FINAL REPORT (PART 1)

Archaeological Monitoring Plan in Support of Wailua River State Park Rockfall Mitigation Wailua Ahupuaʻa, Puna District, Island of Kauaʻi.

TMK (4) 3-9-002:021; 3-9-002:030

Prepared for:

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August 2013

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in Support of Wailua River State Park Rockfall Mitigation
Wailua Ahupua‘a, Puna District, Island of Kaua‘i.
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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

INTRODUCTION

At the request of AECOM Technical Services Inc., Pacific Consulting Services, Inc. (PCSI) has prepared this Archaeological Monitoring Plan (AMP) in support of proposed Wailua River State Park rockfall mitigation on Kauaʻi Island, Hawaiʻi (Figure 1). The State Historic Preservation Division (SHPD) requested that "all ground disturbing activities associated with the rockfall mitigation be monitored by a qualified archaeologist; the archaeologist will rappel down the cliff (with the rockfall mitigation crew) to ensure no historic properties will be damaged" (SHPD 2013). This AMP has been prepared in compliance with this request and with Hawaii Revised Statutes (HRS), Chapter 6E, and Title 13 of the Hawaii Administrative Rules (HAR), Subtitle 13 (State Historic Preservation Division (SHPD) Rules), Chapter 279 (*Rules Governing Standards for Archaeological Monitoring Studies and Reports*), and Chapter 275 (*Rules Governing Procedures for Historic Preservation Review for Governmental Projects Covered Under Sections 6E-8, HRS*).

PROJECT AREA LOCATION

The project area lies within Wailua River State Park along the Wailua River and near the trail at the Fern Grotto. The project includes two construction areas designated as Rockfall Locations 1 and 2 (see Figure 1). Both locations are within TMK: (4) 3-9-002:021, on property under the jurisdiction of the State of Hawaii, Department of Land and Natural Resources (DLNR). The project is within a discontiguous National Historic Landmark, the Wailua Complex of Heiau, Wailua River State Park (Figure 2).

Rockfall Location 1 is on the embankment of the Wailua River and includes eight boulders proposed for mitigation, as well as rock scaling to remove loose rock from the slope. All removed rocks will be relocated to an as yet to be determined off-site location which may include securing them using a localized net system. Specific mitigation measures include (1) rock bolting and shotcrete of four boulders, (2) demolition and removal of one boulder, (3) in situ cable lashing of one boulder, (4) ring netting and cable lashing of two boulders, (5) installation of a localized net system with rock anchors for a large outcrop, and (6) rock scaling to remove all loose surface rock within the limits of the project area. The localized net system will be implemented only following written approval by the engineer of a detailed plan.

Rockfall Location 2 is located in the vicinity of the Fern Grotto and will involve (1) pulling a single large boulder away from the existing rockfall fence for a minimum distance of five feet (ft) of fence line (exact location yet to be determined); and (2) installation of a degradable erosion mat on the slope abutting the trail (i.e., sidewalk) which will involve removal of 4 cubic yards of loose soil from the base of the slope, vegetation clearing, and trenching to key in the mat (SHPD 2013). Appendix A provides design plans for the mitigation measures.

ENVIRONMENTAL SETTING

TOPOGRAPHY AND SOILS

Kauaʻi, one of the older Hawaiian Islands, is 33 miles long and 25 miles wide (553 square miles) (Pukui et al.1974). The island is comprised of a single great shield volcano, deeply eroded and veneered by volcanic activity (Macdonald and Abbott 1970:381). The island consists of a variety of climates and variations in topography. Wailua *ahupuaʻa* (traditional Hawaiian land division) is located on the eastern portion of Kauaʻi, situated in the Līhuʻe Basin, a flank caldera (Macdonald and Abbott 1970:381). The Wailua River, the largest river in the State, is the main drainage system for the Līhuʻe Basin. The river is comprised of the North and South Forks as well as other minor tributaries. The river is affected by the tides and measures two miles inland to the junction of the North and South Forks.

Figure 1. Project Area Location on U.S.G.S. Kapaa Quadrangle (2002).

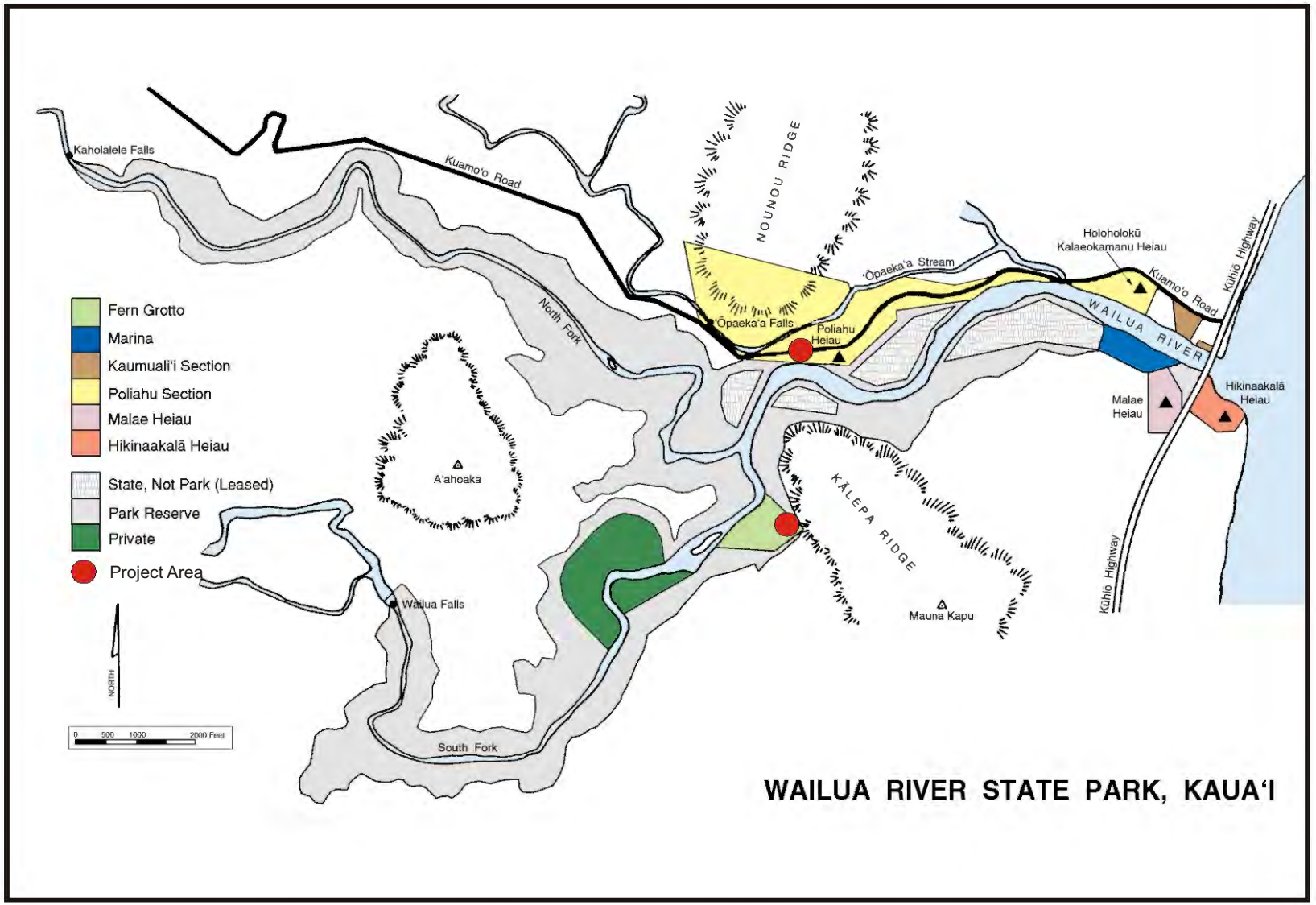

Figure 2. Wailua River State Park Map Showing Project Area (Courtesy of DLNR State Parks Divsion).

Soils in the project area consist of Kolokolo Clay Loam (KW) with 0 to 2 percent slopes, Hanalei Silty Clay (HrB) with 0 to 2 percent slopes, Kalapa Silty Clay (KdF) with 40 to 70 percent slopes, and Rock Outcrop (rRO) with 5 to 99 percent slopes (USDA 2013). KW soils develop in alluvium washed from upland soils, these soils are prime farm lands if protected from flooding. HrB soils develop in alluvium derived from basic igneous rock. These poorly drained soils are used for taro and sugarcane. KdF soils are well drained soils located at the base of slopes; these develop from weathered basic igneious rock. rRO consists of very steep land broken by numerous drainage channels with rapid runoff and active eroision (Foote et al. 1972).

RAINFALL AND HYDROLOGY

The project area receives a fair amount of rainfall. Data for Kauaʻi Island indicates that rainfall in the project area averages 1,500 millimeters (mm), or 59 inches per year (Giambelluca et al. 2012).

VEGETATION

Vegetation along the river bank includes *hau* (*Hibicus tiliacenous*), *kukui* (*Aleurites moluccana*), guava (*Psidium guajava*), Java plum (*Eugenia cumini*), California grass (*Brachyaria Mutica*), and other exotic and native species (Wagner et al. 1990; United States Fish and Wildlife Service 1982; Carpenter and Yent 1997a:5).

BACKGROUND REVIEW

Wailua literally means “two waters,” according to Pukui et al. (1974:224). This may refer to the North and South Forks of the Wailua River. Wailua Ahupuaʻa is situated in the Puna District, and is bordered by Olohena Ahupuaʻa to the north and Hanamāʻulu Ahupuaʻa to the south.

Wailua was one of two royal centers on the Island of Kauaʻi. It was chosen by the *aliʻi* (chiefs) for its fertile soil, fresh water, rich marine resources, safe canoe landings, and good surf (Yent 1995:20). The area *makai* (toward the sea) of Nounou and Kālepa Ridges was a ruling center occupied periodically by the ruling chief and his staff. The area *mauka* (toward the mountain) was used for agriculture; there is evidence of taro field systems and alluvial terraces along the Wailua River (Yent 1995:21).

LEGENDARY HISTORY

The significance of Wailua is evident in the large amount of recorded information which illustrates a place full of legends and cultural history. Historically, Wailua was an area where gods and *aliʻi* gathered. Wailua was known as Wailuanuihoʻānu, “Wailua the great and sacred,” and commoners were not allowed to visit (Dickey 1917). The large numbers of *heiau* and other cultural sites confirm of the importance of this area in prehistory. Bates (1854) stated that:

> The Wailua River stands associated with the very genius of romance and superstition. Every object on the banks, every rock in the stream, and every cliff by which it is overlooked, has attached to it some legend of lovers, warriors, priests, and kings (Bates 1854:190).

The legends discussed here are a brief representation of the available information for the immediate project area. To gain a more thorough understating of the legends of the entire *ahupua’a*, the reader is directed to Dickey (1917).

One of the earliest voyagers to Kauaʻi was Moikeha of Kahiki; he brought a calabash of winds, and planted the first taro and sweet potatoes. Moikeha had a foster son, Laa-mai-kahiki,

who traveled to Kauaʻi and brought to Wailua the god Lono-i-ka-ou-alii and the first *kaeke* (drum made from the hollowed trunk of a coconut tree and covered with shark skin). It is said that this was the first drum of Hawaiʻi (Dickey 1917:25).

Kapohana, the strong man of Wailua, discovered that a robber cannibal had arrived in Wailua. Kapohana was not afraid of the cannibal - the two fought but it was a draw. Kapohana suggested that the two become friends, but this suggestion was not sincere. Kapohana along with 80 warriors surrounded the cannibal's house. The cannibal escaped and ate all the warriors except Kapohana. The two fought again; Kapohana finally killed the cannibal (Dickey 1917:25).

Malae Heiau, also known as Makaukiu Heiau, is the largest *heiau* (ritual site or temple) of Kauaʻi, and was built by *menehune* (legendary race of small people who worked at night, building fishponds, roads, and temples). At this *heiau* a beautiful maiden, Kaili-lau-o-ke-koa, was born. She was skilled at *konane* (checkers) and surf riding. She was the daughter of Laa and the granddaughter of Moikeha, who would someday be the queen of Kauaʻi (Dickey 1917:25-26).

The legendary Cave of Mamaʻkualono was once the home of beautiful woman named Mamaʻkualono. After she refused to marry Maui, the son of Hina, Hina dammed up the South Fork of the Wailua river trying to drown her. She was swept out to sea and saved by her brother who chanted to the gods (Carpenter and Yent 1997a:11, Dickey 1917:33).

The House of Kawelo, SIHP (Statewide Inventory of Historic Places) Site 50-30-08-328 (Site 328), is a rock shaped like a grass house. Kawelo would sometimes take to form of a shark and therefore also had a nearby underwater home as well - another stone submerged in the river (Carpenter and Yent 1997a:11, Dickey 1917:33).

Maluaka is the location where the flowers of *hau* trees gather in the river and float downstream (Carpenter and Yent 1997a:11, Dickey 1917:32).

Kulaina (Site 326) and Kamalau (Site 325) are two boulders that represent a sister and brother who were both turned to stone. According to Dicky 1917:31), the Brother Rock, Kamalau, sits at the base of Mauna Kapu, and the Sister Rock, Kulaina, is located in the Wailua River. There are several versions as to why Kulaina was turned to stone (Carpenter and Yent 1997a:11, Dickey 1917:31). Smith (1955) recounts a different variation of this legend with respect to the names and locations of the rocks. According to Smith, the brother Kumalu and his sister Kulani both of whom went to Wailua, Poliʻahu, to steal the two idols of power and as a result they were turned to stone. Sister Rock is said to be located just below Mount Kapu, and Brother Rock is located in the river (Smith 1955:53).

Hihiakalahau (Site 337) is the place where the first *hau* tree on Kauaʻi grew. This cliff area is named after a man, who after failing to ascend this cliff before daylight, was turned into a *hau* tree (Carpenter and Yent 1997a:11, Dickey 1917:30).

Manamanaiakaluea, a *lehua* tree without any flowers grows here. The flowers of this tree are located underwater in the surf off of Hauola, at a place called Kalauawehe (Carpenter and Yent 1997a:12, Dickey 1917:33).

Poliʻahu Heiau (Site 107), is located on a *pali* (cliff) between Opaikaʻa and Wailua Rivers. Bennett (1931) reports that this *heiau* commands an excellent view of the valleys below. It measures 73.8 by 50.3 meters (m) with walls that have tumbled but the original height, 1.5 by 1.8 m, is still evident (Bennett 1931:127). Poliʻahu Heiau was described as being built by *menehune* (Dickey 1917:30). This *heiau* was reputedly used by the gods as well as by the highest ranking *aliʻi*. It has been said that once a month, on the night of Kāne, the gods would

gather here and their raucous activities could be heard by the common people in the area (Carpenter and Yent 1997a:8, Lydgate 1916:3).

Down the ridge from Poli'ahu Heiau is the bellstone (Site 335). This area contains a number of large boulders situated on the *makai* side of the ridge. One or more of these stones when hit with another stone would give off a loud ringing sound that was used to send messages through the valley (Carpenter and Yent 1997a:8). Some say the bellstone was used to announce the birth of royal children (Joesting 1984:9).

TRADITIONAL LAND USE

In Pre-Contact Hawaii Wailua was known as Wailuanui-a-Ho'ano:

> Wailuanui-a-Ho'ano was born in 'Ewa, Oahu, and his descendants went to Kauai and to Maui, and wherever they settled they called the land after the name of their ancestor. Wailua was a son of La'akona, ancestor of the Ewa family by Ka-ho'ano-okalani (Kamakau 1976:7).

Ali'i made pilgrimages to Mount Wai'ale'ale along the Kaluawehe Trail (King's Highway) to a place called Ka'awakō, where a small shrine is located (Carpenter and Yent 1997a:6). There are seven recorded *heiau* along the Wailua River. It was imperative that all Kaua'i *ali'i* were born at the Holoholokū Birthstones located in Wailua. The importance of Holoholokū is evident in the chant from the legend of Kawelo:

> *Hanau ke 'lii iloko o Holoholoku-he alii nui;*
> *Hanau ke kanaka iloko o Holoholoku, he alii no;*
> *Hanau ke alii nui mawaho a'e o Holoholoku, aohe alii, he kanaka ia*!
>
> The child of a chief born at Holoholoku is high chief;
> The child of a commoner born at Holoholoku becomes a chief, also;
> The child of a high chief born outside of Holoholoku is no chief, a commoner he! (Folk and Ida 1981:13).

HISTORICAL LAND USE

The earliest documentation by western voyagers comes from the journals of Captain George Vancouver who sailed along Wailua shores in 1793. Vancouver mentioned that although there was no safe anchorage at Wailua this was the "most fertile and pleasant district of the island" and "the principle residence of the king" (Yent 1995:9).

In the 1820's the missionaries came to Kaua'i and founded settlements in Waimea. In 1835 the Waimea church set up another church in Wailua, with the help of Debora Kapule, consort to King Kaumuali'i of Kaua'i (Yent:1995:9).

Agriculture was widespread along the Wailua River. Bates (1854) described the surrounding environment during a canoe ride up the Wailua River, indicating that the river wound its way through numerous taro plantations as well as orange and coconut tree groves (Bates 1854:190).

During the Māhele of 1848, roughly 75 acres in Wailua were awarded to 25 individuals with a majority of the *makai* lands being claimed by Debora Kapule and her son Iosia Kaumuali'i (Figure 3). The remaining land in Wailua was declared Crown Lands under Kamehameha III (Stauffer 1993:113; Yent 1995:9).

According to Saito and Campbell (1987), Lihue Plantation began in 1849. The original 3,000 acres of Lihue Plantation increased by 300 acres at Ahukini in 1866. In 1872, 17,000 acres at Hanamā'ulu were added, which included an excellent water source. Lihue Plantation

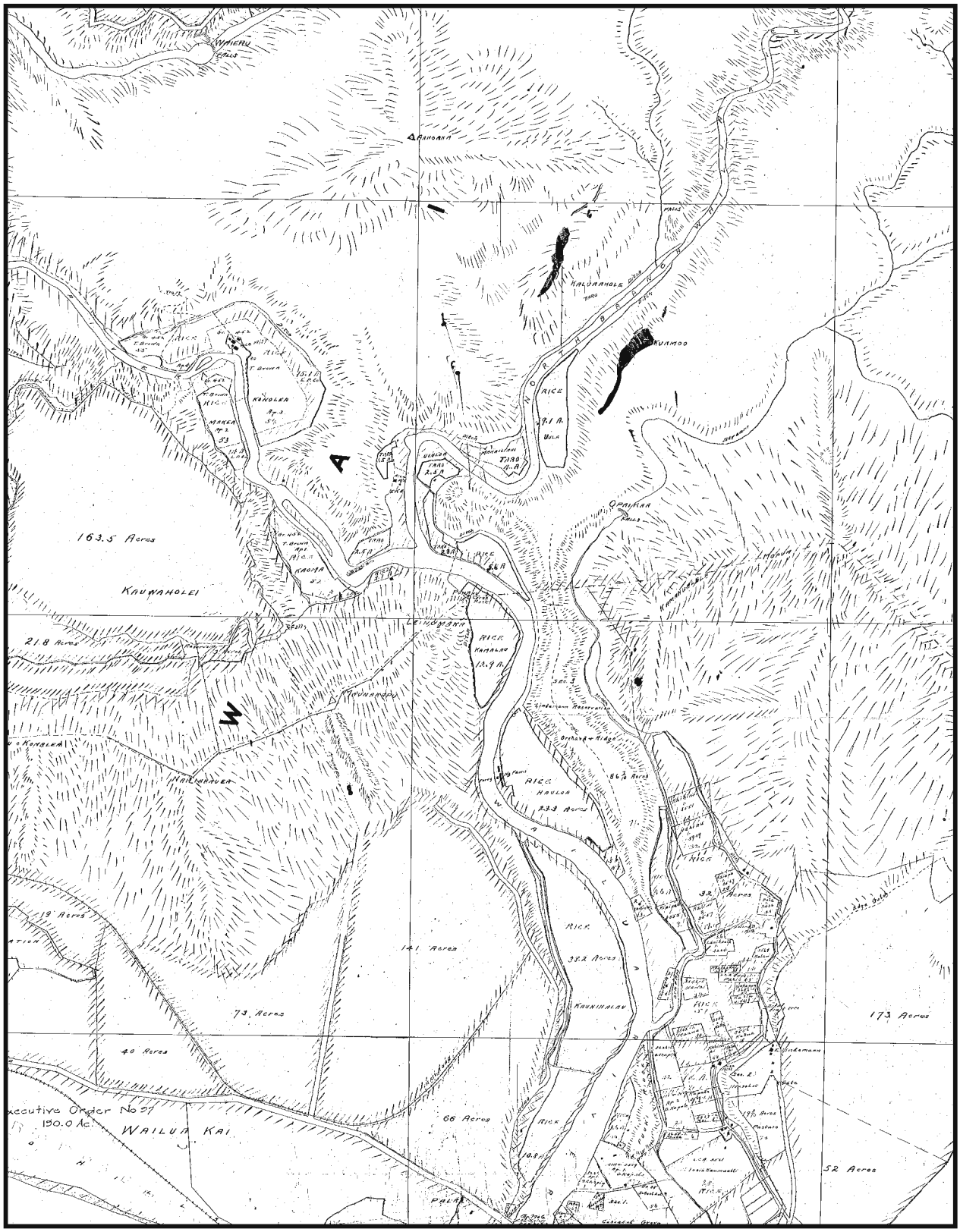

Figure 3. Portion of 1900 Map by Monsarrat Showing LCA Claims (State of Hawaii Land and Survey Division).

continued to expand, leasing 30,000 acres at Wailua in 1878. In 1923, a lease of Wailua lands prompted work on a project to bring water from the south fork of the Wailua River for irrigation and hydroelectric power. In the early 1930s, approximately 100 acres of land had been reclaimed from swamp and bog lands (Saito and Campbell 1987).

By the 1920s the taro planted in alluvial terraces along the Wailua River was replaced with rice, while the uplands were planted with sugarcane and used for cattle grazing. A 1932 map (Figure 4) illustrates the large number of taro, rice, and sugarcane fields present.

Handy (1940) wrote the following about Wailua:

> Along the lower 2 miles of Wailua River, above the sandy coastal plain, are many broad, open, level areas, formerly terraces, now mostly sugar. Opaekaa Stream, which flows into tidewater Wailua River, watered many terraces both above and below the falls. The large area of terraces below the falls is now planted mostly in rice, a few of the upper terraces being used for sweet potatoes, while the uppermost are pasture (Handy 1940:67-68).

The Wailua River State Park was established in 1954 in recognition of the splendid beauty of the Wailua River along with the significant historical and archeological features. The Wailua Complex of Heiau was included in the state park and designated a discontiguous National Historic Landmark in 1962 and listed on the Hawaii State Register of Historic Places in 1981 as Site 50-30-08-0502.

PREVIOUS ARCHAEOLOGICAL STUDIES

There have been numerous archaeological studies conducted within the Wailua Ahupua‘a. This AMP limits this discussion to selected studies in and near Wailua River State Park. Figure 5 shows the location of selected previous survey areas, locations of five of the important *heiau* in Wailua, and other selected sites situated in close proximity to Rockfall Locations 1 and 2. Table 1 presents a summary of these selected previous studies within Wailua Ahupua‘a, with a focus on studies near the immediate project area.

Wailua Ahupua‘a was a significant political and religious center of Kaua‘i during the pre-Contact era. There were more *heiau* in Wailua than in other ahupua‘a on Kaua‘i (see Bennett 1931; Hammatt and Shideler 2007). The large number of *heiau*, a royal birthing site, and a *pu‘uhonua* (place of refuge) present in Wailua Ahupua‘a all support the importance of Wailua in prehistory (Carpenter and Yent 1997b).

The *heiau* in Wailua were first documented by Thrum (1906) when he conducted a survey of Kaua’i *heiau* sites for the Hawaiian Annual of 1907. Five *heiau* were recorded in the Wailua River area. These include Malae Heiau, Poli’ahu Heiau, Holoholokū Heiau, Hikina‘akalā Heiau, and Kukui Heiau (see Figure 5).

Bennett’s survey in the early 1930’s (Bennett 1931) followed up on Thrum’s documentation (1906). Bennett recorded six *heiau* in the Wailua River area and assigned them site numbers. Bennett’s survey included the five *heiau* previously identified by Thrum, including Malae Heiau (Site 104), Poli’ahu Heiau (Site 107), Holoholokū Heiau, sacred coconut grove and birthplace of kings (Site 106), Hikina‘akalā Heiau (Site 105), Kukui Heiau (Site 108), and Site 109, an unnamed *heiau* located on the north bluff of the Wailua River in the cane field a mile from the sea (see Figure 5). Bennett (1931:128) also recorded Site 110, which consisted of taro terraces and a bowl located “back of the Kapa Homesteads” (not shown in Figure 5).

Soehren (1967) conducted the first survey of the entire Wailua River State Park lands. During this survey site evaluations were limited to two word descriptions and a site location

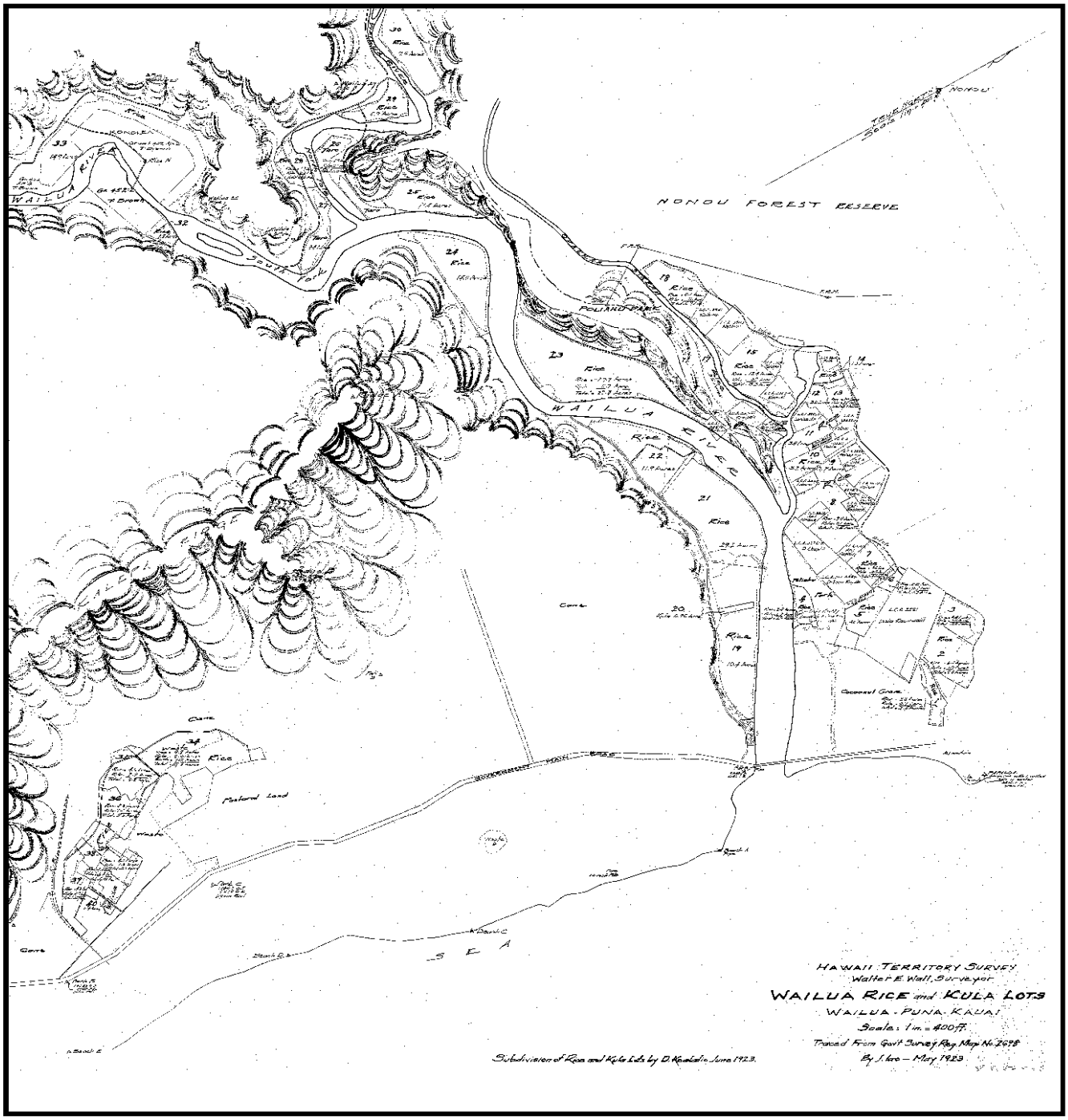

Figure 4. Portion of 1923 Map Showing Rice and Kula Lots (State of Hawaii Land and Survey Division).

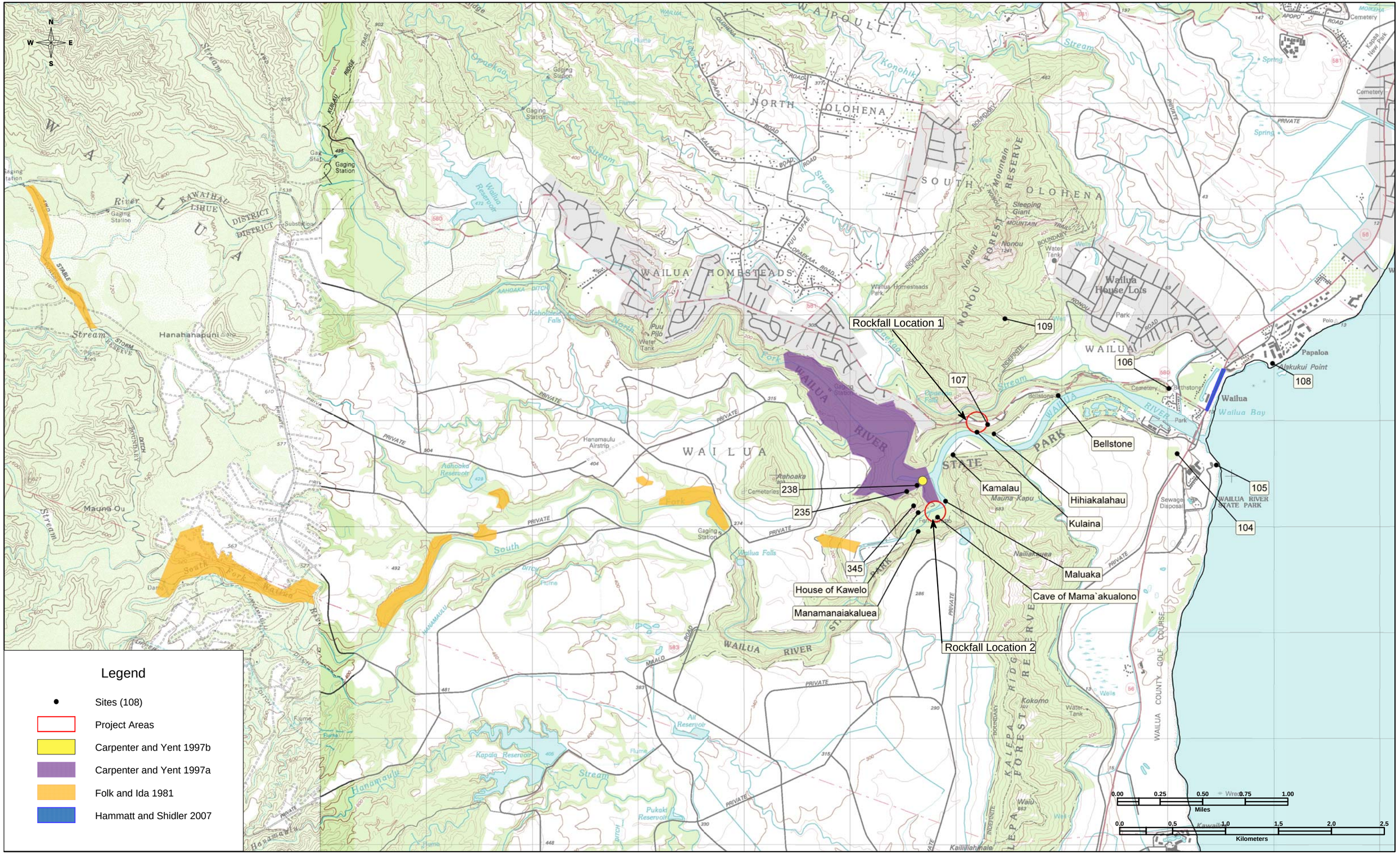

Figure 5. Previous Archaeological Studies and Selected Site Locations in the Vicinity of the Rockfall Project Areas.

Table 1. Selected Previous Archaeological Studies in the Vicinity of the Project Area.

Reference	TMK/Location	Nature of Study	SIHP # 50-30-08-	Summary of Results
Thrum*	Island wide	Survey of Kaua'i heiau	NA	*Heiau*
Bennett 1931	Island wide	Archaeological Survey	104-108	*Heiau,* bowl
Soehren* 1967	Wailua River State Park	Field Trip Report	NA	Report unavailable
Ching* 1968	Wailua River State Park	Archaeological Survey	NA	Initial documentation of many of the Wailua River archaeological and legendary sites
Folk and Ida 1981	(4)3-9-002	Cultural Resource Reconnaissance	NA	Three agricultural terrace complexes
Carpenter and Yent 1997a	(4)3-9-002:001	Archaeological Reconnasissance Survey River	215,218, 219,230-235,237, 248,321-324,338, 339,344, 345	Survey of North Fork of Wailua River; identified five '*auwai*, seven terraces, one house site, one mill site, one platform
Carpenter and Yent 1997b	Wailua River State Park	Archaeological Survey	238	Survey of proposed kayak landing site near Fern Grotto; identified one previously identified agricultural (rice) terrace
Hammatt and Shideler 2007	(4)4-1-003:039 (por.)	Archaeological Inventory Survey	1171	Identified a subsurface cultural layer that extends to Coco Palms resort

*Project area not identified on Figure 5.

name. Carpenter and Yent (1997a) later relocated eleven of the sites that Soehren had recorded (Carpenter and Yent 1997a:20).

Ching (1968) conducted a follow-up survey to Soehren's 1967 survey. Although Ching's descriptions were more extensive than Soehren's, Ching's descriptions still lacked detail. Carpenter and Yent (1997) later relocated fifteen of the sites that Ching had recorded (Carpenter and Yent 1997:20, 22) and updated site information.

Folk and Ida (1981) conducted a cultural resources reconnaissance in the Wailua River State Park. This study consisted of nine separate areas, Area A through I, along the South Fork of Wailua River (see Figure 5). This study located three agricultural terrace complexes. They concluded that early coastal sites may not represent permanent settlements in the area and that some early inland camp sites should be expected (Folk and Ida 1981:36).

Carpenter and Yent (1997a) conducted an archaeological reconnaissance survey of the North Fork of the Wailua River. During this survey fifteen archaeological and legendary sites were documented, all of which had been previously recorded by Soehren (1967) and Ching (1968). The sites situated closest to the two rockfall locations are briefly described below.

Several of the legendary sites discussed below have previously been identified in this report (see section titled “Legendary History”), and are presented again in this section in the context of their locations with respect to Rockfall Locations 1 and 2.

Two of the legendary sites and one *heiau* site are near Rockfall Location 1 (see Figure 5). The *heiau*, Poli‘ahu, is located off of Kuamo‘o Road, approximately 73 m (240 ft) east of the top of the slope at Rockfall Location 1 (see Figure 5). Poli‘ahu Heiau, recorded by Bennett (1931:127), commands an excellent view of the valley, and is a roughly rectangular, paved and walled enclosure. It measures approximately 73.8 by 50.3 m, and has a notch, 21.3 by 9.1 m in size, in the southeast corner. The walls, which exhibit some deterioration and tumbling, range from 1.5 to 1.8 m in height.

The legendary sites located nearest to Rockfall Location 1 include Kulaina and Kamalau (Sites 326 and 325) and Hihiakalahau (Site 337). The legendary Kamalau (Site 325) and Kulaina (Site 326) are a brother and sister who were turned to stone (Bates 1854; Dickey 1917:30-31). According to Dickey 1917: 30-31), the Brother Rock, Kamalau (Site 325) is located at the base of Mauna Kapu, while the Sister Rock (Site 325) is located within Wailua River approximately 91.5 m (300 ft) east of Rockfall Location 1. There are several versions of why these two siblings were turned to stone (Bates 1854; Dickey 1917:30-31). Smith (1955) recounts a different variation to this legend, where the brother Kumalu and his sister Kulani both of whom went to Wailua, Poli‘ahu, to steal the two idols of power and as a result they were turned to stone. Sister Rock is said to be located just below Mount Kapu, and Brother Rock is located in the river (Smith 1955:53).

The second legendary site, Hihiakalahau (Site 337), is located approximately 164 m (540 ft) east of Rockfall Location 1 on the same side of the river. Hihiakalahau is a place on a cliff where the first *hau* tree was grown on Kaua‘i. A man by the same name, who failed to ascend this cliff before daylight, was turned into a *hau* tree (Dickey 1917:20). This is appears to be the same cliff that is below Poli‘ahu Heiau (Site 107 –see Figure 5).

Seven sites documented by Carpenter and Yent (1997a; 1997b) are located relatively near Rockfall Location 2. These include three archaeological sites (Sites 235, 345, and 238) and four legendary sites, including Maluaka (Site 237), House of Kewalo (Site 328), Cave of Mama‘akualono (no site number), and Manamanaiakaluea (Site 332).

Site 235 was given the name *Eoe* by Soehren (1967) and Ching (1968). It is located on the opposite side of the river from the Fern Grotto, and approximately 329 m (1,080 ft) north/northwest of Rockfall Location 2 (see Figure 5). This site contains remnants of a *poi* (fermented taro) mill that was in operation up until the 1930’s (Carpenter and Yent 1997a:32). Site 235 also contains two features: a stone and mortar foundation measuring 15.0 by 5.5 m as well as a stone walled enclosure measuring 8.0 by 2.5 m. There are additional waterways nearby, as well as concrete grinding wheel. There is also basement with stairs leading down to it and west of the basement there is a circular stone, mortar, and brick structure of unknown function (Carpenter and Yent 1997a:32).

Site 345, a possible *heiau* situated on the bluff overlooking the South Fork of the river, is situated on the opposite side of the river from the Fern Grotto, approximately 201 m (660 ft) east/northeast of Rockfall Location 2. This site consists of a deteriorated enclosure, with only the foundation stones remaining. The overall enclosure measures 26.5 by 21.5 m (Carpenter and Yent 1997a), and has a notch in the southeast corner. The notch is similar to the notch in Poli‘ahu Heiau (Carpenter and Yent 1997a:37).

Maluaka, Site 237, was named *Eke* by Soehren (1967) and Ching (1968). It is located directly across from the Fern Grotto boat landing, just above the junction of the north and south

forks of the Wailua River (Carpenter and Yent 1997a:32). It is situated approximately 128 m (420 ft) north of Rockfall Location 2, on the same side of the river. According to Dickey (1917:32), Maluaka is where the flowers of the *hau* trees gather in the river rather than floating downriver. When the wind known as Waiapua blows, the flowers travel downriver to Hauola, the *pu'uhonua*.

This site area also consists of a set of five extremely eroded terraces with no stone facings. According to Carpenter and Yent (1997a:32) this place was apparently used as a picnic area by boat tour companies since 1955; this use has impacted the site area.

House of Kewalo, Site 328, is a large rock shaped like a grass house (Carpenter and Yent 1997a:11). It is located on the opposite side of the river from the Fern Grotto, and approximately 165 m (540 ft) east of Rockfall Location 2. Kewalo is a legendary figure who would sometimes take the form of a shark, and had an underwater home that consists of another submerged boulder (Dickey 1917:33).

The Cave of Mama'akualono (no site number) is a legendary site located approximately 220 m (720 ft) north/northeast of Rockfall Location 2. According to Dickey (1917:33) the cave was once the home of a beautiful woman, who refused to marry Maui, the son of Hina. Because of her refusal, Hina dammed up the South Fork of Wailua River, trying to drown Mama'akualono. She was swept out to sea but was saved by her brother who chanted to the sea gods who carried her to Maui Island.

Manamanaiakaluea (Site 332) is located approximately 238 m (780 ft) southeast of Rockfall Location 2 on the same side of the river. This is a place where a *lehua* tree without flowers grows (Dickey 1917:33; Carpenter and Yent 1997a:12). The flowers of this tree are underwater in the surf off of Hauola, a place called Kaluawehe.

Site 238 is a large earthen-faced terrace situated parallel to Wailua River found during a survey for a new kayak landing (Carpenter and Yent 1997b). The terrace is situated about 10 to 15 m from the river's edge, and approximately 292 m (960 feet) north/northwest of Rockfall Location 2 on the same side of the river. The terrace is approximately 90 m in length and the level area behind the facing extends back to the western side of the loop trail to the Fern Grotto (Carpenter and Yent 1997b:17). The northeastern end of the terrace has been obliterated by development of the loop trail; the southwestern end terminates at a small drainage channel that may have been used to irrigate the terrace. Ching (1968) believed this terrace was a rice paddy and used in the historic era. According to Yent (personal communication), this terrace does not extend into the vicinity of Rockfall Location 2. Further information about Site 238 is presented in the section titled "Pedestrian Survey of Wailua River State Park Rockfall Mitigation Project Areas."

Hammatt and Shideler (2007) conducted an archaeological inventory survey of a segment of Kūhiō Highway scheduled for widening from Kuamo'o Road to the temporary Kapa'a Bypass Road. The project area was located east of Kūhiō Highway, west of the Coco Palms resort, north of Kuamoo Road and south of Hale'īlio Road. An extensive background section pertaining to the land use history, myths and legends and previous archaeological studies was presented in their report. No surface archaeological sites were found during fieldwork. During excavation of 10 backhoe trenches, one stratigraphic layer with traditional Hawaiian archaeological materials was found in Backhoe Trench 9. This intermittent cultural layer was identified as being part of Site 50-30-08-1711, as described by Buffem and Dega (2002), Dega and Powell (2003), and Hoffman et al. (2005). Archaeological monitoring was recommended during construction of the highway segment.

RECONNAISSANCE SURVEY OF WAILUA RIVER STATE PARK PROJECT AREAS

As part of the SHPD requirements for this project, PCSI conducted a reconnaissance survey of the project areas, or Areas of Potential Effect (APE's), with the objective of identifying and/or relocating surface archaeological historic properties within the project area and APE to ensure avoidance (SHPD 2013). The APE's surveyed included Rockfall Locations 1 and 2, and a staging area associated with Rockfall Location 1.

No archaeological sites or features, including cave entrances, were found during surveys of these two areas. Figures 6 and 7 present Google Earth images of the locations of Rockfall Locations 1 and 2.

On July 29, 2013, PCSI conducted the archaeological reconnaissance surveys of Rockfall Locations 1 and 2. For Rockfall Location 1, this was accomplished by using rock climbing gear to rappel down steep slopes and vertical cliffs. The survey of Rockfall Location 2 did not require climbing gear.

PCSI archaeologists, accompanied by Mr. Ardalan Nikou of AECOM, rappelled down central portions of the steeply-sloped Rockfall Location 1 to search for evidence of past use, including surface architectural structures and caves (lava tubes, overhang shelters, rock shelters). During the survey, several of the boulders to be subjected to mitigation measures were visited.

Rockfall Location 1 is approximately 48 by 40.8 m (157.4 by 133.8 ft) in plan view. During the survey, it was noted that the slope in this APE ranged from approximately 40 to 90 degrees. Figure 8 presents overview photographs of the topography in Rockfall Location 1 overlooking the Wailua River. Soil and weathered basalt rock outcrops were present in areas where the slope ranged from 40 to 70 degrees. Figure 9 presents overview photographs of soil and rock surfaces on the embankment. Numerous weathered outcrops were vertical or nearly vertical (Figure 10). The weathered condition of the basalt outcrops and the steeply sloping topography create quite unstable surface areas. Vegetation appeared to be secondary, consisting primarily of *koa haole* trees, grasses, and introduced shrubs.

A reconnaissance survey of the staging area associated with Rockfall 1 was conducted on August 6, 2013. The staging area is approximately 75 m west of Poli'ahu Heiau, above the embankment where Rockfall 1 is located (see Figure 6). The staging area measures approximately 33.6 by 19.2 m (110.2 by 62.9 ft) and is located about 10 m (32.8 ft) south of the visitor's parking lot. The topography of the staging area is roughly level and contained manicured grasses. The locale where the staging area is located has been disturbed by previous Park development in the 1960's, including the construction of the parking lot and visitor walkway, installation of the drinking fountain, and landscaping activities. Figure 11 presents overview photographs of the staging area. No surface archaeological sites/features were present in the staging area.

Rockfall Location 2 did not require rappelling, the area was surveyed using pedestrian transects. Rockfall Location 2 is approximately 15.2 by 12. 2 m (50 by 40 ft) in size and is situated upslope from the visitors trail. It was noted that the surface of this APE contained soil deposits. Several above-ground utility lines (water and gas) were observed. Vegetation consisted of *laua'e* fern and grasses. Figure 12 present overview photographs of the surface areas and vegetation. A staging area will not be necessary for the implementation of mitigation measures at Rockfall 2.

On August 6, 2013, PCSI archaeologists met with Martha Yent, Archaeologist with the Division of State Parks, Department of Land and Natural Resources, in order to visit the sites that are in closest proximity to Rockfall Locations 1 and 2. Prior to this visit, PCSI

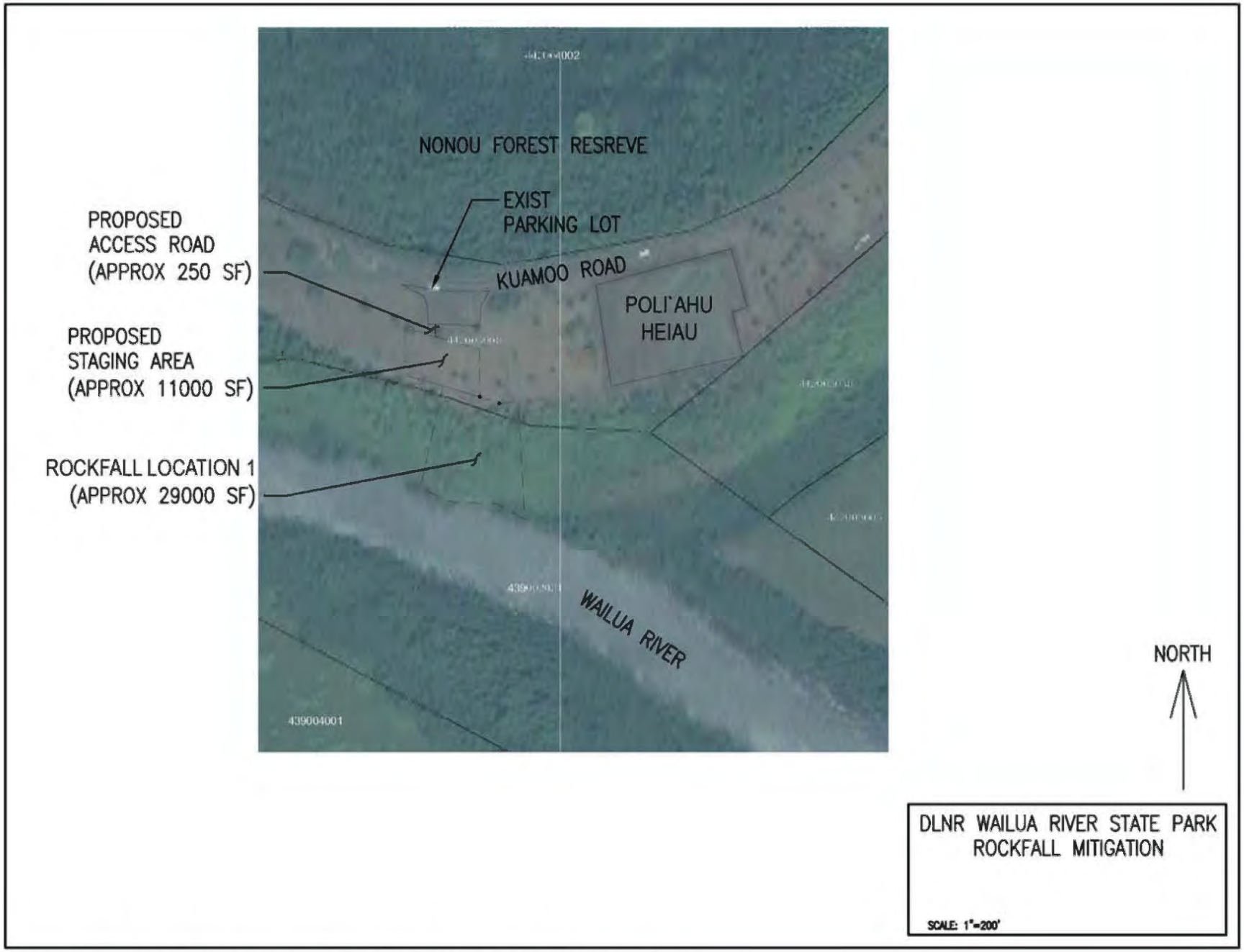

Figure 6. Rockfall Location 1 in Relation to Poli`ahu Heiau.

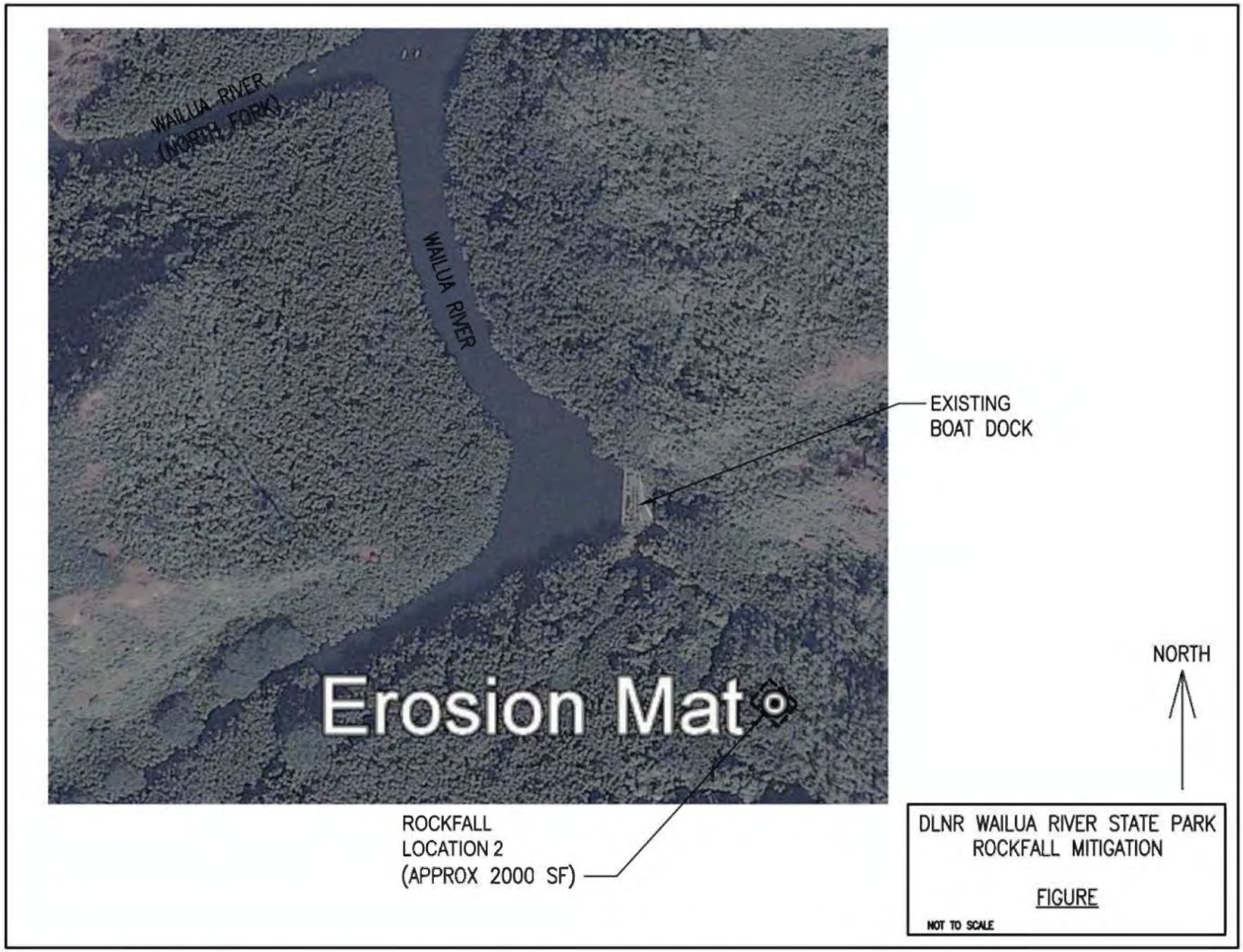

Figure 7. Rockfall Location 2 in Relation to Existing Fern Grotto Boat Dock.

Wailua River from Rockfall Location 1; view to west.

Wailua River from Rockfall Location 1; view to south down the cliff.

Figure 8. Overview Photographs of Wialua River from Rockfall Location 1.

Ms. Yvette Osborn, PCSI Archaeologist, rappelling down the embankment; view to north.

Near the area where a barrier fence will be installed; view to east.

Figure 9. Overview Photographs of Rockfall Location 1 Showing Rock and Soil Surfaces on Embankment.

PCSI Archaeologist Keola Nakamura rappelling down vertical, decomposing basalt outcrop; view to east.

Figure 10. Photograph of Vertical Outcrop in Rockfall Location 1.

Staging area for Rockfall Location 1 with parking lot in background; view to northwest.

Staging Area for Rockfall Location 1 from Poliʻahu Heiau; view to west.

Figure 1. Overview Photographs of Staging Area 1.

Soil slope of Rockfall Location 2; view to southeast.

Rockfall Location 2 upslope from visitor's walkway; view to northeast.

Figure 12. Overview Photographs of Rockfall Location 2.

archaeologists used existing site location maps (Carpenter and Yent 1997a: Figures 2-4, 10; Carpenter and Yent 1997b: Figure 2; Hammatt and Shideler 2007: Figure 18) to identify these specific archaeological and legendary sites. These sites, and their distances to Rockfall Locations 1 and 2, are listed in Table 2.

Ms. Yent also provided historic photographs of the project area, and during the survey, photographs were taken from locations near where the historic photographs were taken. These comparative photographs are provided in Appendix B. In particular, the historic photographs show the steep nature of the embankment where Rockfall Location 1 is situated.

Table 2. Summary of Distances between Selected Archaeological and Legendary Sites and Rockfall Locations 1 and 2.

Site Number/Name	Distance from Rockfall Location 1	Distance from Rockfall Location 2	Comments
Site 107 / Poli'ahu Heiau	73 m (240 ft) east	---	On cliff above river
Site 325 / Kulaina*	91.5 m (300 ft) east	---	Legendary site (boulder) within Wailua River
Site 326 / Kamalau*	329.4 m (1080 ft) southwest	---	Below Mauna Kapu
Site 337 / Hihiakalahau	164 m (540 ft) east	---	Legendary site on same side of river
Site 235 / Eoe	---	329 m (1,080 feet) north/northwest	Poi mill remnants, stone/mortar complex and enclosure; on opposite side of river
Site 345 / NA	---	201 m (660 ft) east/northeast	Enclosure remnant; possible *heiau*, on opposite side of river
Site 237 / Maluaka	---	128 m (420 ft) north	Legendary site on same side of river
Site 328 / House of Kewalo	---	165 m (540 ft) east	Legendary site on opposite side of river
NA / Cave of Mama'akualono	---	220 m (721 ft) north/northeast	Legendary site on same side of river
Site 332 / Manamanaiakaluea	---	238 m (780 ft) southeast	Legendary site on same side of river
Site 238 / NA	---	292 m (960 ft) northwest	Long earthen terrace for rice cultivation on same side of river
*It has been noted that there are variations of the legend of the Brother and Sister rocks.			

The objectives of the August 6 site visit were to confirm the locations of the historic properties listed in Table 2, and determine if the rockfall mitigation measures will impact these historic properties (SHPD 2013). With the help of Ms. AnaStasia Lytle, Kaua'i District Park Superintendent at Wailua River State Park, a small boat was made available to the archaeologists for visiting the sites. All the sites in Table 2 could not be relocated. Poli'ahu Heiau was visited during the survey of the staging area for Rockfall Location 1 (see Figure 6). This *heiau* is the closest archaeological site to Rockfall Location 1. Since Poli'ahu Heiau is approximately 73.0 m (239 feet) east of Rockfall Location 1, it should not be impacted by the mitigation measures.

PCSI consulted with Mr. Walter "Freckles" Smith regarding some of the legendary sites. Mr. Smith, besides authoring the book "*Legends of Wailua*," he and his family have a long

standing history with the Wailua River area. Legends of this area have been passed down through his family for generations.

The legendary site known as Hihiakalahau (Site 337) does not have structural remains, but according to Mr. Smith, it is located adjacent to Rockfall Location 1 on the same side of the river. This is the place where the first *hau* tree was grown on Kaua'i. Mr. Smith informed us that a lot of *pili* grass used to grow on this embankment, but now it only grows near the bottom of the embankment. Since there are no structural remains at this site, and because the *hau* tree is no longer there (Mr. Smith, personal communication, August 12, 2013), it is believed that the proposed mitigation measures will not impact this site.

During the survey, it was confirmed that archaeological Sites 235 and 345, and the legendary site known as House of Kewalo are on the opposite side of the river from Rockfall Location 2 and should not be impacted by the proposed mitigation measures.

PCSI consulted with Mr. Walter Smith, who co-authored the book *Legends of Wailua* (Smith 1955) with his father, regarding the legendary Brother Rock (Kamalau; Site 326) and Sister Rock (Site 325). Mr. Smith's book has different information regarding these two sites, specifically, the names of the two rocks are slightly different (Kumalu instead of Kamalau; Kulani instead of Kulaina), and which rock is in the river. Mr. Smith indicated to us that there are many variations of this legend. According to the information passed down in his family, it is the legendary Brother Rock, named Kumalu, that is in the river and the Sister Rock, named Kulani, is at the base of Mauna Kapu (Smith 1955:53). Both are situated far enough from Rockfall Location 1 as to not be impacted by the proposed mitigation measures.

Mr. Smith also shared that the Cave of Mama'akualono (see Figure 5) is the traditional Hawaiian name for the Fern Grotto cave. The Fern Grotto is a commercial name that has been in use for most of the 20th century. This cave is situated over 100 m from Rockfall Location 2 and will not be impacted by proposed mitigation measures.

The legendary sites of Maluaka, a place where *hau* flowers gather in the river, and Manamanaiakaluea, a place where a *lehua* tree without flowers grows, could not be relocated. There are no structural remains associated with these two sites. If site locations provided by Carpenter and Yent (1997a) are accurate, these two sites should not be impacted by proposed mitigation measures.

In summary, it is believed that the proposed mitigation measures for Rockfall Locations 1 and 2 will not impact any of the archaeological or legendary sites in Wailua River State Park. Archaeological monitoring of selected mitigation measures will ensure that a qualified archaeologist will be on site should any subsurface archaeological materials or features be encountered.

CONSULTATION WITH COMMUNITY RESIDENTS

As requested by SHPD, PCSI has been consulting with community residents of Wailua regarding the proposed rockfall mitigation work. Dr. Sara Collins has had several conversations with Mr. Randy Wichman and Ms. Sabra Kauka regarding a site visit to be attended by community residents to be held in late August or early September. She also discussed place names and legendary sites with Mr. Wichman. Also Steve Clark consulted with Mr. Walter Smith regarding several of the legendary sites in Wailua River State Park.

PCSI has also been consulting and coordinating project AMP efforts with archaeologists at State Parks, including Martha Yent and Holly McEldowny. The results of the consultation, including the upcoming site visit, will be incorporated into the archaeological monitoring report to be submitted to SHPD at the end of the project.