bodily manifestations of the gods...Unfortunately though, Poli'ahu's image and bodily form is being destroyed. They are altering the images of our deities because the *pu'u*[s] are being leveled and the telescopes are being built on top of her. (see section 7 for full interview)

There are *ahu* all over the mountain, noted Ms. Pisciotta, and many by Lake Waiau are markers for directionals (see section 7 for interview). For example, Ahu-a-Umi is aligned with Venus, she said. “Our traditions are not antiquated, they are ancient, but that does not mean they are useless in the world today and their science. They are not just religious belief they have practical use to us every day.”

For Ms. Ku'ulei Keakealani, the *mo'olelo* of what she calls Mauna a Wākea are critical to understanding the place itself. Knowing the *mo'olelo wahi pana* of a certain area can often change the way one views the place:

If we went to another layer...or dimension, for me, the stories of a place are something that I almost don't even have words to describe. Sometimes, all I need to know, all you need to know, is the story of a place that's hundreds and thousands of years old that can change my perspective or your perspective of a place. (see section 7 for interview)

She narrated a traditional version of Poli‘ahu and her fateful meeting with Kūkahau‘ula. With the help of Mo‘oinanea, her father Kāne reluctantly allows the two lovers to meet twice a day, at sunrise and sunset. When Mauna a Wākea turns into colors of pink, purple and red, we bear witness to the loving of the two deities. “So Kūkahau‘ula is embracing and placing his love like no other man could, as he loves Poli‘ahu two times, everyday, *no na kau a kau*, forever and ever” (see section 7 for full account).

Other *mo‘olelo* such as the one from community contact Mr. Danny Akaka Jr. relates the battle that Poli‘ahu has with Pele the fire goddess, her elemental opposite. In this story, the two goddesses fight over ‘Aiwohikupua using fire and ice (see section 7 for full story).

Trails and springs can also be named after deities, such as the story of ‘Umi-a-Līloa (the 16th century ruler of Hawai‘i) when ‘Umi was mistreated by his in-laws at Hilo, and names a trail and a spring at the summit of Maunakea called “Poli‘ahu.” According to Kamakau, “It was an ancient trail used by those of Hamakua, Kohala, and Waimea to go to Hilo” (Kamakau 1992:16).

Other *mo‘olelo* tells of spiritual entities like nightmarchers. CIA participant Mr. Kimo Keali‘i Pihana told of many accounts, stating that the nightmarchers’ appearances to visitors and employees are their way of saying the following:

Who are you? What are you doing up here? Where are you from? Go home, you don’t belong here.”... Yes, these are guardians to the mountain and area, they are known as the night Marchers, not only walking below lands, but up here too. They show themselves because they don’t really want to be exposed. They want everything up there now to be left alone.”

For the use of Maunakea as a last landmark for the Hawaiian Islands, see Fornander 1919; Volume IV: 160-161. For other mentions of Maunakea, see for example, Fornander (1919; Volume IV: 224-225); Kalākaua (1888: 249-315), and Maly and Maly (2005).

Section 9 Summary

CSH is conducting this draft *preliminary* CIA at the request of Parsons Brinckerhoff International. The *preliminary* CIA includes broadly the *ahupua‘a* of Ka‘ohe, Hāmākua District, on the island of Hawai‘i and more specifically on a portion of TMK: (3) 4-4-015: 009 and 012. The proposed Project includes the construction and operation of the Thirty Meter Telescope Observatory Project (TMT) on the Science Reserve located near the summit, a construction staging area and new electrical transformer, both of which are located at the Hale Pōhaku site at the 9,000 foot level on Maunakea.

9.1 Results of Background Research

Background research on the Project area and the surrounding summit region of Maunakea indicates:

- Maunakea is a sacred cultural landscape; symbolic of Wākea (the ‘Sky Father’ to all Hawaiians), home of Poli‘ahu, the goddess of snow and foe of Pele (the fire goddess), and of many other resident deities and supernatural entities (e.g., Līlīnoe, Kūkahau‘ula and Mo‘oinanea) and the *piko* (umbilical cord) of the island-child, Hawai‘i which connects the land to the heavens (Maly and Maly 2005:v); home of Waiau, the highest permanent lake in the Hawaiian Islands; location of the highest and most extensive basalt quarry in all of Polynesia and perhaps the entire world; and numerous trails, *ahu* (stone markers), religious shrines and cinder cone *pu‘u* (hills), based on extensive historical and oral-historical documentation.
- Maunakea is rich in *mo‘olelo*, *mele* (chants, songs), and *‘ōlelo no‘eau* (proverbs, poetical sayings) associated with *akua* (God, male and female deities, spirits) and storied places (*wahi pana*). Poli‘ahu, the snow goddess and Pele, the volcano goddess engaged in legendary battles to control Maunakea. Pele also had legendary battles with the pig demi-god Kamapua‘a on the summit of Maunakea. Numerous stories of Wākea and Papa, Poli‘ahu, Līlīnoe, Kūkahau‘ula and Mo‘oinanea, to name a few, are written into the landscape.
- The TMT Observatory Project area is located on a ridge line north of the summit cone, Pu‘u Kūkahau‘ula, at approximately 13,700 feet elevation. The Hale Pōhaku Project area is located at approximately 9,160 feet in elevation. Maunakea, the tallest mountain in the Hawaiian Islands at 13,796 feet elevation, is also the tallest mountain on earth as measured from the ocean floor to the summit, a distance of some 29,500 feet (thus, exceeding by approximately 1,000 feet the non-volcanic Mount Everest).
- Vegetation is almost non-existent in the summit region of Maunakea; the tree-line is located nearly a mile in elevation below the summit (at approximately 9,000 feet elevation); the highest major vegetation zone, known as the Alpine Scrub Zone, generally ends at approximately 11,300 feet elevation. Plants in the so-called Alpine Stone Desert Zone of the summit region are mostly limited to small lichens and mosses. More plant life is present in the Hale Pōhaku Project area

characterized by scrub vegetation including a number of natives such as *māmāne* (*Sophora chrysophylla*), *pūkiawe* (*Leptecophylla tameiameia*) and the endangered endemic, *ahinahina*, also known as Maunakea silversword (*Argyroxiphium sandwicense*) as well as introduced exotics such as mullein (*Verbascum thapsus*) and various grasses.

- Maunakea translates literally as white (*kea*) mountain (*mauna*), so named for its breathtaking snow-capped summit. However, according to Nā Maka o ka ‘Āina (2008) and according to other authorities on Hawaiian culture (e.g., Kepa Maly, Pualani Kanahale), Maunakea has numerous other meanings and translations. It is a short version of Mauna a Wākea, a name that connects it to the sky father, Wākea; this would be one of its *kaona* (hidden or more subtle meanings).
- Hale Pōhaku literally “stone house,” refers to the two stone cabins constructed by the Civilian Conservation Corps in 1936 and 1939 at an elevation of 9,220 feet on the southern slope of Maunakea. L.W. Bryan, who served as the Territorial Forestry Office and oversaw the construction of the “stone houses,” also named them Hale Pōhaku.
- Pu‘u Poli‘ahu is named for Poli‘ahu, “the woman who wears the snow mantle of Mauna Kea”; Poli‘ahu, which is also the name of a land division on Maunakea, is translated as “garment [for the] bosom (referring to the snow)” by Pukui et al. (1974) and as “Snow goddess of Mauna Kea. Lit. Bosom goddess” by Pukui and Elbert (1986). Maly & Maly include a citation by W.D. Alexander regarding the naming of Pu‘u Poli‘ahu. As the peak was nameless, Alexander called it “Poliahu” since it had “a poetical name, being that of the demigoddess with snow mantle who haunts Mauna Kea” (Maly and Maly 2005:200).
- Waiau, the permanent lake located within Pu‘u Waiau near the summit of Maunakea at approximately 13,020 feet elevation, translates as “swirling water,” and is associated with the snow goddess Poli‘ahu and is guarded by the supernatural water spirit (*mo‘o*) known as Mo‘oinanea. Queen Emma went to the top of Maunakea to bathe in the waters of Waiau. The ceremony was to cleanse in Lake Waiau at the *piko* (navel or center) of the island. The water caught at Lake Waiau is considered pure water of the gods much like the water caught in the *piko* of the *kalo* (taro) leaf and is thought of as being pure, therefore it is used medicinally (Nā Maka o ka ‘Āina 2008).
- The Mauna Kea Adze Quarry, also known as Ke-ana-kāko‘i, “the adze-making cave” (Pukui et al 1974:103), is located on the southern slopes of the mountain, at elevations up to 12,400 feet. The site was listed on the National Register of Historic Places in 1969, and the Hawai‘i State Register of Historic Places in 1981.
- The *ahupua‘a* of Ka‘ohe was government land on which four native claims were made following the Māhele in 1848. Only one *kuleana* claim was awarded in the entire ahupua‘a. The single awarded claim indicates coffee, arrowroot, banana, and taro were all cultivated in the lands of Ka‘ohe. Ka‘ohe was also known as a habitat

for *uwa'u*, or *'ua'u* (dark-rumped petrel) seabirds that reside in rocky, dry, elevated areas (Foster 1893).

- While historic accounts and *mo'olelo* tell of the presence burials on Maunakea (Maly and Maly 2005), archaeological evidence until recently, was relatively limited concerning confirmed human burials in the summit region. Prior to 2005, archaeological authorities on Maunakea, including Pat McCoy, had documented only one confirmed burial site (with multiple burials) and four possible burial sites in the summit region (McCoy 1991). All of these sites are located on Pu'u Mākanaka to the northeast of the subject Project area. In progress work by McCoy and Nees however, has documented 28 sites designated as burials and possible burials (McCoy et al 2008).
- Several extensive cultural studies have been previously carried out for Maunakea (McEldowney 1982; Kanahele and Kanahele 1997; Maly 1998; Langlas et al. 1999; Maly 1999; PHRI 1999; Maly and Maly 2005). The most comprehensive study by Maly and Maly (2005) builds on archival and oral- historical research conducted by the authors beginning in 1996 (to 2005) and presents a wide range of information on natural and cultural beliefs, resources and practices associated with Maunakea. Among the many critical findings of Maly and Maly's (2005) cumulative research is the emphasis on Maunakea as a sacred landscape and native lore associated with traditional knowledge of the heavens—documenting 270 Hawaiian names for stars.
- Past studies identify Traditional Cultural Properties (TCP) on Maunakea. Three places that have been identified by SHPD as TCPs and documented in a study done by PHRI (1999) are: (1) Kūkahau'ula, the summit (Site 21438), (2) Līlinoe (Site 21439) and (3) Lake Waiau (Site 21440). Other traditional places may also qualify (Figure 6). Maly (1998:29) has suggested the entire Maunakea summit region down to the 6,000 foot elevation contour be designated a Traditional Cultural Property (Figure 16).
- Archival and oral-historical evidence confirms that Maunakea has long been, and continues to be, a place where significant cultural practices are carried out: where, the *piko* of newborn children is taken to Pu'u Kūkahau'ula and Lake Waiau to ensure long life and safety; the remains of individuals with generational ties to Maunakea are taken to *pu'u* and the summit plateau for interment (Maly and Maly 2005:vi); shrines and stone markers are erected and; ceremonial and other activities related to birth, death, healing, navigation and more, occur.

9.2 Results of Community Consultation

CSH attempted to contact 58 community members (government agency or community organization representatives, or individuals such as residents, cultural and lineal descendants, and cultural practitioners) for the purposes of this *preliminary* draft CIA. Thirty people responded and 13 *kūpuna* and/or *kama'āina* were interviewed for more in-depth contributions to the *preliminary* draft CIA. Community consultation with a few respondents is ongoing. The results

of preliminary cultural consultations indicate that there are several major concerns (and ancillary ones) regarding potential adverse impacts on cultural and natural resources and associated beliefs and practices as result of the proposed development of the Thirty Meter Telescope, construction of the staging area for the TMT Observatory Project and the HELCO electrical transformer needed to supply electrical power to the TMT Observatory Project. Results of the community consultation indicate:

- All of the community consultants interviewed for this study stress that Maunakea is a sacred landscape and that any future development activities on the mountain proceed with greater awareness of, and the utmost respect for Hawaiian culture, Hawaiians' spiritual connection to the mountain, and the sanctity of Maunakea.
- Nine of the community consultants interviewed, and three of the respondents who provided brief commentary, explicitly stated their opposition to the proposed actions on Maunakea which is traditionally, and continues to be, one of the most sacred locations in all of Polynesia, not to mention Hawai'i Nei. These participants voiced sadness, frustration or negative feelings about the cumulative impacts of past and present developments on Maunakea. In the words of one participant (Ku'ulei Keakealani), "I think my first and foremost thoughts would be that it doesn't need to be done. Not because more research isn't needed or anything along those lines. The latest technology and research helps educate all of us, but at the same time, it's about the location. When is enough, enough?" She goes on to say, "I just think that, that Thirty Meter Telescope and all of those observatories up there have just overstepped the bounds of going into what is a sacred realm. I don't know how many people can go to the summit of Mauna a Wākea and not acknowledge that you are in a different realm. That truly is the realm of the goddess Poli'ahu and of all these other incredibly stronger forces above and beyond us as humans." Another (Isaac Harp) wrote, "Hawai'i's sacred and religious sites that have been desecrated and destroyed in the name of astronomy can never be returned to how they were before the astronomy community took aim at them" (Appendix D). Specific *mana'o* concerns and recommendations from those that oppose the proposed TMT Observatory Project and Hale Pōhaku Mid-Level Support Facilities Project are:
 - Three participants (Arthur Mahi, Isaac Harp, George Van Giesen) called for astronomy facilities to be removed and Maunakea be repaired to its original condition. Mr. Van Giesen specified that *if* the TMT Observatory Project is built, the plan should include an exit strategy from Maunakea once the technology has been deemed outdated stating that, "it has to be set on a timeline that if they put the [telescope] up, it's going to have to be dismantled and everything put back the way it was." He further recommended that, the proponents of the TMT Observatory Project make an effort to disclose and reach out to the community about the findings of the telescope commenting that, "[Carl Sagan] did a bunch of shows and expos...showing everybody what he was doing, the pictures he was taking and what he was finding." One participant (Isaac Harp) requested restitution to aggrieved parties. Mr. Kimo Pihana also stresses the value of, bringing "the telescopes back down to the level of the people" and reported the success of a program in 2001 in which a star gazing event was

held at the yearly Makahiki festival in Hilo, “That kind of brought about a new program into the University System of creating another position of people that would contribute their times and efforts doing outreach to the schools. It helps create the ‘Imiloa Astronomy Center in Hilo. Today people who are not able to go to the top of Maunakea can enjoy the idea of science and culture right here at this level, here in Hilo at the University Park area, this way people don’t feel being left out.”

- One participant (Sheila Okin) recommended no further development until issues are rectified with the Hawaiian people.
- One participant (Ku‘ulei Keakealani) called for the proposed TMT Observatory Project to be installed in Chile rather than in Hawai‘i.
- A number of these participants discussed the importance of astronomy to Hawaiians, particularly citing voyaging traditions. One participant (Kimo Keali‘i Pihana) remarked, “...astronomy is nothing new to the Hawaiian people. We are navigators of Polynesian; we are on the ocean and on these islands prior to western contact and Captain Cook” and commented that, contemporary western astronomy means that, “future generations are very near [to] colonizing other areas outside of the planet earth. Preparation and engineering and education play a very important role.” Ms. Kealoha Pisciotta makes the point that study participants who oppose the building of the TMT Observatory Project should not be perceived as rejecting western science, “...we are not going to let you keep saying that Hawaiians or the environmentalists are against astronomy...we have stated publicly and in written form that astronomy is a noble endeavor that should be support[ed], however, not at the expense of everything else and good science should include environmental science, the geology, hydrology, the ethnographic studies, archaeology: all of it is science and our cultural tradition is science....I am saying give credit where it is due, and that we were able to circumnavigate the globe millennia before western science. So science would do well to recognize our star knowledge as science and stop calling it myth.”
- Several interview participants and respondents express concern about the disturbance of burials and associated cultural artifacts, markers and shrines (*ahu*) and in *pu‘u* as result of construction of the proposed TMT Observatory Project and support facilities. Mr. Pihana states that while the TMT Observatory Project is to be located on the northern plateau—far from burial grounds, “...even then it is too close to our *kūpuna* and early caretakers of the mountain have been put up there, some of our *ali‘i* are buried up there. It would really be another hurt or you are going to put more salt on the wound so to speak and I don’t think our people are going to accept that development. You are going to have a bigger protest than ever because of that...” Keoloha Pisciotta explains, “Burials are in the *pu‘u* and along important astronomical alignments. Burials are hard to talk

about, on the one hand you need to speak to it to have them protected on the other hand culturally the different levels of *kapu* on speaking to it. One of our greatest concerns is that there has been no actual burial treatment plan. The one plan that the Hawai‘i Island burial council basically said is the best treatment is no development, because the burials include not only important national figures, but also important spiritual figures. So, the question is what is the burial treatment for Līlīnoe? ...Pu‘u Mākanaka, of course it is listed only as a burial, but really it is a burial complex, hence the name Mākanaka....The *kūpuna* have testified extensively in the past as eyewitness that on Pu‘u Mākanaka that there is so many *iwi* that you can see them through the cinder. So they immediately know better not go over there.... So destruction of the cinder cones and the landscape itself is the danger to *iwi*.” Mr. Harp wrote in an email that he fears, “unintentional disturbance of kahiko burials on Mauna Kea, some of which are hundreds of years old or older. Many of these are burials of persons from the highest ranks of maoli society whose *iwi* (bones) were carried to Mauna Kea from all corners of Hawaii for interment on the summit, the realm of Wakea and Papa.”

- Five participants (Arthur Mahi, Kalikokalehua Kanaele, Isaac Harp, Kealoha Pisciotta, Kimo Pihana) discuss environmental concerns, particularly about Lake Waiau and the mountain aquifer, as well as other impacts to environmental services. These participants assert that Maunakea—the principle aquifer and watershed for Hawai‘i Island—is being contaminated by human use (i.e., sewage and toxic chemicals leaching from astronomy facilities). Ms. Pisciotta points out that Maunakea is the “principle aquifer and water shed for Hawai‘i Island” and that the waters, ice and snow collected from Mauna Kea are used for Native Hawaiian healing and other rituals. She refers to, “evidence of 10 thousand documents of hazardous materials used on the mountain and no record of UH removing them. Our evidence is that hazardous waste can go directly in the ground because they have no proper waste containment. If the community’s water becomes toxic, where do we go? On the other hand they can fix that. It is completely fixable problem...” Mr. Kanaele comments, “The mountain itself is a great filtering system; inside of it has a hose that represents rivers underneath and on top. The melted ice and rain—all that seeps right into the aquifers and then down to the rest of the *‘āina*. Maunakea is blue and Maunaloa is red. So you can see where the water goes. They are tampering with the main source of our water.” In an email, Mr. Harp wrote, “I am concerned that the many toxic chemicals used by and the sewage produced by the astronomy industry have the potential of polluting of the sacred healing wai (waters) of Waiau. My concern also extends to the health and safety of the wai from our aquifer that maoli and non-maoli alike depend on for life. Perhaps the wai has already been polluted. Was a baseline study of the wai of Waiau and of the aquifer been conducted prior to astronomy development?” Other

environmental concerns are expressed by Mr. Harp who fears the development may cause further threat to the endemic Maunakea Wēkiu Bug (*Nysius wekiuicola*). Mr. Pihana underscored that there should be a program that instills better responsibility to keeping Maunakea free of ‘ōpala (rubbish) and stated, “We need to protect the environment up there, the animals, insects and all natural resources. We are conscious about that. The idea of being able to look up into the heaven and still be able to learn the old names of stars and constellations such as those we use in navigation. People like to go and practice at the night time too. They also need to learn to respect it more.”

- One participant (Kealoha Pisciotta) notes that the entire Mauna Kea Science Reserve have been identified by SHPD as an historic district, and suggests that a Cultural Reserve be created, and that the following landscape features qualify as TCPs: the Mauna Kea Adze Quarry Complex; the cluster of 3 *pu‘u* of Kūkahau‘ūla that make up the summit region of Maunakea; Lake Waiau; and Līlīnoe, referring to the *pu‘u* southeast of the summit and within the Science Reserve (Section 7.7, Appendix C).
- Three participants (P.F. Kwiatkowski, Kealoha Pisciotta, Isaac Harp) question legal aspects of the lease agreement between the University of Hawai‘i and the state and legitimacy of the Mauna Kea Science Reserve to operate on ceded and/or occupied lands (Appendix C and D). Mr. Kwiatkowski is a supporter of astronomy, but he questions the way that Maunakea has been managed by the UH and the State of Hawai‘i, as well as the proliferation of telescopes through the years, “Fast forward to just a few years ago....The University of Hawai‘i, the entity that ‘manages’ the mountain, now has the authority to do pretty much whatever it wants on the mountain, not taking into account that much of the land it ‘manages’ is actually ceded lands from the Kingdom of Hawai‘i. Whether or not that makes a difference is a moot point, as the will of the people is supposed to be manifested through the State Government, when, in actual fact, it is not.”
- Two participants (Arthur Mahi, Kalikokalehua Kanaele) question the benefits to the local economy and education promised by past and proposed telescope projects on Maunakea. Mr. Mahi discussed how the *kūpuna* of Hawai‘i did not give their permission for the other telescopes to be built, and whatever financial windfall the telescopes were promised to bring has never materialized. Mr. Kanaele, citing Ali‘i O Nā Moku commented, “Education to desecration isn’t education at all.”
- Two interview participants, the SHPD and OHA asked that the current proposed TMT Observatory and Hale Pōhaku Mid-Level Support Facilities Projects be viewed in light of the long history of development on Maunakea and cumulative impacts to cultural resources and practices and

not on an isolated basis. Mr. Harp comments, “All aspects of the TMT proposal, including supporting utilities, supporting areas, supporting structures, and supporting activities on our sacred mauna must be disclosed and viewed in its entirety from a cumulative perspective rather than from a fractionalized section-by-section viewpoint.”

- Three participants (Danny Akaka Jr., Kelly Greenwell, Leningrad Elarionoff) interviewed for this draft *preliminary* CIA, and one respondent who provided brief commentary (Karin Halemau), are in favor of the development of the TMT Observatory Project and its associated facilities on Maunakea. These participants recommend Project proponents proceed with care and respect to the sacredness of Maunakea and advised mitigation measures and/or alternatives to the current proposed design and location of the TMT Observatory Project and support facilities. In the words of Mr. Akaka Jr., “The future of Maunakea...can serve as an educational center and a place for man to view the stars and the universe but it has to remain a sacred and holy place. It’s like stepping into a sanctuary, a very sacred place of peace, a place that one can learn the things beyond what man knows now.” Mr. Halemau provided this brief statement for the CIA, “My whole feeling is anything concerned with this generation and the next is good...if anything could educate the next generation—that would be good.” Mr. Kelly Greenwell considers the TMT Observatory Project as an important project that would bring back the cultural importance of consulting the heavens, “If you were to look back 500 years...at the ...lifestyle and beliefs of people who lived here then, and realize that it was tied in to what we call science today, tied to how you ran your life and how you ran your society, the most important element in their belief system is the heavens...They are able to find direction in something that is constant. Something constant is all important and the heavens are a constant. So they used it as a tool of discovery. It’s not only [Hawaiians] that did this, almost all ancient people did it. If you were then able to have a tool that allowed you to see the heavens in a much more advantaged way, a telescope for instance, that can actually look at what you’re looking at, see what you’re looking at, it would be hugely embraced. It wouldn’t be thought of as a bad thing; it would be thought of as a miracle almost...” Mr. Greenwell further advises, “If they went in there with a degree of respect and understanding for those issues...it’s like building any temple, you have to bless the land that’s its built on. You cannot violate the land that the temple is built on. These stargazers, if you will, are akin to a series of temples. And they have to be appreciated as such.... But it’s not an issue of ‘no, we’re not going to do this.’ It’s...who we’re doing it for, and why we are doing it. Who we’re doing it for is very important...When it comes to actually sitting down, and deciding how we are going to build these structures on this mountain, the attitude has to be ‘we want to listen.’ And that is said from both parts. It’s not just the people who are speaking who have a future up there...we’re going to have to think for everybody. It’s a big responsibility....One of the things that we have to remember is that the mountain belonged to the old ancient Hawaiian culture. But now it belongs to the living, it belongs to the future....There’s a way to build a relationship and it’s going to come out of the culture of this place but has to be respected by people coming here. And that’s what it boils down to. You are moving into an environment that’s been fortified by a lot of grief, a grief that has come from

theft. And this is an opportunity to show it doesn't have to be that way." Mana'o, concerns and recommendations from these participants are:

- One participant (Leningrad Elarionoff) believes the TMT Observatory Project should be built on a recycled site. He states that if an outdated telescope site on Maunakea is identified, the site should be recycled for the TMT Observatory Project usage to avoid unnecessary intrusions that detracts from the beauty and majesty of Maunakea. Mr. Elarionoff also calls for the removal of any debris resulting from the construction of the road in order to restore the dignity of the mountain. In his words, "If an outdated structure is identified and there is a need to build another telescope on the mountain, tear down the old structure and build the new one on the same footprint. The Mountain is valuable and respected by us. Do not sacrifice our cultural monuments for expedience or budget concerns. Another structure can be another unnecessary intrusion that detracts from the beauty and majesty of Maunakea."
- One participant (Kelly Greenwell) calls for a process to be put in place that respects community and allows projects such as TMT Observatory Project telescope to continue.
- One participant (Danny Akaka Jr.) suggests the removal of all other telescopes and that only one telescope be utilized and shared by interested parties.
- All three of these participants state that if the TMT Observatory Project proceeds, it should be developed to blend in with the natural environment setting and not detract from the natural beauty and sacredness of Maunakea. Mr. Greewell calls for a process of constructing the telescope that would respect the aesthetics of the mountain. One way that could be done is to not paint it white and to bring it down to a lower level. Respect needs to be woven throughout the process of building the telescope. Mr. Akaka, Jr. explained, "We need to instill that understanding to people who are going to be up there and who are going to work there. They need to have respect for this very sacred place. It's kind of like working on the grounds of a church, you don't want to be *kāpulu* [careless, slipshod, untidy, disgusting], you don't want to desecrate it. Maunakea is also a resting place for many of the ancients. So it's a very hallowed, very sacred place. So anything that is constructed up there not only has to fit into the nature of the mountain, but it has to be something that can also compliment Maunakea. One needs to understand that it's a place that at one time, not all Hawaiians were privileged to go to because it was the abode of the gods and a place that was greatly respected."
- Interviewees discussed salient features of the cultural landscape, resources and associated uses of Maunakea including, *mo'olelo* about Wākea and Papa, Poli'ahu, Līlīnoe, Kūkahau'ula and Mo'oinanea; the summit as an area where families take the *piko* of their babies to bury, and where the bones or ashes of deceased family members are placed,

burials and burial complexes; shrines and stone markers; navigation traditions and astronomy; the adze quarry, ancient and historic trails; the healing and purifying waters of Lake Waiau and snow and ice collected for medicinal and ceremonial purposes; bird hunting; and other past and present cultural practices (Sections 7 and 8). One respondent (Arthur Mahi) states, “The mountain is our *kupuna* (grandparent, ancestor).” Study participants discussed:

- The summit as an area where families take the *piko* of their babies to bury, and where the bones or ashes of deceased family members are placed. Mr. Pihana explained, “The placing of the human piko or umbilical cord, an ancient and still a practice of today—the beginning point of our people. I was able to put my son’s piko in Lake Waiau after I started working there and my son participated with me, he was turning seventeen at that time. I was just moved by being able by going out there and see the place clean not being desecrated, very serene. We consider this a tradition to the Hawaiians. It keeps it as a safe place for our future longevity of our family. There are many other families, generations that have done the same. Ms. Pisciotta stated, “I have familiar genealogical ties to the mountain and some of the *iwi* [bones, remains] there, actually ancient and modern. I feel it is important to mention modern because that is still in ongoing cultural practice continuing today. Famous people of today have their *‘ohana* there.”
- The traditional Hawaiian practice of bathing in Lake Waiau; and, gathering ice and water from the summit of Maunakea for religious and ceremonial purposes. Ms. Pisciotta discusses ceremonies at the lake, “All different kinds, Queen Emma went there to *hi‘u wai* [bathe for water purification] before her election and to demonstrate her worthiness and *mo‘okū‘auhau* or genealogy.”
- The navigational significance of Maunakea due to its view of the constellations and also the seas surrounding the island of Hawai‘i and Maui. Mrs. Kealoha Pisciotta mentions navigational alignment connections with Poli‘ahu Heiau on Kaua‘i and the summit oh Maunakea. Mr. Pihana states, “Going back to the times of ‘Umi who had set up his shrines all over this island in celebration. By then the priest were concerned with studying the stars and navigation. Also the time of the year to celebrate the solstice and also the equinox. We were able to bring that practice up to the summit of Pu‘u Wēkiu today. So that we can seek reverence towards the idea of our ancestors leaving behind information that we could go to higher places and do the same type of work they do below....‘Umi was navigating the stars. The star chart, the moon phase and also the directional between from here to Hawai‘i. Today teachers, cultural practitioners visit the Lake Waiau.”
- The evidence of Poli‘ahu as observed by people today. Mr. Pihana explains, “As far as we can see today, most of it looking at Poli‘ahu, the

snow goddess, she comes along almost daily even though you don’t see the snow, she is there, because of *hau*, the cold, the winds, *makani*.” Mr. Pihana’s words serve as one example of many stories told about Poli‘ahu.

- SHPD, responding in a memo sent on May 4, 2009 states that, “As you may have discerned from the most recent Mauna Kea Comprehensive Management Plan (MCMP) for the UH Management Area (January 2009) and the public hearings for that plan that Mauna Kea is a very sensitive subject that truly needs and deserves more time to consider all the cultural impacts to this iconic symbol of all cultural connections including but not limited to the genealogical connections, and the spiritual connections to all of the deities in the Hawaiian cosmos and to the kanaka maoli world view.” Additionally, SHPD recognizes Maunakea’s place in Hawaiian navigation as “the first sighting for voyaging canoes to arrive safely to our islands in the middle of the Pacific [and] a significant part of the Pacific Rim mythological connections to all the Pacific Rim.” SHPD recommends:
 - An assessment of buildings no longer functional be done before building new structures or “perhaps no more development on this sacred mountain”;
 - access for cultural practitioners be clearly addressed and defined;
 - the entire summit of Maunakea be treated as one traditional cultural landscape and not as a piecemeal analysis of just the Science Reserve and that;
 - more community outreach occur for all cultural impacts on the summit and the proposed area to properly assessed—see the list of contacts in the MCMP.
- OHA, responding in a letter dated January 9, 2009 (Appendix B), acknowledges the different perspectives on Maunakea as a spiritual, sacred place, home to “wao akua” (dwelling, place of the gods) and the place where the presence of numerous ahu and iwi kūpuna provide silent testimony that generations of Hawaiians have worshipped and buried loved ones “at the highest point possible to rest in peace.” The “life sustaining waters known as Kanekawaiola...contribute to a healthy natural environment, which in turn allow man to thrive.” The letter describes the 40-year debate surrounding the development of Maunakea and recommends that the current proposed TMT Observatory Project study be viewed in context of this long history to “consider the overall impacts of development on Mauna Kea.” OHA suggests several parties for consultation and is currently reviewing the Hale Pōhaku Mid-Level Support Facilities Project area information to determine whether they will provide additional comments.

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Appendix A Executive Summary Copied from Maly and Maly (2005:v- viii)

Executive Summary

At the request of Stephanie Nagata, on behalf of the University of Hawai‘i-Office of Mauna Kea Management, *Kumu Pono Associates LLC* undertook research, compiled a detailed collection of archival-historical records, and conducted oral history interview with *kūpuna* and elder *kama‘āina*, pertaining to the *ahupua‘a* (native land divisions) of Ka‘ohe, Humu‘ula and neighboring *‘āina mauna* (mountain lands) of Mauna Kea, on the island of Hawai‘i. This work was undertaken as a part of ongoing archival and oral historical research conducted by *Kumu Pono Associates LLC*, since 1996, and builds upon the accounts published by Maly in 1997, 1999, 2002, and 2003. The study is multifaceted, and includes detailed verbatim accounts and descriptions of Mauna Kea, the larger Humu‘ula-Ka‘ohe lands, and *‘āina mauna*, covering the periods of Hawaiian antiquity and traditions, to first-hand accounts of travel on and around Mauna Kea, dating from the early 1820s to the 1960s.

One of the primary goals of this study has been to bring a significant collection of historical resource material, describing – native Hawaiian traditions, traditional and customary practices and beliefs; early descriptions of the landscape, land use, and access; changes in the environment; efforts at conservation of the mountain landscape; and the events leading to development of observatories on Mauna Kea – into one manuscript. Such a manuscript will provide readers with access to the diverse, and at times, difficult to locate, historical narratives that document the cultural landscape, and history of land use on Mauna Kea. It being believed that this information may in turn serve as a platform for informed discussions – in the field of cultural and historical resources – in planning for the future well-being of Mauna Kea as a cultural, natural, and scientific resource.

Because of the nature of the Hawaiian system of beliefs and land management, this study looks not only at the upper regions of Mauna Kea, but also at the lands which lie upon the slopes of Mauna Kea. In the traditional and historical setting, the people living on the lands which rested upon, or even viewed Mauna Kea, shared ties to the upper mountain regions as well. The historical records – including oral testimonies of elder *kama‘āina* of the mountain lands – provide readers with detailed descriptions of traditional and customary practices; the nature of land use, and the types of features found on the mountain landscape; and early efforts in conservation on Mauna Kea and the adjoining *‘āina mauna*. The descriptions of land use and subsistence practices range from antiquity to the 1970s, and represent the knowledge of generations of life upon the land.

It is important to note that in the summit region of Mauna Kea (from approximately 11,000 feet and above) and on the lower mountain slopes are found several features named for, or associated with Hawaiian gods and deity. These associations are indicators of Mauna Kea’s place

in the cultural and history of Hawai‘i as a scared [*sic*] landscape. With each part contributing to the integrity of the whole cultural, historical, and spiritual setting.

Through the collection of historical-archival texts and oral history interviews, we have found that a wide range of traditional knowledge and practices, including, but not limited to the following, are described for Mauna Kea and the adjoining *‘āina mauna*:

- **Mauna Kea** - though simply translated as “White Mountain” since at least 1823, the name, Mauna Kea is also known in native traditions and prayers as Mauna a Wākea (Kea), “The Mountain of Wākea.” It is the first-born mountain son of Wākea and Papa, who were also progenitors of the Hawaiian race. Mauna Kea is symbolic of the *piko* (umbilical cord) of the island-child, Hawai‘i, and that which connects the land to the heavens.
- **Pu‘u o Kūkahau‘ula¹**, named for a form of the god Kū, where the *piko* of new-born children were taken to insure long life and safety. This practice is still participated in at the present time.
- **Waiau**, named for the mountain goddess, Waiau (Ka piko o Waiau), and home of the *mo‘o* (water-form) goddess Mo‘o-i-nanea. Place where *piko* of newborn children were taken to ensure long life; and from which “*ka wai kapu o Kāne*” (the sacred water of Kāne) was collected. These practices are still participated in at the present time.
- **Pu‘u Poli‘ahu²** and **Pu‘u Līlīnoe**, named for, and the abode of goddesses of Mauna Kea.
- In 1823, the first missionary party to visit the summit of Mauna Kea learned from the natives that it was “the abode of the gods,” and none could be induced to travel to the summit (Goodrich in Ellis, 1963:292).
- *Heiau* and *‘ahu* – ceremonial sites, shrines, and places where *mele* (chants and offerings) were presented.
- *‘Ahu* – stone mounds as land markers.
- *Ana* and *lua kā ko‘i* (caves and quarries from which stone was harvested for making tools).
- *Ilina* (burial features) extending from the summit to the lowlands. Specific mention is made in several important historical accounts – recorded by both native witnesses and non-Hawaiians – of the presence of burials in the *pu‘u* and summit plateau of Mauna

¹ The name of Pu‘u o Kūkahau‘ula is the traditional name of the summit cluster of cones on Mauna Kea, appearing in the native accounts and cartographic resources until ca. 1932. The recent names, Pu‘u Wekiu, Pu‘u Hau‘oki and Pu‘u Haukea, have unfortunately been used since the 1960s (since the development of astronomy on Mauna Kea), and have displaced the significant spiritual and cultural values and sense of place associated with the traditional name, Pu‘u o Kūkahau‘ula.

² The place name Poli‘ahu, was recorded in native texts (cf. Kamakau, 1961 in this study), and as a part of Boundary Commission proceedings in 1872 (in this study); it was also widely documented as the name of the primary goddess of Mauna Kea. The specific usage of the place name “Puu Poli‘ahu” (also referred to a Peak A), was apparently given to the present-day location in 1892, by W.D. Alexander, commemorating the goddess, Poli‘ahu (cs. Alexander and Preston, 1892-1893, in this study).

Kea. The remains of individuals who share ties to Mauna Kea are still taken to the various *pu'u* on Mauna Kea for interment.

- Native trails – portions of which, on the ascent to the summit, and around the base of Mauna Kea, are overlaid by modern routes of access.
- Shelters and habitation caves.
- Resource collection sties.
- Later features, dating from the middle 1800s, including pens – such as **Kulaka**, on Humu'ula above Pu'u 'Ō'ō; and **Aiakala**, in Ka'ōhe, above the Pu'u Nanahu section of the mountain – walls and fence lines.
- Stone and wooden houses.
- Water collection and storage facilities;
- Bird hunting blinds – in the form of single, double or tri-sided stone walls; former garden plots; and other ranch “support” features.

Another facet of this study, was a review of native lore associated with traditional knowledge of the heavens. While we have uncovered no specific archival references to native astronomy on Mauna Kea, the association of the gods and deities whose forms are seen in the heavens and whose names are commemorated at locations on Mauna Kea is significant. We have found, that as is the case in all areas of Hawaiian life, the traditions, customs and practices associated with the *'oihana kilokilo* (astronomy) and *kilo hōkū* (observing and discerning the nature of the stars) were deeply tied to the spiritual beliefs of the Hawaiian people. The stars are physical manifestations of the gods who created the heavens, earth, and humankind, or are body-forms granted to select individuals or beings of nature (Malo, 1951 and Beckwith, 1951). The combined writings of native and foreign historians on this subject – recorded between the 1830s to 1935 – provide us with a list of more than 270 Hawaiian names for stars (not including alignments of stars which marked the heavens and pathways of traditional navigators).

Also, of importance in discussions regarding modern astronomy on Mauna Kea, the narratives cited in this collection provide readers with first-hand accounts – from archival documents and oral history interviews – of the early days of astronomy on the mountain, including the thoughts and recommendations of the pioneer scientists, responsible agencies, and community members on the Island of Hawai'i, in regards to use and limitations of Mauna Kea. An example of the kind of information recorded by the early scientists and community on the island of Hawai'i, between 1964 to 1980, was the development of telescope facilities on Mauna Kea should be carefully limited – by 1980, the recommended number being six observatories.

Historical Land Use on the Mountain Lands

As early as the 1820s, introduced cattle, sheep, goats, and wild dogs had made their way up to the mountain lands, and were bothersome to those who traveled the *'āina mauna*. In 1834, Scottish naturalist, David Douglas was killed by a wild bullock at Keahua-ai (now called Douglas Pit or Kaluakauka) near the boundary of Humu'ula and Laupāhoehoe. By 1850, the natural-cultural landscape of the *'āina mauna* was being significantly altered by the roving herds of wild bullocks, sheep and other ungulates, and ranching interests were being formalized in the

region. In 1857, the Crown and Government mountain lands of Humu'ula and Ka'ohē – including the summit of Mauna Kea – were leased to Francis Spencer and the Waimea Grazing and Agricultural Company, which established ranching stations and operations around the mountain lands. Portions of the land of Pi'ihonua were leased to native bird hunters in the middle 1860s, and subsequently to native and foreign bullock hunters. As a result, Humu'ula and the larger *'āina mauna* have been intensively ranched for more than 150 years.

Because hunting, and subsequently ranching of bullocks, cattle and sheep were the primary historic activities on the mountain lands, areas once forested soon became open pasture land. While the first formal lease of Humu'ula and Ka'ohē was issued in 1857 (Keoni Ana to F. Spencer), it was Samuel Parker and Parker Ranch that held the longest lease on the Humu'ula and Ka'ohē mountain lands. In between 1900 to 2002, their leases extended around Mauna Kea to the Pu'u Huluhulu vicinity, and for a period, the leases also included portions of the 'Āina Hou lands. The Parker Ranch interests initially focused on sheep ranching in the Humu'ula-Kalai'eha section, but in 1964, the ranch terminated its *[sic]* sheep program. Cattle operations were maintained till the end of the Parker lease in August, 2002.

Today, limited ranching of cattle is continued on the lands extending from Humu'ula to Hānaipoe, Pā'auhau, and the Parker Ranch lands – the Humu'ula section being worked under a permit by the Department of Hawaiian Home Lands, and leases from the State of Hawai'i. While the Humu'ula section is still partially grazed, some 6,000 acres between the Pu'u 'Ō'ō and Pu'uloa, have succumb to an infestation of the introduced gorse (first recorded on the land in 1892), which has had little maintenance since ca. 1980.

As early as 1831, portions of the land of Pi'ihonua Uka and neighboring forest lands were being worked by Daniel Castle, and later, by the Castle and Hitchcock brothers for lumber milling and bullock hunting operations. Subsequently by the 1860s, native lessees were granted the right of hunting in the Pi'ihonua uplands. Then in 1887, the *ahupua'a* of Pi'ihonua (everything from above Hilo Town to the upland boundary with Humu'ula) was leased to John Timoteo Baker, who undertook ranching operations in Pi'ihonua in the 1890s.

Prior to Baker's lease, the Puu Oo Ranch Station had been established, with its buildings developed as part of the Humuula Sheep Station Company; this due to an error in locating the boundary between Humu'ula and Pi'ihonua. In 1896, the boundary matter was settled, and Baker maintained cattle and livestock ranching operations in the area. Baker sold his lease to W.H. Shipman in 1899, which was followed by the sale of a 40 acre parcel – the Pu'u Oo Ranch headquarters – in Patent Grant No. 8970, to W.H. Shipman. In 1902, Shipman secured leases on the lands of Pāpa'ikou, Makahanaloa and other Hilo District lands, which were incorporated into the Pu'u Oo ranching operation. W.H. Shipman, Limited, sold its interest in the Pu'u 'Ō'ō parcel in the 1970s, and it remains in private ownership to the present day.

Early leases of the Ka'ohē mountain lands date back to 1857 (Keoni Ana to F. Spencer), and the operations of Francis Spencer's Waimea Grazing and Agricultural Company. The lease took in all of the mountain lands (to the summit of Mauna Kea), across Ka'ohē to its' Mauna Loa boundary. Activities were all tied to sheep and cattle ranching. Subsequently, in 1870, the lease was acquired by Parker Ranch, which held most of the Ka'ohē mountain lands until their removal in 1905 for the Mauna Kea Forest Reserve, and later withdrawals as a part of the Pōhakuloa Military installation in 1956 (Governor's Executive Order No. 1719; and Presidential

Executive Order No. 1167). Portions of the land of Ka'ōhe, generally those on the northern (Waimea) side of Mauna Kea, are still grazed by Parker Ranch. The land of Ka'ōhe IV (the Pōhakuloa section), were turned over to the United States Army, and have been used for military training operations since that time.

The summit of Mauna Kea, situated in the *ahupua'a* of Ka'ōhe, was noted as a site of importance for modern astronomical observations by the Pendulum Party of 1892. In 1964, the first modern observatory was built on top of Pu'u Poli'ahu. By 1965, the National Aeronautics and Space Administration (NASA) and the University of Hawaii initiated their program "*to exploit the exciting potentialities of the Mauna Kea site for astronomical purposes*" (cf. Newell to Hiatt, Feb. 16, 1965, in this study). In 1967, the University of Hawaii Institute for Astronomy was founded, and in 1968, the Board of Land and Natural Resources leased the entire summit of Mauna Kea to the University by Lease No. S-4191. While the practice and activities associated with astronomy on Mauna Kea represent the shortest of the periods of history and land use described in this study, its forty-one years (at the time of this writing) in the summit region of Mauna Kea, also represent the period of most significant changes in the natural and cultural landscapes on the mountain.

Archival Resources of the Present Study

Records cited – many as verbatim transcripts, allowing readers to understand the full context of the accounts as meant by the original authors – include native accounts translated from Hawaiian language sources; the records of Kingdom and Government agencies; journals of historic visitors; records of the lessees and ranching operations on the mountain lands; and narratives from scientific expeditions to Mauna Kea through the 1960s. There are also cited, a number of the early letters by participants in the development of astronomy on Mauna Kea, dating from 1963 to 1980.

Archival-historical resources were located in the collections of the Hawai'i State Archives, Survey Division, Land Management Division, and Bureau of Conveyances; the Bishop Museum Archives; the Hawaiian Historical Society; University of Hawai'i-Hilo Mo'okini Library; private family collections; the Parker Ranch & Paniolo Preservation Society (PPS) collections; the National Archives and Records Administration, and NOAA Central Library; the Houghton Library-Harvard; the USGS Central Library, Denver; the Hawaiian Historical Society; the Hawaiian Mission Children's Society Library; the Hilo Public Library; the Archives of the Institute for Astronomy; and in the collection of *Kumu Pono Associates LLC*. The oral history interviews cited in this study represent selected interviews conducted by Maly between 1999 to 2005, and reflect the recollections of elder native Hawaiians and *kama'āina* of lands of the *'āina mauna*. The interviewees ranged in age from their 60s to 90s, and in their stories they describe life upon the land, practices associated with travel and work on the mountain lands, and the early days of astronomy on Mauna Kea.

Appendix B Office of Hawaiian Affairs Letter

PHONE (808) 594-1888

FAX (808) 594-1865



STATE OF HAWAII
OFFICE OF HAWAIIAN AFFAIRS
711 KAPOLANI BOULEVARD, SUITE 500
HONOLULU, HAWAII 96813

HRD08/3874B

January 9, 2009

Lehua Ka'uhane
Cultural Surveys Hawai'i
P.O. Box 1114
Kailua, Hawai'i 96734

RE: Cultural Impact Assessment consultation
Thirty Meter Telescope project
Mauna Kea, Ka'ohe Ahupua'a, Hāmākua District, Hawai'i Island
Tax Map Key: (3) 4-4-015:009 and 012

Aloha e Lehua Ka'uhane,

The Office of Hawaiian Affairs (OHA) is in receipt of your December 4, 2008 letter initiating consultation and seeking comments ahead of a cultural impact assessment (assessment) for the proposed construction and operation of the Thirty Meter Telescope (TMT) project. Based on the information within your letter the proposed TMT is an optical-infrared telescope and would be situated on an estimated 4 acres of presently undeveloped land within the 525-acre Astronomy Precinct of the Science Reserve near the summit of Mauna Kea.

From one perspective, the summit of Mauna Kea is a wao akua, home to deities such as Lilinoe, Kukahau'ula, Poli'ahu and Waiau to name but a few. This is the point where Papa and Wakea meet in the physical world. It is Mauna Kea who stops the rainclouds which provide pristine life sustaining waters known as Kanekawaiola. These waters contribute to a healthy natural environment, which in turn allows man to thrive. The numerous ahu and iwi kūpuna known to be situated in the summit area provide silent testimony that generation upon generation of Hawaiians have respected their gods and taken loved ones to the highest point possible to rest in peace.

From another perspective, Mauna Kea is a unique astronomical observation site. The dry and stable atmosphere in the summit area results in a proportion of clear nights that is among the highest in the world. This ideal astronomical atmosphere allows for observation of the faintest galaxies at the very edge of the observable Universe. For these reasons, Mauna Kea now hosts

Lehua Ka'uhane
Cultural Surveys Hawai'i
January 9, 2009
Page 2

the world's largest astronomical observatory with telescopes operated by astronomers from eleven countries.

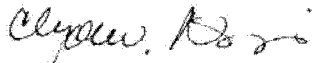
In the forty years that have passed since the first telescope was constructed, the debate surrounding the continued development on Mauna Kea has intensified and the divide between the above mentioned perspectives has not changed. The proposed TMT project should be viewed as one part of this long history. With this in mind, your assessment should not only be focused on the proposed TMT project, but also consider the overall impacts of development on Mauna Kea.

OHA recommends that consultation occur with the following individuals and organizations who may be willing to share their thoughts with you: Kealoha Pisciotto, Clarence Ching, Reynolds Kamakawiwo'ole, Ke'alahi Meyers, the Royal Order of Kamehameha I, KAHEA, the Edith Kanaka'ole Foundation, Kahu Ku Mauna and the 'Imiloa Astronomy Center. Please remember that this list is not all encompassing and we are sure you will identify additional individuals and organizations as you move forward with your consultation process.

OHA hopes to continue working with you to develop a paradigm shift in assessments which will truly identify the impacts proposed undertakings will have on cultural resources and traditional practices. OHA respectfully maintains the position that all parties bear a responsibility to work towards building successful working relationships with individuals, organizations and communities throughout Hawai'i which will result in a true understanding of what resources and practices are important to the Hawaiian people.

Thank you for initiating consultation at this early stage and we look forward to the opportunity to review the draft assessment and provide additional comments. Should you have any questions, please contact Keola Lindsey, Lead Advocate-Culture at (808) 594-1904 or keolal@oha.org.

'O wau iho nō me ka 'oia'i'o,



Clyde W. Nāmu'o
Administrator

C: OHA-East and West Hawai'i CRC Offices

Appendix C Written Testimony of Kealoha Pisciotta

Kealoha Pisciotta
President
Mauna Kea Anaina Hou
P.O. Box 5664
Hilo, Hawai'i 96720
Tel: 808.968.7660

Hallett Hammatt, President
Cultural Surveys Hawai'i, Inc.
P.O. Box 1114
Kailua, Hawai'i 96734

DATE: 3-14-09

RE: Cultural Impact Statement for the Thirty Meter Telescope Project
Cultural Surveys Hawai'i, Inc., Kailua Hawai'i

Aloha Pumehana Hal and Auli'i,

I wish to thank you very much for your work on a Cultural Impact Statement (CIS) for the TMT Telescope Project, as well as your efforts to protect Mauna Kea, its sacred landscape and resources. As I am sure you are already aware, Mauna Kea has been the subject of extensive litigation over the last ten (10) years. In 2003 a federal court case was brought by OHA against NASA -that resulted in NASA being ordered to comply with the National Environmental Policy Act (*Please see*, Civil No. 02-0027 SOM BMK -- Office of Hawaiian Affairs v. Sean O'Keefe, in his capacity of Administrator, National Aeronautics and Space Administration et al.).

In 2007, the Third Circuit Court case (*Please see*, Civil No. 04-1-397 -- Mauna Kea Anaina Hou et al., v. State of Hawai'i et al.). In the case against NASA, I was a plaintiff witness testifying with regards to Mauna Kea sacred resources and associated customary and traditional practices. In the state's Third Circuit Court case, Mauna Kea Anaina Hou was a primary litigant along with the Royal Order of Kamehameha I, Moku O Mamalahoa, Heiau Helu 'Elua (represented by Paul K. Neves), the Sierra Club Hawai'i Island Chapter (represented by Debbie Ward, and Nelson Ho), individual Practitioners Clarence Ku Ching and Hank Fergerstrom. Both cases (i.e. federal and state) the courts found in favor of the people, ruling specifically against the University, NASA and the State's BLNR.

Currently, our Third Circuit Court case is in the Intermediate Court of Appeals (ICA). The University Institute for Astronomy (UHIFA) filed the appeal seeking to have the Third Circuit Court Judge Glenn S. Hara's judgment overturned by the higher court. In response to the UHIFA appeal our lawyers (Alston, Hunt, Floyd and Ing) filed a cross appeal under the Private Attorney General Doctrine (PAGD), in short the PAGD, is a law that permits any party (private or public) that defends the public interest in a court of law (i.e. getting a

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p.c.

808-965-8582

Huili Mitchell

Mar 23 09 01:11P

Kealoha Pisciotta
 President
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 P.O. Box 5664
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state agency to follow its own rules etc.) to request the court award them their attorney fees and courts costs (or in our case returned to our lawyers.).

Apparently, the UHIFA believes only their lawyers should be paid using tax dollars even when they loose and were found to be in violation of state law.

For the above legal reasons, I must request a few things from you both. First, the comments provided in section I (legal disclaimer information), must be included in full in the CIS if my name and testimony is to be used in the CIS.

I. Legal Disclaimer Information

It is my understanding that Cultural Surveys Hawai'i, Inc. (CSH) is performing a CIS pursuant to state law for the Thirty Meter Telescopes. It is also my understanding that this will not be used for any other purpose(s). I ask this because in the past and even the present our testimonies have been used in various documents for various purposes without our express consent. Therefore, any information provided by me in the interview with you for CSH, may be used only for the purposes stated, and may not be used for anything other purpose with out my express written consent.

I do not support the TMT project. I do not support the project, first, because the TMT project will exceed the carrying capacity of Mauna Kea, including the number and size of astronomical facilities legally permitted on Mauna Kea. The BLNR set a legal limit on the number of telescopes (also a limit on size and height of astronomical facilities), in the 1983-85 Mauna Kea Science Reserve Complex Development Plan. The BLNR limit is thirteen (13), that is eleven (11) major and two (2) minor telescopes. The 1995 plan while a plan meant to override the BLNR's 1983-85 plan, directs all astronomy related uses (and limits) to continue to comply with the 1983-85 BLNR plan. Therefore, the TMT may not be permitted under the current legal constraints provided in the BLNR rules and regulations.

The TMT has received significant federal funding and is a federal undertaking pursuant to the National Environmental Policy Act (NEPA), therefore, the TMT must begin NEPA and National Historic Preservation Act (NHPA) section 106 consultations. A state level CIS will not suffice under federal law. Furthermore, the TMT will have substantial, significant and adverse impact on the cultural and natural resources of Mauna Kea. This is so, because the cumulative impacts on the cultural and natural resources where previously evaluated in the NASA federal EIS (please see NASA EIS cumulative impact section). The NASA's EIS is the first and only federal EIS that has ever been conducted on the resources of Mauna Kea. More importantly the BLNR may not

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approve projects with significant and adverse impacts on the cultural and natural resources in any Conservation District.

I am providing the following testimony as a Native Hawaiian traditional and cultural practitioner with cultural and lineal ties to Mauna Kea. I can speak only from my own house of knowledge regarding traditional and customary practices on the various areas of Mauna Kea. While I absolutely appreciate the funds provided (\$100.00) for my testimony, I personally do not take funds for my work for Mauna Kea, the funds you have provided to me will be sent to our legal team and or KAHEA to help with the Mauna Kea work. I appreciate the offer, and I believe this is important since many people are not paid for their expertise—it is only my personal policy not to receive funds for my work for Mauna Kea.

I could not complete the Hale Pohaku (HP) area comments, because the maps provided and project descriptions are unclear and inadequate. For example, the language used in the project description does not match the maps provided and the maps did not have color keys. The maps should include color indication lines of where the HELCO power lines will be located and what lands in particular at HP the TMT wants to use and for what purpose. Because Mauna Kea is a burial ground any land altering activities must be clearly delineated—in order to prevent impact to the burial(s).

We recommend you and your staff review the attached (1) OHA's position (3/9/09) on the UH-UHIFA's "Comprehensive Management Plan" (UH CMP), (2) CMP Draft EA and (3) Joint plaintiff testimonies in opposition to the UH-UHIFA Bills seeking to transfer authority and control of Mauna Kea to the UH-UHIFA.

II. Additional Cultural Concerns

The additional cultural concerns regarding the TMT project include but are not limited to the following:

1. Destruction of the landscape is the primary threat and "cultural concern" on Mauna Kea (because the landscape once destroyed can never be fully restored). The protection and prevention of the cultural and natural resources from further destruction and degradation cause by further construction of telescopes on and around the summit of Mauna Kea, is the greatest of the "cultural concern". Judge Hara, found the resource that needs to be protected is Mauna Kea itself, the entire summit, and not

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simply protection on a project by project basis. Conducting a CIS only for the TMT project is problematic and violates the circuit court ruling.

2. Mauna Kea is a burial ground containing the 'iwi of our most sacred and revered ancestors. The ground altering activities involved in the construction of many of the telescopes included digging many stories under ground as well and many stories above ground. Mauna Kea is considered the Wao Akua, and the meeting place of Papa and Wakea. The landscape is comprised of countless traditional and cultural practices and properties. It is a national landmark and eligible for listing on the National Historic Register, as a historic district, a conservation district and NAR.
3. These rights and resources are what state and federal law protect not development. Conservation is the primary purpose of the Mauna Kea Conservation District, not development. Development therefore is not a guaranteed or protected land-use activity on Mauna Kea. Development in other words is a privilege specifically dependent on conservation and therefore, is not a right.
4. The historic properties that are of importance to Native Hawaiians and possess traditional cultural significance derived from associated cultural practices and beliefs (i.e. Traditional and Cultural Properties) of Mauna Kea include but are not limited to the following:
 1. The summit region from approximately 6,000 feet elevation to the Kukahau'ula (summit), including burial and burial complexes
 2. Many of the Pu'u [cinder cones], associated burials and kinolau;
 3. View plane (including mauka-makai and makai-mauka view planes)
 4. Mountain landscape in navigational traditions;
 5. Lake Waiau and adjacent cinder cone;
 6. Numerous Trail systems.
 7. Snow, ice and water collected for medicinal and ceremonial purposes, and kinolau.

The cluster of pu'u (cinder cones) forming the Summit of Mauna Kea have been identified by the State Historic Preservation Division ("SHPD") of the

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Department of Land and Natural Resources ("DLNR") as a **Historic Property** and the **summit region of including most of the Mauna Kea Science Reserve** has been identified by SHPD as a **Historic District**. Both Historic Properties are eligible for listing on the National Historic Register.

Generally a historic district is defined as a historic property that "...possesses a significant concentration, linkage, or continuity of sites, buildings, structures, or objects united historically or aesthetically by plan or physical development.

The Mauna Kea Summit as a "cultural landscape" has been determined eligible for the National and State Register of Historic Places under multiple criteria including cultural significance to the native Hawaiian People (cf. letter of D. Hibbard to R. Evans, September 12, 1991). As a result, archaeologists with DLNR-SHPD have referred the summit region of Mauna Kea as a "ritual landscape," with all of the individual parts contributing to the integrity of the whole summit region. (pers. comm. P. McCoy and H. McEldowney; Group 70 meetings of September 10, 1998). *Id* Citing McCoy and McEldowney).

The historic district of Mauna Kea incorporates virtually the entire Science Research area, extending beyond the limits of the entire reserve, and also portions of the Natural Area Reserve and the district includes 93 archaeological sites, three landscape features which qualify as traditional cultural properties, including but not limited to the Mauna Kea Adze Quarry Complex, encompassing over 76 shrines of varying complexity, four are adze manufacturing workshops, burials.

The largest of the three traditional and cultural properties, 'Kukahau'ua refers to the cluster of three pu'u that merge and collectively make up the summit of Mauna Kea. The second property, 'Waiau' refers to the small lake and adjacent pu'u situated southwest of the summit and within the Natural Area Reserve. The third property, 'Lilinoe' refers to a pu'u situated southeast of the summit and within the Science Reserve.

Cultural and Social impacts must be considered

The social impacts, those impacts that specifically impact Native Hawaiian cultural and religious beliefs relating to the sacred landscape and the Temple-Mauna Kea, must be considered. For the Native Hawaiian People Mauna Kea is home of Na Akua (the Divine Deities), Na 'Aumakua (the Divine Ancestors), and the meeting place of Papa (Earth Mother) and Wakea (Sky Father)

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who are considered the progenitors of the Hawaiian People. Mauna Kea, it is said, is where the Sky and Earth separated to form the Great-Expanse-of-Space and the Heavenly Realms. Mauna Kea in every respect represents the zenith of the Native Hawaiian people's ancestral ties to Creation itself.

The upper regions of Mauna Kea reside in Wao Akua, the realm of the Akua-Creator. It is also considered the Temple of the Supreme Being.

There are over 93 Astronomical Observatories and Observatory complexes around the world in which to do world class astronomy. Mauna Kea is already considered a world premier site for astronomy work, and houses the largest and most advanced observatories in the world. However, **TMT must consider that Mauna Kea represents the only place on earth where the special and unique Native Hawaiian ritual and ceremonies are conducted.** TMT must consider the impacts to the Native Hawaiian Communities cultural and religious practices. The TMT must also consider the socio-economic impacts this project will have on the Hawaiian Community. The U.S. Civil Rights Commission statistics reports that there are approximately 6000 pure blooded Hawaiian people left in the world today, and their projected survival is only through the year 2044. the Commission further reports that approximately 54% of native Hawaiian people (those with 50% or more blood), make less than 9000 dollars per year.

Cumulative Impacts: Hydrology, Hazardous Materials and Sewage Treatment

TMT must consider and evaluate the impacts from the use, storage and handling of hazardous materials, and sewage upon the Mauna Kea aquifer system (water shed lands of Mauna Kea). Mauna Kea is the principle aquifer and water shed for Hawai'i Island.

The waters, ice and snow collected from Mauna Kea are used for Native Hawaiian healing and other ritual and ceremony.

There is serious concern also for the protection of the waters of Lake Waiau, and the other Pu'u (cinder cones) that also pool water. The Lake is a Traditional Cultural Property, and is home to deities. Waters are harvested for ceremony from Lake Waiau, and other pooling waters.

The TMT is obligated to ensure the Public Trust doctrine is protected.

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During the NASA EIS process, copies of the over 10,000 Material Safety Data Sheets (MSDS) we received by subpoena in the State CCH. The TMT must consider the impacts of these hazardous materials on the TCP and associated Native Hawaiian practices (i.e. collection of snow, ice and snow) and should also consider the watershed conditions after thirty years of sewage and hazardous material release into the ground of Mauna Kea.

According to the Material Safety Data Sheets ("MSDS") received, the following Observatory/Telescope Facilities were found to use "elemental" mercury. The University Of Hawai'i 88 inch or 2.2 meter Observatory ("UH88") (Exhibit F-64), The Canada-France-Hawaii Telescope ("CFHT") (Exhibit F-62), The William M. Keck Observatory I and II ("WMKO") (Exhibit F-61), The NASA Infrared Telescope Facility ("IRTF") (Exhibit F-60), and The United Kingdom Infrared Telescope ("UKIRT").

There have been 3 Mercury spills reported at the William M Keck Telescope. August 10, 1995, September 15, 1995, and November 6, 1995. There have been 7 recorded spills from other facilities over the years.

The Hazardous materials listed below were found to be stored and used at the Observatories/Telescope Facilities they include but are not limited to, the following:

- Hydrochloric-Acid (Note: not listed in JCMT Exhibit F-66)
- Potassium Hydroxide
- Hydraulic, Motor, and Lubricating Oils
- Pesticides
- Insecticides
- Calcium Carbonate
- Sulfuric Acid
- Diesel, Jet Fuel, and Unleaded Gasoline
- Ethylene Glycol
- Kerosene
- Methyl Ethel Keytone
- Toluene
- Paints, Thinners and Solvents
- Rush Treatments and Inhibitors
- Carbon Disulfide
- Elemental Mercury

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I hope this information helps. If you have any further questions please feel free to contact me at the contacts above.

Mahalo for your time, consideration, hard work and Aloha for Mauna Kea,
In Aloha I remain,
Kealoha Pisciotta

Appendix D Resolution on TMT Observatory (Isaac Harp)

Resolution in Opposition to Thirty Meter Telescope (TMT), as amended, was adopted at the duly convened November 15, 2008 meeting of Na Kupuna O Moku O Keawe ("Na Kupuna") held at Kapa'au, North Kohala, Island of Hawai'i

WHEREAS, Na Kupuna states that the Hawaiian Kingdom was and remains a neutral independent nation, was a member of the Family of Nations until removed under false representation by the United States, and has Treaties with many major nations of the world, including the U.S., France and Great Britain. Here we list for the record those Treaties, Conventions, and other International Agreements of the Hawaiian Kingdom:

United States of America, December 23rd, 1826 (Treaty)
 Great Britain, November 13th, 1836 (Lord E. Russell's Treaty)
 France, July 17th, 1839 (Captain LaPlace's Convention)
 France, March 26th, 1846 (Treaty)
 Great Britain, March 26th, 1846 (Treaty)
 Denmark, October 19th, 1846 (Treaty)
 Hamburg, January 8th, 1848 (Treaty)
 Agreement Touching Consular Notices (Danish and Hamburg Treaties),
 January 25th, 1848
 United States of America, December 20th, 1849 (Treaty)
 Sweden and Norway, July 1, 1852 (Treaty)
 Tahiti, November 24th, 1853
 Bremen, March 27th, 1854 (Treaty)
 France, September 8th, 1858 (Treaty)
 Belgium, October 4th, 1862 (Treaty)
 Netherlands, October 16th, 1862 (Treaty)
 Italy, July 22nd, 1863 (Treaty)
 Spain, October 9th, 1863 (Treaty)
 Swiss Confederation, July 20th, 1864 (Treaty)
 Russia, June 19th, 1869 (Treaty)
 Japan, August 17th, 1871 (Treaty)
 New South Wales, March 10th, 1874 (Postal Convention)
 United States of America, January 30th, 1875 (Reciprocity Treaty)
 German Empire, 1879-80 (Treaty)
 Portugal, May 5, 1882 (Provisional Convention)
 United States of America, December 6, 1884 (Supplementary Convention)
 Hong Kong, December 13th, 1884 (Money Order Regulations)

Universal Postal Union, March 21st, 1885 (Additional Act of Lisbon)
Japan, January 28th, 1886 (Convention)
Universal Postal Union, November 9th, 1886 (Ratification)
Samoa, March 20th, 1887 (Treaty)

WHEREAS, Na Kupuna states that the Hawaiian Kingdom continues to exist - as recognized by the Permanent Court of Arbitration at the Hague, Netherlands, that entertained the case of Larsen vs. Hawaiian Kingdom, an arbitration that the U.S. refused to participate in for fear of being cited by the Permanent Court of Arbitration as a belligerent occupier of Hawai'i;

WHEREAS, Na Kupuna - in the absence of an operating government of the Hawaiian Kingdom, and in the absence of a line of succession to a monarch (Hawai'i is a constitutional monarchy) – states henceforth that as recognized under international law, the elders of descendants of Hawai'i subjects are among the next in line of lawful authority having sole lawful jurisdiction over Hawai'i island. This is an adjunct of Hawaiian Kingdom law that continues, although the present U.S./State of Hawai'i regimes ignore international laws of occupation by applying their own fabricated laws rather than the laws of the occupied Hawaiian Kingdom. The current situation reflects intentional misrepresentation, deceit and fraud by the U.S./State of Hawai'i;

WHEREAS, Na Kupuna states that the so-called “ceded lands” are lands unlawfully taken from the Hawaiian Kingdom in 1893 and unlawfully “ceded” to the U.S. as part of the unlawful annexation of Hawai'i to the U.S. in 1898;

WHEREAS, Na Kupuna states that the so-called annexation of Hawai'i to the U.S. in 1898 is a myth, as the attempt was made by a “resolution” of the U.S. Congress - a domestic document having no legal significance outside of the boundaries of the sponsoring nation, the U.S. - and not by legally accepted treaty. Hawai'i was and remains a foreign nation to the U.S.;

WHEREAS, Na Kupuna states that the Republic of Hawai'i that allegedly “ceded” the Hawaiian Kingdom National lands to the U.S. had no title to those lands. There is no “chain of title” giving any degree of good and legal title to the Republic of Hawai'i;

WHEREAS, Na Kupuna states that the Mauna Kea Science Preserve – upon which numerous astronomical observatories have been built - is part of the so-called “ceded lands” of the State of Hawai'i;

ADDITIONALLY, following current U.S. law - a law that Na Kupuna disagrees with -- under Section 5(f) of the Admissions Act (1959) – the so-called “ceded” lands were transferred to the so-called “State” of Hawai'i “in trust,” among other

things, for the benefit of Native Hawaiians;

WHEREAS, Na Kupuna claims lawful jurisdiction and authority over these so-called “ceded” lands;

RECOGNIZING, the U.S. congress, in U.S. Public Law 103-150, dated November 23, 1993, states: *Whereas, the indigenous Hawaiian people never directly relinquished their claims to their inherent sovereignty as a people or over their national lands to the United States, either through their monarchy or through a plebiscite or referendum;*

WHEREAS, Na Kupuna suggests that the time line offered by TMT's sponsors, allowing 7-years for construction of the facility is grossly understated. Na Kupuna notes that litigation based on the Conservation District Use Application for the Keck Observatories Outrigger Telescope Project is on-going (7 years at the moment). Na Kupuna predicts a probable timeline for the TMT project of: litigation taking place on the Comprehensive Management Plan (CMP) that is in progress (estimated at 7 years), litigation on the TMT EIS (estimated at another 7 years - which will NOT take place concurrently with the CMP litigation), construction of TMT (if the project survives the 14 years of predicted litigation - of another 7 years) and 3 years for decommissioning. The total of 24 years - added to the present date of 2008 moves us into the year 2032 - leaving 1 year for operation of the TMT before termination of University of Hawai'i's general lease of the Science Reserve that terminates in 2033;

THEREFORE, Na Kupuna states that the \$1.1 Billion budget for TMT, combined with costs of litigation, payment of Plaintiffs' attorneys fees, etc., will increase total costs for the TMT to over U.S. \$5 Billion. This figure enormously exceeds any practical cost/benefit;

WHEREAS, Na Kupuna states that in recent years, as part of the process for permitting the Keck Observatories Outrigger Telescopes, that NASA generated an EIS that concluded that “past, present and ‘reasonably foreseeable’ future astronomical activities at the summit of Mauna Kea have had a substantial and adverse cumulative impact on the mountain's cultural resources.”;

FURTHERMORE, while TMT attempts to disengage its project from the conclusions of the NASA EIS by stating that it is not a “federal agency” and thus not affected by conclusions of the NASA EIS, it is. TMT is a “federal agency” as it has applied for federal operational funds, or is expected to do so in the future;

FURTHERMORE, even if TMT were not a “federal agency,” Na Kupuna believes that any EIS generated by TMT **MUST**, when considering the same or similar issues as the NASA EIS, come up with the same or similar conclusions;

FURTHERMORE, Na Kupuna believes that even if TMT is not a “federal agency,” that BLNR (so-called “State” of Hawai‘i Board of Land and Natural Resources), no matter what the conclusion of a proposed “State” EIS might be - that any and all incremental impacts attributed to the TMT would add further substantial impacts to the conclusions of the NASA EIS of “substantial and adverse cumulative impact ...,” and **MUST** reject such an application for conservation use permit;

MOREOVER, in the event that the proposed TMT EIS results in a conclusion substantially different from NASA’s EIS, Na Kupuna believes that the conclusion of NASA’s EIS (of substantial and adverse cumulative impact) would be the effective determining factor that would attach to all present and proposed astronomy activities on Mauna Kea, including the proposed TMT permit application;

FURTHERMORE, Na Kupuna believes that in the case above, there is no alternate method to handle such potentially conflicting conclusions, but to adopt the conclusion (of the NASA EIS) that best protects the cultural resources, cultural practices, and environmental protections on Mauna Kea;

WHEREAS, Na Kupuna and its individual representatives (of the several districts of Hawai‘i Island) maintain their cultural beliefs in the sacredness of Mauna Kea;

WHEREAS, the principals of TMT Corporation, the sponsors of this proposed telescope with a proposed budget of \$1.1 Billion (U.S.) to be potentially situated on Area E of the Mauna Kea Science Preserve are the California Institute for Astronomy, the University of California and the Association of Canadian Universities for Research in Astronomy;

WHEREAS, Na Kupuna objects to the involvement of the Association of Canadian Universities for Research in Astronomy, as it is a foreign-based organization of a nation (Canada) that is a participant in the RIMPAC Naval Exercises held periodically in and around Hawai‘i, where in the past, it has taken part in the bombardment of Hawaiian island targets, which are actions Kupuna Council continues to condemn;

FURTHERMORE, Na Kupuna further objects to the involvement of the Association of Canadian Universities for Research in Astronomy, as it is a foreign-based organization of a nation (Canada) that does not support Indigenous

Peoples (such as the Hawaiian people of Hawai'i) by refusing to vote in support of the recently passed UN Declaration of the Rights of Indigenous Peoples, which it now wants to use, in its hypocrisy, Hawaiian Indigenous lands - the so-called "ceded" lands - to build its telescope on;

FURTHERMORE, Na Kupuna objects to the TMT being sited on Area E of the Mauna Kea Science Reserve as it will begin (and result in) the degradation of a pristine area of sacred Mauna Kea by necessarily building new roads and extending various pernicious infrastructure;

ADDITIONALLY, Na Kupuna believes that initiating construction in the currently pristine Area E will set a precedent for opening up this area to further construction of future observatories that will desecrate an increasingly larger area of the sacred temple;

FURTHERMORE, Na Kupuna believes that the power requirements of TMT will substantially squander the increasingly deficient power capacity of Hawai'i island - eventually mandating construction of new generating system capacity that will result in increasing the cost of citizens' electric bills, pro rata or otherwise;

ADDITIONALLY, Na Kupuna believes that situating the TMT where it is proposed, with its expected (approximately) 360 feet diameter dome (the ten meter Keck lenses have domes with a diameter of 120 feet), will be very detrimental to the observation and enjoyment of the natural beauty of Mauna Kea. This is especially so for observers from the South Kohala/Waimea area - where this dome - approximately three (3) times the diameter of the individual Keck domes - will be an extreme eyesore. The existing, and much smaller observatories on Mauna Kea already create an excessively ugly scene that is directly responsible for degrading the natural beauty of Mauna Kea;

WHEREAS, Na Kupuna states that the Mauna Kea lands are "conservation" lands of the so-called State of Hawai'i, and are administered and managed with priority as conservation lands;

WHEREAS, Na Kupuna believes that no comprehensive studies of the Insecta, Aves and Mammalia classes on Mauna Kea have been done. Members of Na Kupuna, for instance, have knowledge that there are other insects, other than the Wekiu bug, that at times inhabit Mauna Kea, including a number of spiders, lady bugs, etc. Members of Na Kupuna also suggest that the Hawaiian Hoary Bat (*Lasiurus cinereus semotus*) may be a visitor to the summit areas (the Science Reserve) of Mauna Kea. In addition, there is the report by Kealoha Pisciotta that at a ceremony held outdoors on the summit (a number of years ago when she was an employee on the mountain), that she observed a Hawaiian Hawk or 'Io (*Buteo solitarius*) circling directly above the summit;

WITH CONCERN, Na Kupuna inquires about the possible use of insecticides/pesticides in and around a possible TMT at Mauna Kea;

WHEREAS, Na Kupuna states that astronomy, whose participants enthusiastically consider their activity to be superior to all other uses on Mauna Kea, is, by law, only a sub-use of the conservation lands on Mauna Kea, not THE major use of Mauna Kea;

WHEREAS, Section 171 of Hawai‘i Revised Statutes requires that fair market rent be paid for the lease of any of the so-called “ceded” lands;

WHEREAS, Na Kupuna has serious objections to past and present practices that allows lease rent paid by the University of Hawai‘i (lessee - hereinafter “U.H”) of the so-called “ceded” lands from the State of Hawai‘i (lessor) for \$1 per year;

HOWEVER, Na Kupuna states that if TMT wants to maintain a “legal and lawful” project under Section 171 of Hawai‘i Revised Statutes in the highest ethical and legal standards, then even if not required by U.H. - a fair market lease rent should be voluntarily paid to the Board of Land and Natural Resources (“BLNR”) as agent for the State of Hawai‘i (to whom the rent is owed);

WHEREAS, Na Kupuna believes that while public lands are often set aside to public agencies for use in serving the public, subsequent transfer to 3rd parties outside of Hawai‘i government, especially when the benefits go to foreign nations that are obtuse to the Indigenous peoples of Hawai‘i, are, or should be, subject to fair market rents. This is especially so as fair market rents are statutorily mandated by Hawai‘i Revised Statutes;

HOWEVER, Na Kupuna suggests that a fair market lease rent be 120% of proposed rents and viewing times that TMT would pay for a similar site in Chile. The additional 20% would make up for detriments (such as deficiencies for currency transactions, access to site, travel time, language, schools for employee children, standard of living, utilities, TV, shopping, site amenities such as wind flow and lower altitude, cultural differences, transportation difficulties, living communities, etc.) that a Chilean location would necessitate;

WHEREAS, while BLNR continues to complain of not having sufficient budget for the management and administration of Mauna Kea, Na Kupuna believes that the statutory fair market lease rents could go far to remedy the financial straight-jacket that BLNR is currently saddled with, particularly in this time of U.S. and Hawai‘i state financial instabilities;

WHEREAS, Na Kupuna also objects to other foreign-nation telescopes built on its sacred lands, including the Japan National Telescope and the Canada-France

Telescope. All telescopes built on Mauna Kea burden the Hawaiian Nation culturally and (by subsidy) economically by paying an insulting rent of \$1 a year;

WHEREAS, Na Kupuna believes that the foreign-nation telescopes built on our sacred temple constitutes further unlawful occupation of our national lands and these telescopes should be deconstructed and rebuilt on the subject nations' own national lands;

THEREFORE, Na Kupuna believes that the Association of Canadian Universities for Research in Astronomy should join other similar agencies and/or organizations - to pursue astronomical facilities and projects in its own country;

FURTHERMORE, Na Kupuna states that the Hawaiian community, through the Hawai'i State Office of Hawaiian Affairs ("OHA"), is benefited by 20% of the \$1 annual rent (from each observatory) - amounting to 20 cents per year;

FURTHERMORE, Na Kupuna states [that] with 13 observatories currently on Mauna Kea, that OHA's income from astronomy activities amounts to the ridiculous sum of a mere \$2.60 per year;

WHEREAS, Na Kupuna states that with the inclusion of adaptive optics and interferometry - the twin Keck telescopes having an equivalent resolution of approximately 8 times the lens' effective diameter - or 80 meters - which when compared with the TMT (of a "single" lens of only 30 meters) - has almost 3 times TMT's resolving power. Other than TMT's light gathering ability - the resolution of the TMT is inferior when compared to the adoptive optic- and interferometry-assisted Keck telescopes and therefore have cost-effective issues;

MOREOVER, Na Kupuna believes that the cost/benefit ratio of TMT, when compared to such telescopes as the Keck's, is skewed to the side of inefficiency;

WHEREAS, Na Kupuna observes that Mauna Kea is positioned over one of the major aquifers of Hawai'i island and MUST be conserved and protected to insure that the life-giving water from this aquifer remains pure for future generations of Hawai'i Island;

WHEREAS, Na Kupuna believes that all water and chemicals taken to the summit of Mauna Kea in support of TMT's telescope operation, and all human wastes and trash produced, must be taken back down the mountain and disposed of properly. What goes up, must come down;

WHEREAS, as the term "Sustainable Astronomy" has been used relative to public relations materials supporting the construction of TMT, Na Kupuna requests a full and comprehensive definition for the term "Sustainable Astronomy;"

WHEREAS, Na Kupuna believes that it is a matter of U.S. policy that the American Indian Religious Freedom Act applies to Hawaiians' use of Mauna Kea and that in due respect and compliance, TMT must comply with its requirements;

"It is the policy of the United States, in furtherance of the policy established in the joint resolution entitled "Joint Resolution American Indian Religious Freedom," approved August 11, 1978 (42 U.S.C. 1996), to protect and preserve the inherent right of any Native American to believe, express, and exercise his or her traditional religion, including, but not limited to, access to any Native American religious site, use and possession of sacred objects, and the freedom to worship through ceremonies and traditional rites."

NATIVE AMERICAN FREE EXERCISE OF RELIGION ACT OF 1993

Senate Bill 1021

Item Key: 4770

Introduced to 103rd Congress

May 25, 1993

* * *

American Indian Religious Freedom Act Amendments of 1994

A BILL

To assure religious freedom to Native Americans.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

* * *

SEC. 2.

It is the policy of the United States, in furtherance of the policy established in the joint resolution entitled "Joint Resolution American Indian Religious Freedom," approved August 11, 1978 (42 U.S.C. 1996), to protect and preserve the inherent right of any Native American to believe, express, and exercise his or her traditional religion, including, but not limited to, access to any Native American religious site, use and possession of sacred objects, and the freedom to worship through ceremonies and traditional rites.

SEC. 3. DEFINITIONS.

For the purposes of this Act, the following definitions shall apply:

(1) AGGRIEVED PARTY.

--The term "aggrieved party" means any Native American practitioner, Native American traditional leader, Indian tribe, or Native Hawaiian organization [including Na Kupuna] as defined by this Act.

(8) LAND.--The terms "land," "lands," or "public lands" mean surface and subsurface land within the jurisdiction of the United States or the respective States, including submerged land of any kind or interest therein and all water and waterways occupying, adjacent to, or running through the land.;

WHEREAS, Na Kupuna recognizes that Native Hawaiians, especially the elderly, suffer very serious health issues relative to the general population of Hawai'i;

WHEREAS, Na Kupuna, on behalf of all kupuna (elders), Native Hawaiians and the general populace of Hawai'i Island, and the so-called State of Hawai'i, suggests that, if TMT is eventually permitted to build (after meeting all legal requirements and cultural concerns), although, hopefully, in an area other than Area E, that its Canadian partner, Association of Canadian Universities for Research in Astronomy, advocate for and participant in a program to import pharmaceuticals from Canada - where pharmaceuticals can be acquired for a substantially lesser expense than in the U.S. - to be sold by licensed participating pharmacies for a set (minimal) markup, thereby significantly benefiting citizens' in their necessary healthcare;

NOW, THEREFORE, Na Kupuna O Moku O Keawe opposes the permitting and construction of the TMT and any other telescopes on the sacred mountain of Mauna Kea, Hawai'i Island, so-called State of Hawai'i. We also call for the removal of all telescopes and related equipment on the sacred mountain of Mauna Kea as these were never intended for Hawaiian cultural or religious practices.

DATED: November 15, 2008, at Kapa'au, North Kohala, Hawai'i Island,

Signed: Kihei Niheu

Witnessed: Isaac Harp

Appendix E Hale Pōhaku Mid-Level Support Facilities Map

