Archaeological Literature Review and Field Inspection for the Hāmākua Energy Project, Nienie Ahupuaʻa, Hāmākua District, Hawaiʻi Island TMKs: portions of (3) 4-5-002:056 and (3) 4-5-002:057

Prepared for
Pacific Current Hawaiʻi

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(Job Code: NIENIE 1)

July 2024

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Management Summary

Reference	Archaeological Literature Review and Field Inspection for the Hāmākua Energy Project, Nienie Ahupua‘a, Hāmākua District, Hawai‘i Island, TMKs: portions of (3) 4-5-002:056 and (3) 4-5-002:057 (Bautista et al. 2024)
Date	July 2024
Project Number(s)	Cultural Surveys Hawai‘i, Inc. (CSH) Job Code: NIENIE 1
Investigation Permit Number	CSH completed the fieldwork component of this study under archaeological fieldwork permit number 24-30, issued by the Hawai‘i State Historic Preservation Division (SHPD) per Hawai‘i Administrative Rules (HAR) §13-13-282.
Land Jurisdiction	Private
Project Proponent	Hamakua Energy, LLC
Primary Contact	Pacific Current Hawai‘i Marcelino Susas, Vice President of Strategy and Business Development 733 Bishop Street, Suite 1880 Honolulu, HI 96813 Office: 808 379 3981 M: 808 445 0064 marcelino.susas@pacificcurrenthawaii.com
Project Location	The project is located at the existing Hamakua Energy power plant near the town of Honoka‘a on the northern coast of Hawai‘i Island. It is in Nienie Ahupua‘a, Hāmākua District, TMKs: (3) 4-5-002:056 and (3) 4-5-002:057.
Project Description and Related Ground Disturbance	The proposed Hamakua firm renewable energy project would migrate the existing 60 MW combined cycle plant to 100% renewable fuel. The project would utilize the existing facilities and footprint at parcel TMK: (3) 4-5-002:056, migrating the fuel of the combustion and steam turbines to renewable fuels prior to the start of the PPA term on 1 December 2030. The project will also replace existing fuel storage tanks. A 7.5 MW/ 30 MWhr BESS (Battery Energy Storage System) would be installed on current “blacktop” adjacent to the existing Haina Substation at TMK: (3) 4-5-002:057.
Project Acreage Geographic Extent	9.46 acres (3.83 hectares)
Document Purpose and Historic Preservation Regulatory Context	This investigation was conducted—through historical, cultural, and archaeological background research and a field inspection of the project area—to determine the likelihood that archaeological historic properties may be affected by the project. This document is intended to facilitate the project’s planning and support the project’s historic preservation review

	compliance. This investigation does not fulfill the requirements of an archaeological inventory survey (AIS) investigation, per HAR §13-276. This information may also be used to support consultation with the SHPD regarding the project's necessary historic preservation review steps pursuant to Hawai‘i Revised Statutes (HRS) §6E-42 and HAR §13-284.
Built Environment	The project area is within the existing, operative Hamakua Energy power plant and Haina Substation. The plant was constructed in 1999–2000 within the western portion of the former Honokaa Sugar Company Mill. The plant consists of administrative and control room buildings, storage areas, fuel storage tanks and energy-producing facilities. The project area is accessed by Kia Manu Street, which completely encircles the plant and is gated at the plant entry. The proposed battery storage site is in an open, paved area located directly adjacent to the Haina Substation, which is just *makai* (seaward) of the plant and accessed by a paved driveway. Most of the lands surrounding the project area were once planted in sugarcane, and are currently a mix of forest, open pasture, and agricultural fields. The small residential community of Haina is located a short distance upslope of the plant, and the town of Honoka‘a is approximately 1 mile *mauka* (inland) along Route 240.
Natural Environment	The project area lies at an elevation of approximately 107–145 m (350–475 feet [ft]) above sea level on the windward side of the Hāmākua coast. The project area is situated upon a plateau between the Nienie Gulch to the west and a shallower unnamed gulch to the east. The terrain in the project area is gently sloping down toward the sea, which is approximately 0.5 km (0.3 miles) to the northeast. The study area is exposed to the northeast trade winds, and receives a mean annual rainfall of 1,500–2,000 mm (59–79 inches) (Giambelluca et al. 1986:99). The project area comprises a portion of the former sugar plantation that has been redeveloped into the current Hamakua Energy plant. The natural terrain and vegetation have been altered by these prior developments, and vegetation within the project area is now predominantly invasive grasses and ironwood trees (*Casuarina equisetifolia*). The project area is situated upon 64,000–300,000-year-old Pleistocene lava flows from Mauna Kea (Figure 4). These flows are overlain by approximately 1 m of Pāhala Ash which has been altered over time by chemical weathering into mineral-rich clay (MacDonald et al. 1983:352, 362). The predominant soil types within the project area are Paauhau silty clay loam, 12 to 20% slopes (PaD), and Paauhau silty clay loam, 20 to 35% slopes (Figure 5). Paauhau series soils are well drained silty clay loams that formed in volcanic ash; these soils have been used predominately for sugarcane, as well as for pasture, macadamia nuts, and truck crops (Sato et al. 1973:44). The eastern portion of the project area

	along the unnamed gulch is characterized by the miscellaneous land type Rough broken land (RB) (see Figure 5).
Background Research Methods	Background research included a review of previous archaeological studies on file at the SHPD; review of documents at Hamilton Library of the University of Hawai‘i, the Hawai‘i State Archives, the Hawaiian Mission Children’s Society Library and Archives, the Hawai‘i Public Library, and the Bishop Museum Archives; study of historic photographs at the Hawai‘i State Archives and the Bishop Museum Archives; and study of historic maps at the Survey Office of the Department of Land and Natural Resources. Historic maps and photographs from the CSH library were also consulted. In addition, Māhele records were examined from the Waihona ‘Aina database (Waihona ‘Aina 2024). This research provided the environmental, cultural, historic, and archaeological background for the project area.
Background Research Summary	The project area is located in the *ahupua‘a* (traditional land division) of Nienie, within the traditional district or *moku* of Hāmākua. The literal translation for Nienie is “Sheer and smooth, as a cliff” (Pukui and Elbert 1986:266). Because of the abundant rainfall and consequent abundant agriculture in the district, the Hawaiian god Lono was particularly important in rituals and legends of Hāmākua. Lono’s attributes of abundant growth and dark, rain-laden clouds were invoked by rulers and commoners alike. Lono’s animal form of Kamapua‘a (Pig Child) claimed the Hāmākua coast as his domain on Hawai‘i Island (Handy and Handy 1972:341). The “Tradition of Kamapuaa” relates how Kamapua‘a fought the volcano goddess Pele for several days at Halema‘uma‘u, the crater at Kīlauea Volcano. The settlement of their dispute split the island between the two; Pele took stony Puna, Ka‘ū, and Kona while Kamapua‘a took Kohala, Hāmākua, and Hilo, which were the districts free of lava rocks (Fornander 1916:342). No specific references to Nienie were found in traditional accounts during the present research. For centuries Hāmākua was a political, religious, economic, and demographic center on the island of Hawai‘i. The agricultural and political center of the Hāmākua District was Waipi‘o Valley (Cordy 1994:9), located approximately 12.5 km northwest of the project area. Waipi‘o was the largest wet-taro growing valley on the island and one of the largest planting areas in the entire island chain. The valley was home to notable *ali‘i* (chiefs) from at least the mid-1400s through the rule of Līloa and his son ‘Umi (ca. 1580–1620), who shifted the seat of government to Kona (Kamakau 1992:19).

	Hāmākua was also renowned as a religious center. The Paka‘alana Heiau and *pu‘uhonua* (place of refuge) complex in Waipi‘o were the most sacred temples on the island, and Kukuihaele Ahupua‘a was noted for its medical *kahuna* (priests) (Cordy 1994:17). A *heiau* (pre-Christian place of woship) called Wāwaemākilo is known to have once existed at Nienie; Thrum (1908:41) noted this *heiau* was in “Honokaa, near bluff; nothing now remains.” Two decades later, in his survey of East Hawai‘i Island, Hudson (1932:54) wrote, “At Honokaa Landing on the top of the bluff was a heiau named Wawaemakilo. Nothing remains to mark its site except a few stones which may have formed part of the foundations.” Hāmākua was the scene of some of the last major battles on the island of Hawai‘i. Kamehameha fought a series of battles there with his cousin Keōua in 1790. While Kamehameha and his army were engaged on Moloka‘i, Keōua’s forces descended on Waipi‘o, destroying *heiau* and fishponds, pulling up taro plants and robbing the populace (Kamakau 1992:151). Kamehameha returned to fight two inconclusive battles with Keōua, before both forces retreated to their own lands in November 1790. It was during this retreat from Hāmākua to Ka‘ū by way of Kīlauea that a large portion of Keōua’s forces were destroyed by a volcanic eruption of cinders and sand (Fornander 1916:472). In 1819, after the death of Kamehameha, his heir Liholiho abolished the *kapu* (taboo) system. Kamehameha’s cousin Kekuaokalani led a revolt in Kona against Liholiho and the abolition of the *kapu* system, and a rebellion broke out at the same time in Hāmākua. After the king’s forces defeated Kekuaokalani’s army at Kuamo‘o in Kona, the Hāmākua rebellion was easily put down (Kuykendall 1938:65–69). In 1823 the missionary Reverend William Ellis made a circuit of the island, preaching everywhere he stopped. Ellis described the Hāmākua coast in his journal and noted that the Hawaiians, “generally appear in clusters at the opening of the valleys, or live scattered over the face of the high land […]” (Ellis 2004:351). Land was irrigated for taro near the mouths of the gulch streams (Ellis 2004:386). With approximately 2,600 inhabitants, Waipi‘o was one of the most densely populated areas in Hawai‘i during the late 1700s (Cordy 1994:17). Following Western Contact, district population declined heavily due to epidemics, missionary influences, and emigration to the port towns. In the mid-nineteenth century, the Kingdom of Hawai‘i initiated a program of massive land reform known as the Māhele (land division of 1848) and Kuleana (land division, right, privilege, property) Act. By examining the patterns of *kuleana* Land Commission Award (LCA) parcels in a given area, insight can be gained to the likely intensity and

	nature of Hawaiian activity. In his place name database, Soehren (2019) states Nienie was omitted in the Māhele. Cordy (1994:70) notes Nienie was sometimes written Manienie in the Māhele testimonies, and that eight *kuleana* were awarded there. The awarded lots were scattered from the shore up toward the vicinity of the government road. These eight LCA are summarized in Table 1, using information from the Waihona ‘Aina (2024) Māhele database. A portion of a 1909 map (Figure 6) depicts the project area in relation to the five nearest LCA (240I, 240M, 7815, 7837, and 8141). The remaining three LCA (5477, 7817, and 10793) are further upslope. All eight of the awards in Nienie consisted of a single *‘āpana* or lot, ranging in size from 0.43 acres to 20 acres. The native testimonies for these LCA indicate they were generally used for house lots or subsistence agriculture; specific crops mentioned included taro, *wauke* or paper mulberry (*Broussonetia papyrifera*), sweet potato, banana, *‘ōhi‘a* (*Metrosideros polymorpha*), and orange. Notably, LCA 240M contained a portion of a roadway, and LCA 240I located further upslope contained a meeting house and houses for a teacher. During the mid- to late 1800s tracts of land in Hāmākua were being purchased for development of commercial ranching and agriculture. The ranching interests were typically located in the more upslope regions, where herds of wild cattle had proliferated following the introduction of cattle to the island by Captain George Vancouver in 1793 (Barrère 1983:20). Sugar plantations occupied the lower lands. Although the first sugar mill was not established in Hāmākua until 1878, the rich soil and plentiful runoff of the Hāmākua coast eventually made it the premiere location for sugar growing on the island of Hawai‘i. The rugged terrain and lack of ports did make growing, harvesting, and transporting sugar difficult, but a number of small plantations were formed along the coast between Waipi‘o and the town of ‘O‘ōkala to the southeast, serviced by plantation mills with associated landings for transportation (Dorrance and Morgan 2000:90–91). The Honokaa Sugar Company was incorporated in 1878; its fields stretched along 6 miles of the coast, and extended 2 to 9 miles inland, to elevations of 1,500 to 1,800 ft (Dorrance and Morgan 2000:91). Its mill and associated landing were established downslope of the village of Honoka‘a. For several years the mill processed cane for nearby planters, but by 1890 most of these planters’ parcels had been consolidated into the Honokaa Sugar Company (Dorrance and Morgan 2000:91). An 1889 map of Hamakua Ditch shows a large swath of Honokaa Plantation lands upslope of the project area (Figure 7). The Upper Hamakua Ditch, which was constructed to carry water from Kohala to the plantations along Hāmākua coast, and a proposed flume line are shown further to the south.

Honoka‘a Village and the Honoka‘a Landing at the coast of Nienie are also depicted. A 1906 map of Hawai‘i Island indicates the plantation lands extended all the way to the sea (Figure 8).

Harvesting of cane was done with a mix of hand labor, flumes, and railroad transport. Dorrance and Morgan (2000) describe the Honokaa Sugar Company's plantation railroad system:

> Two narrow gauge tracks were constructed, one the width of the plantation at the level of the mill, and the other the width of the plantation below the level of the mill. Cane harvested in the fields above the upper rail line was flumed down to receiving stations, and washed into railroad cars that carried the crop to the mill. The flume water was then diverted to lower fields for irrigation. Cane harvested in the lower fields was both flumed or hand-loaded into railroad cars along the lower tracks. These were pulled by a cable to the upper level tracks using a shunt line with a Fowler steam tractor-powered winch 1, then hauled by locomotives to the mill. [Dorrance and Morgan 2000:91]

Bags of raw sugar to be refined in San Francisco were lightered from Honoka‘a Landing to inter-island ships anchored offshore. These ships sailed to Honolulu, where the sugar was transferred to San Francisco-bound vessels (Dorrance and Morgan 2000:91). The 1909 map (see Figure 6) provides a more detailed look at the plantation; the mill facility and surrounding plantation village of Haina are immediately east of the project area, in Nāmoku and Haina Ahupua‘a (this is the village called Haina on modern maps; see Figure 1). The 1909 map also depicts the series of ditches and flumes, railways and various roadways, significant gulches, and LCAs and Land Grants. A large structure is shown at the coast of Nienie above the landing, likely a warehouse for storing cane sugar awaiting shipment. The only features that appear within the project area are a portion of a rectangular enclosure or structure and a section of roadway. The 1911 USGS topographic map depicts many of the same plantation features and labels the main railroad line as the "Honokaa Plantation R.R. [railroad]" (Figure 9). A 1927 map of Hamakua Forest Reserve shows the Lower Hamakua Ditch seaward of "Main Road" and clearly illustrates the routes of the plantation railways intersecting at the mill.

Honokaa Sugar Company absorbed the adjacent Pacific Sugar Mill Company in 1928. The following year, shipment of milled cane out of Honoka‘a Landing ceased, as a direct route to San Francisco was established via freighter out of Kukuihaele, 6 miles to the north (Dorrance and Morgan 2001:91). Over the following decades the method

	of cane transportation would evolve, and eventually trucks were used to haul the sugar to the harbor in Hilo. The 1957 USGS topographic map (Figure 10) depicts the continued expansion of Honoka‘a town and the village of Haina near the Honoka‘a Mill. While a cane road is no longer indicated looping through the project area, a portion of a roadway is shown along the approximate southern boundary. Another linear feature—possibly a flume or pipeline of sorts—extends cross-slope through the southern portion of the project area. A series of cylindrical structures for storing molasses is depicted at Honoka‘a Landing, near the terminus of the rail line labeled “Old RR Grade.” It is difficult to make out whether these tanks are still present on the 1977 orthophotograph (Figure 11). This aerial view illustrates the expanse of cane fields and network of cane roads surrounding the mill. The location of the current Haina Substation (northern portion of the project area) appears to be cane field. The current Hamakua Energy Plant property (southern portion of the project area) appears as disturbed land, possibly utilized for staging or storage. A roadway visible looping around the area is the apparent precursor to Kia Manu Street. During the 1970s Honokaa Sugar Company was merged with other plantations along the Hāmākua Coast, and in 1979 it was officially rebranded as Davies Hamakua Sugar Company. In 1984 the plantation was sold to Francis Morgan, who operated it as the Hamakua Sugar Company until its closure in 1993 (Dorrance and Morgan 2000:92–95). Following the closure of the Honokaa Mill in the 1990s, the project area was developed into the Hamakua Energy Plant. This development occurred ca. 1999–2000.
Prior Archaeological Studies Summary	Background research identified eight prior archaeological studies located within 2.5 km of the project area. These studies are depicted on Figure 12 and summarized in Table 2. None of these prior archaeological studies overlap with the current project area location. In 1991, Paul H. Rosendahl, Inc. (PHRI) carried out an archaeological inventory survey (AIS) of approximately 186 acres located approximately 1.6 km upslope of the current project area (Walker and Rosendahl 1991; see Figure 12). The fieldwork utilized both aerial and ground survey. The available interim report notes two site complexes comprising five component features were identified within or immediately adjacent to the project area (State Inventory of Historic Places [SIHP] #s 50-10-08-15143 and -15144); these features included two walls, an alignment, cairn, and an “upright.” The sites were assessed as being in good to excellent condition. No additional description of the sites is available in the report, and no assessment is made of probable site

	age. They were both interpreted as having a likely habitation-related function (Walker and Rosendahl 1991:2). In 1994, PHRI undertook an archaeological subsurface testing program for the 5.235-acre Honoka‘a Health Care Facility Site located approximately 1.9 km upslope of the current project area (Thompson and Walker 1994; see Figure 12). The testing was conducted to determine the potential for subsurface historic properties and included excavation of 16 backhoe trenches distributed throughout the project area. No significant cultural remains or materials were encountered and no further archaeological work was recommended for the project (Thompson and Rosendahl 1994:i). In 1999, the U.S. Department of Agriculture, Natural Resources Conservation Service (USDA NRCS) undertook a preliminary archaeological survey in preparation for repairs to the Lower Hamakua Ditch, which is approximately 1.1 km *mauka* of the current project area (Kawachi 1999; see Figure 12). The study area comprised a 30.5-m (100-ft)-wide corridor along an approximately 23.5-mile segment of the ditch between the *ahupua‘a* of Kukuihaele and Pa‘auilo. The report notes the ditch has been designated by SHPD as SIHP # 50-10-7, 8, 9-07513 (Kawachi 1999:2). One feature was observed along the study area: a platform on the north side of the ditch in Kapoaula Ahupua‘a, which may have predated the ditch construction and appears to have been modified for recent use. The general absence of archaeological features was attributed to prior disturbances associated with construction of the ditch, plantation activities, and modern development (Kawachi 1999:i). In 2006, CSH conducted a literature review and field inspection of eight DOE campuses in the Honoka‘a School District for a cesspool conversion project, including Honoka‘a Elementary School and Honoka‘a High and Intermediate School (Hammatt and Shideler 2006). The campuses are located approximately 1.9 km southeast of the current project area (see Figure 12). Honoka‘a High and Elementary School, as the school was called prior to the elementary splitting off into its own campus, is on the Hawai‘i Register of Historic Places as part of SIHP # 50-10-08-07522 (Thematic Group for Public Schools on Hawai‘i Island). A lava tube is known to extend under the campus, but according to a school custodian, the tube contains no burials or cultural materials. No archaeological features were identified during the field inspection, and no further archaeological work was recommended for this campus (Hammatt and Shideler 2006:47). However, the project would end up being monitored by an archaeologist (see Wilkinson et al. 2011). In 2008, Archaeological Consultants of the Pacific conducted an archaeological assessment (no finds AIS) of a proposed roadway

	realignment corridor totaling 1.29 acres, located approximately 0.4 km downslope of the current project area (Moore and Kennedy 2008; see Figure 12). No archaeological sites were identified, likely due to extensive modern land alteration. A determination of "no historic properties [affected]" was recommended, and no further archaeological work was recommended (Moore and Kennedy 2008:16). In 2011, CSH reported on archaeological monitoring for the cesspool conversion project at Honoka‘a Elementary, Intermediate, and High Schools (Wilkinson et al. 2011; see Figure 12). No archaeological features or cultural materials were documented during the monitoring fieldwork, and the lava tube beneath the campus was not impacted. In January 2017, ASM conducted archaeological monitoring for an improvement project at Honoka‘a Elementary School (Tam-Sing and Rechtman 2017a; see Figure 12). No archaeological features or cultural materials were documented during the monitoring fieldwork. Later in 2017, ASM finalized a report for archaeological monitoring of a water line project (Tam-Sing and Rechtman 2017b). The water line extended an overall distance of approximately 5 miles along county and state right-of ways; the section nearest the current project area is approximately 2.3 km southeast (see Figure 12). Three isolated historic-period artifacts were identified, comprising portions of glass bottles dating from the early to mid-twentieth century (Tam-Sing and Rechtman 2017b:13). No significant archaeological features or cultural materials were documented during the monitoring fieldwork.
Fieldwork Effort and Findings	Fieldwork was accomplished on 13 June 2024 by CSH Project Director Olivier M. Bautista, B.A., and CSH Archaeologist Samantha Purdy, B.A, under the general supervision of Principal Investigator Hallett Hammatt Ph.D. This work required 1 person-day to complete. The field inspection began at the Hamakua Energy Plant facility where the crew was greeted and accompanied by a plant worker for the duration of the field inspection. The crew set out to inspect the completely fenced grounds of the project area for any trace of the former plantation mill infrastructure and/or any other potential historic properties. The inspection then moved *makai* down a paved easement to the Haina Substation, which is fronted by a large rectangular asphalt lot where the battery storage area is proposed. Ground visibility was excellent throughout the project area due to the prior ground disturbance and existing developments throughout. Figure 13 through Figure 20 illustrate the existing built environment of the project area. Kia Manu Street accesses and encircles the plant. Cane roads appear in various iterations in the project area on historic maps, but the present

	looped alignment of Kia Manu Street first becomes apparent in the 1977 orthophotograph (see Figure 6 through Figure 11). Kia Manu Street is currently a maintained, paved roadway measuring up to approximately 10 m (33 ft) wide where shoulders are present (Figure 21 through Figure 24). The modern roadway improvements and other disturbances on the property appear to have impacted all the constructed elements of the former cane road alignments. No archaeological features, including any remains of the former sugar mill, were observed within the project area. Remnants of the old mill and associated infrastructure are still visible on the parcel to the east, and within the gulches bracketing the project area where historic bridge crossings are present. None of these areas will be impacted by the project. The current Haina Substation and plant buildings are of modern construction. These structures are not visible on the 1977 orthographic photo (see Figure 18), indicating they were constructed less than 50 years ago. Numerous framed photos depicting the development of the plant are displayed in the Hamakua Energy administrative office hallway; some of these photos clearly show mass excavation conducted ca. 1999 throughout the project area for development of the new energy plant and substation facilities (Figure 25 and Figure 26). Kia Manu Street can also be seen as a dirt road looping around the property. These photos illustrate how the project area has been almost entirely altered in the modern era, impacting any archaeological or historic architectural features that may have been present where mass excavation occurred.
Potential for Project Effect on Historic Properties	Background research indicated the project area was once part of the Honokaa Sugar Company plantation and located directly adjacent to the former Honokaa Mill. The field inspection confirmed an absence of surface archaeological features within the project area and documented extensive prior ground disturbance associated with the construction of the current power plant and substation. The proposed improvements are fully contained within these previously developed areas. Potential for intact subsurface pre-Contact or historic cultural deposits within the project area is considered very low based on these findings.
Recommendations	Based on the findings of this LRFI and changes to the property since its development for the energy plant, we recommend obtaining SHPD concurrence with a determination of “no historic properties effected” and no further archaeological work required.

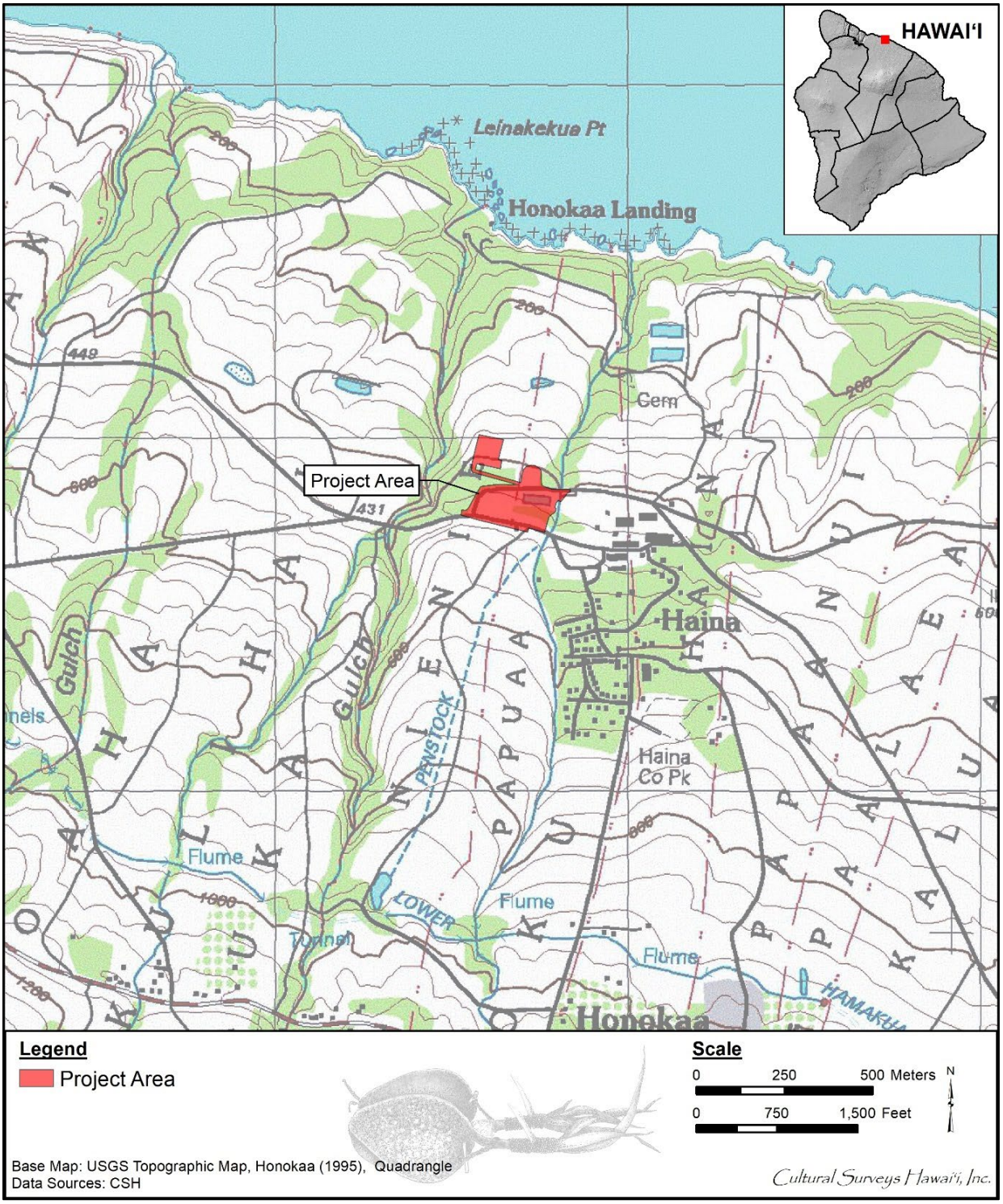

Figure 1. Portion of the 1995 Honokaa USGS 7.5-minute topographic quadrangle showing the location of the project area

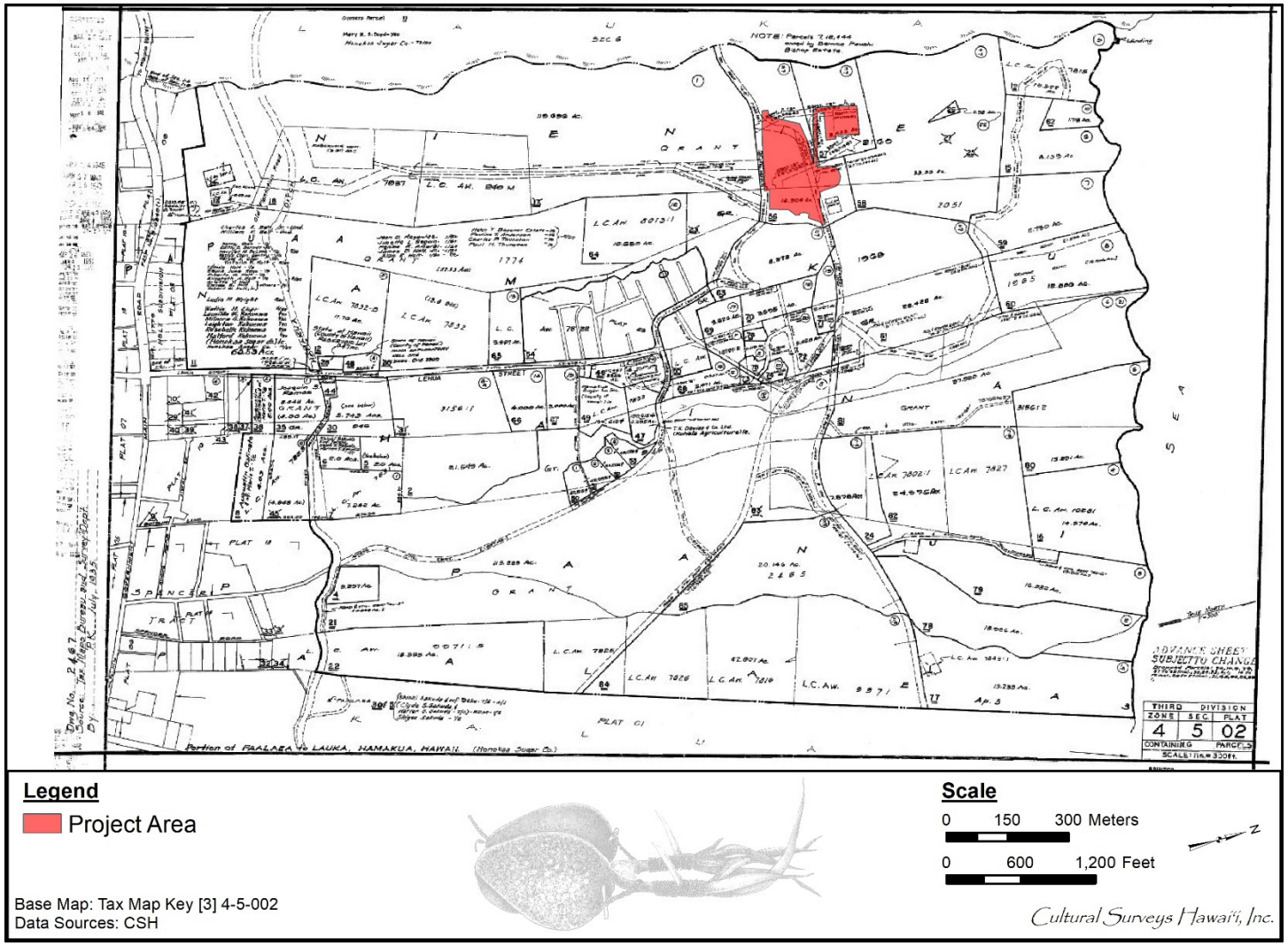

Figure 2. Tax Map Key (TMK) (3) 4-5-002 showing the project area in parcels 056 and 057 (Hawai‘i TMK Service 2024)

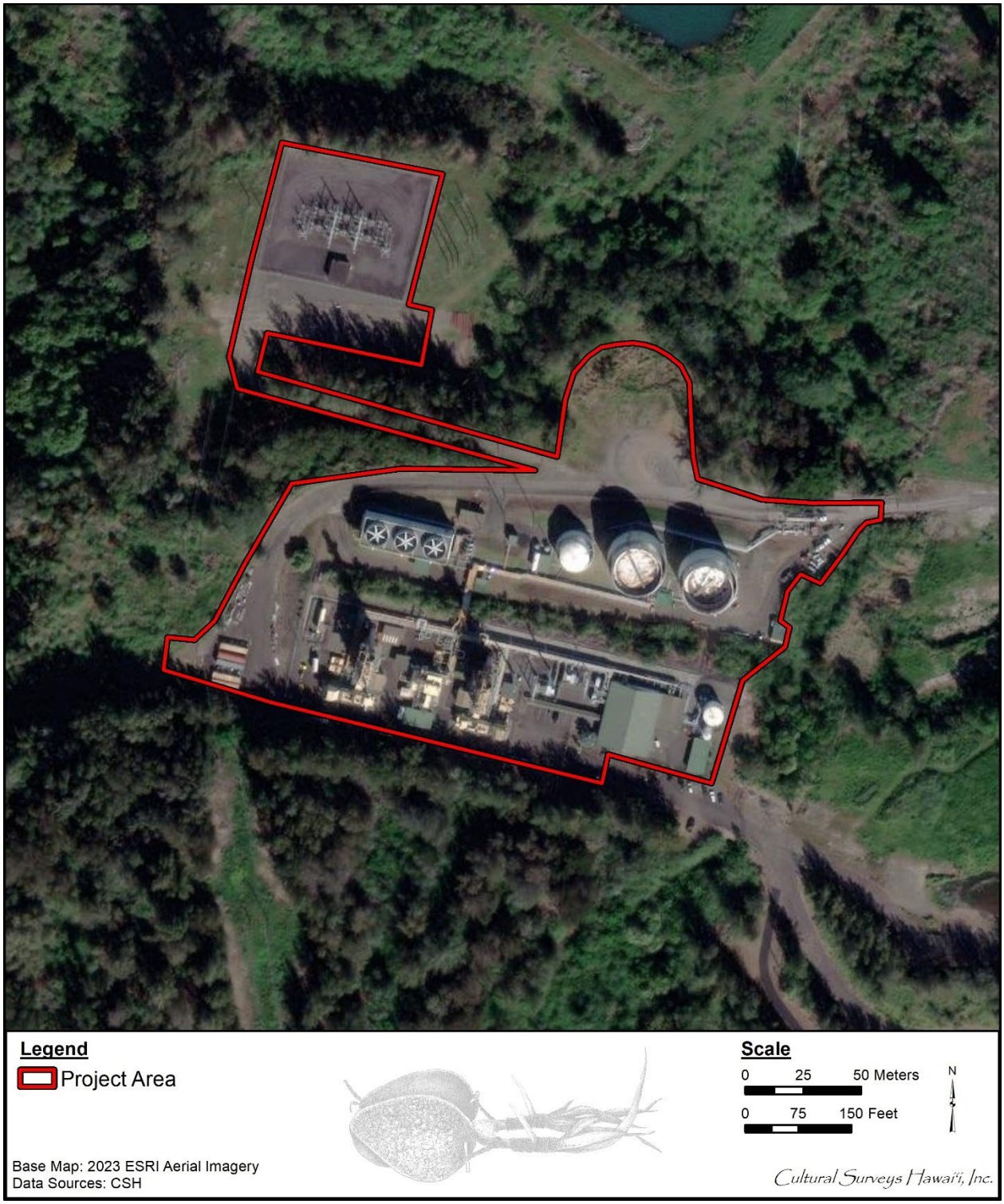

Figure 3. Aerial photograph of the project area (ESRI 2023)

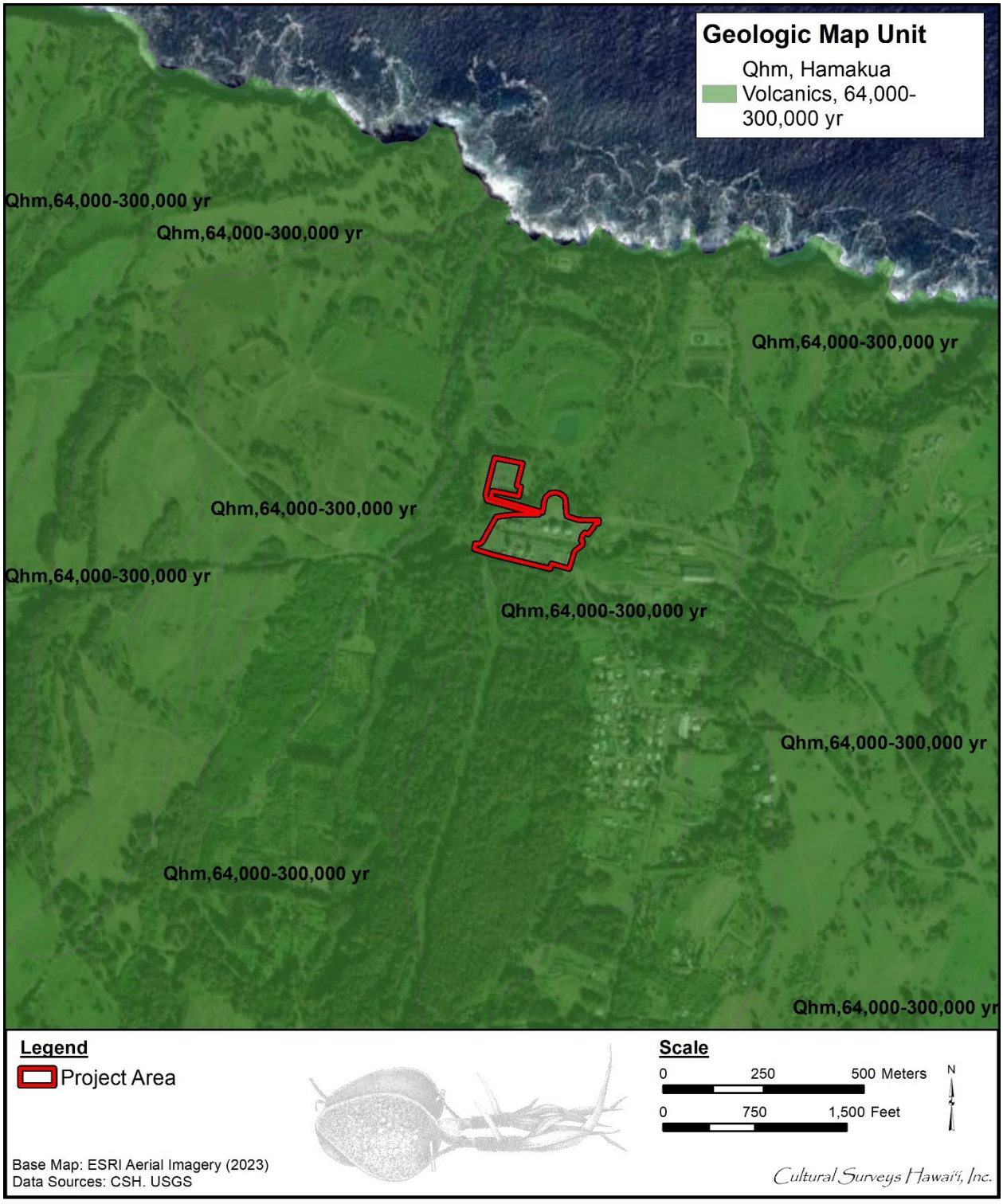

Figure 4. Aerial photograph (ESRI 2023) overlain with geological data (Sherrod et al. 2008), indicating geological map units in the vicinity of the project area

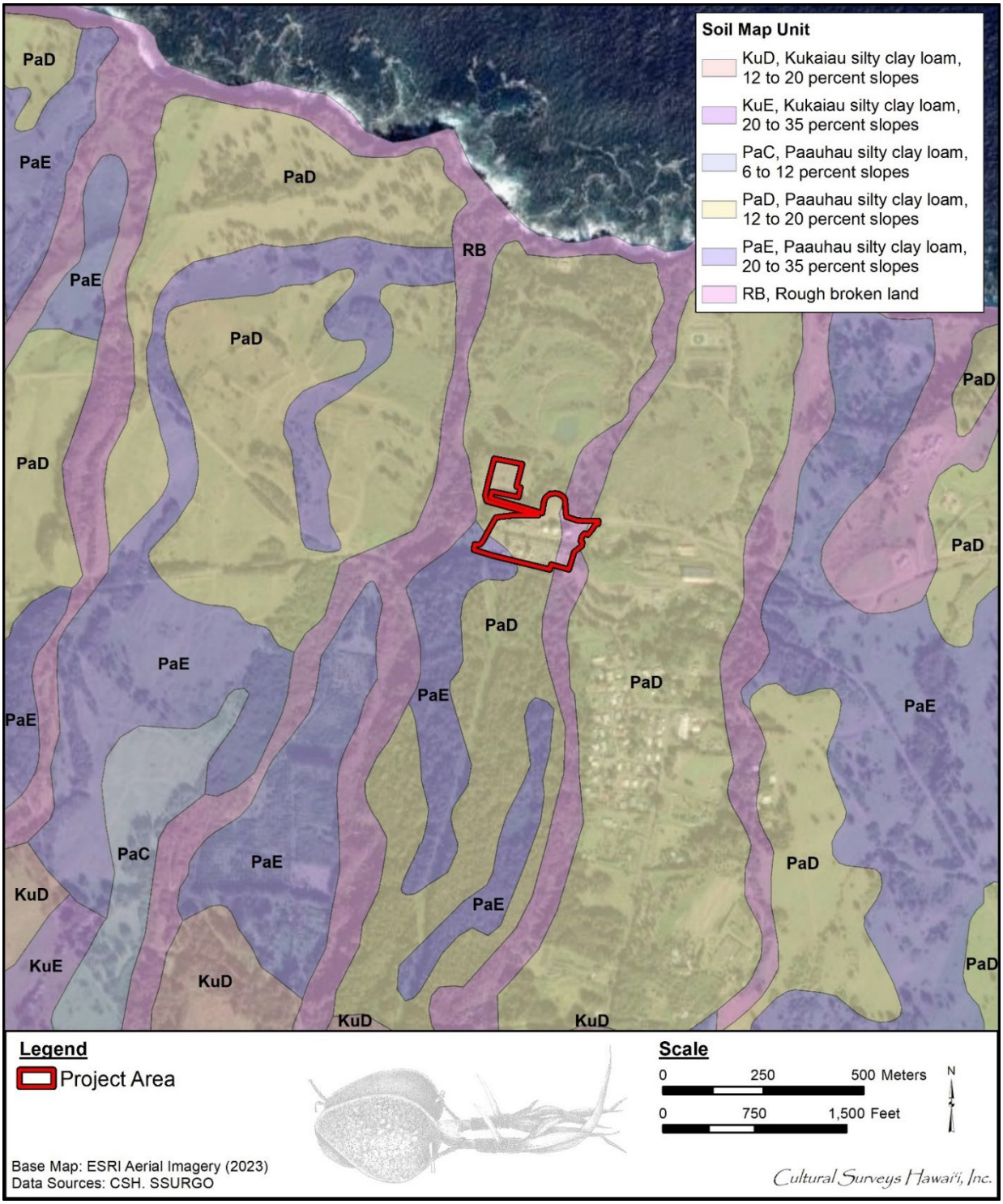

Figure 5. Overlay of *Soil Survey of the Island of Hawaii* (Sato et al. 1973), indicating soil types within and surrounding the project area (USDA SSURGO 2001)

Table 1. Land Commission Awards (LCS) in Nienie Ahupua‘a (based on information in Waihona ‘Aina 2024)

LCA #	Claimant	# of ‘Āpana (lots)	Acreage	Land Use
240I	Tito	1	0.68	Four houses, one meeting house, three houses for Tito, school teacher
240M	Kiniakua	1	–	Government road, partly cultivated lots
5477	Unahiolea	1	8.9	Two *wauke kihapai*, four potato *kihapai*, two taro *kihapai*, two banana *kihapai*, two *ohia kihapai*
7815	Kaulumano	1	8	Two houses, four *mala*, one orange tree, one *kula*
7817	Kea	1	9	One house, six *mala*, and one *kula*
7837	Kane	1	20	Two houses, seven *mala*, and one *kula*
8141	Hooulu	1	0.43	One house
10793	Polohili	1	9.8	Five taro *kihapai*

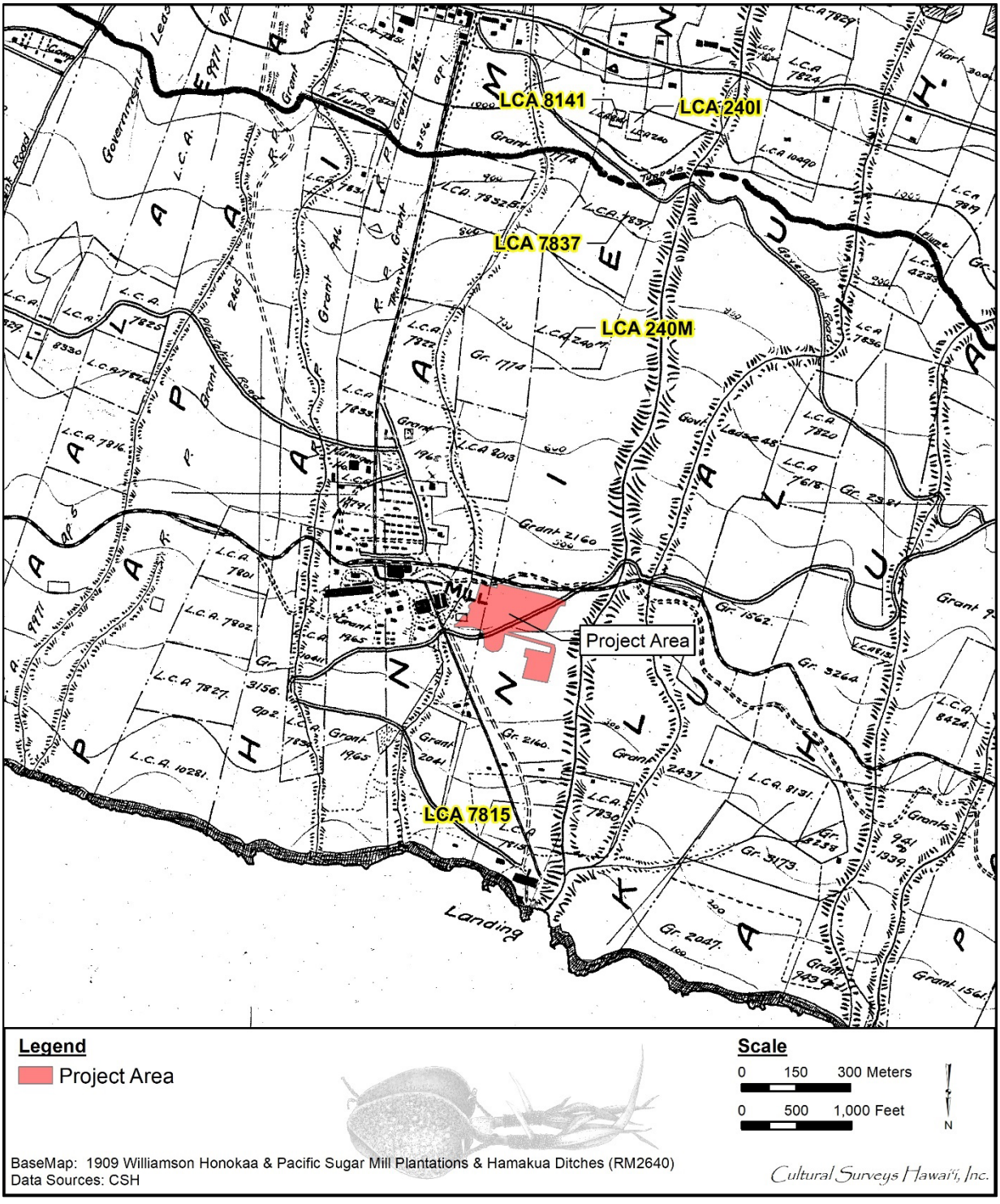

Figure 6. Portion of the 1909 Williamson map of Honokaa & Pacific Sugar Mill & Hamakua Ditch (RM 2640) showing the locations of LCAs and Land Grants, plantation infrastructure, and transportation routes

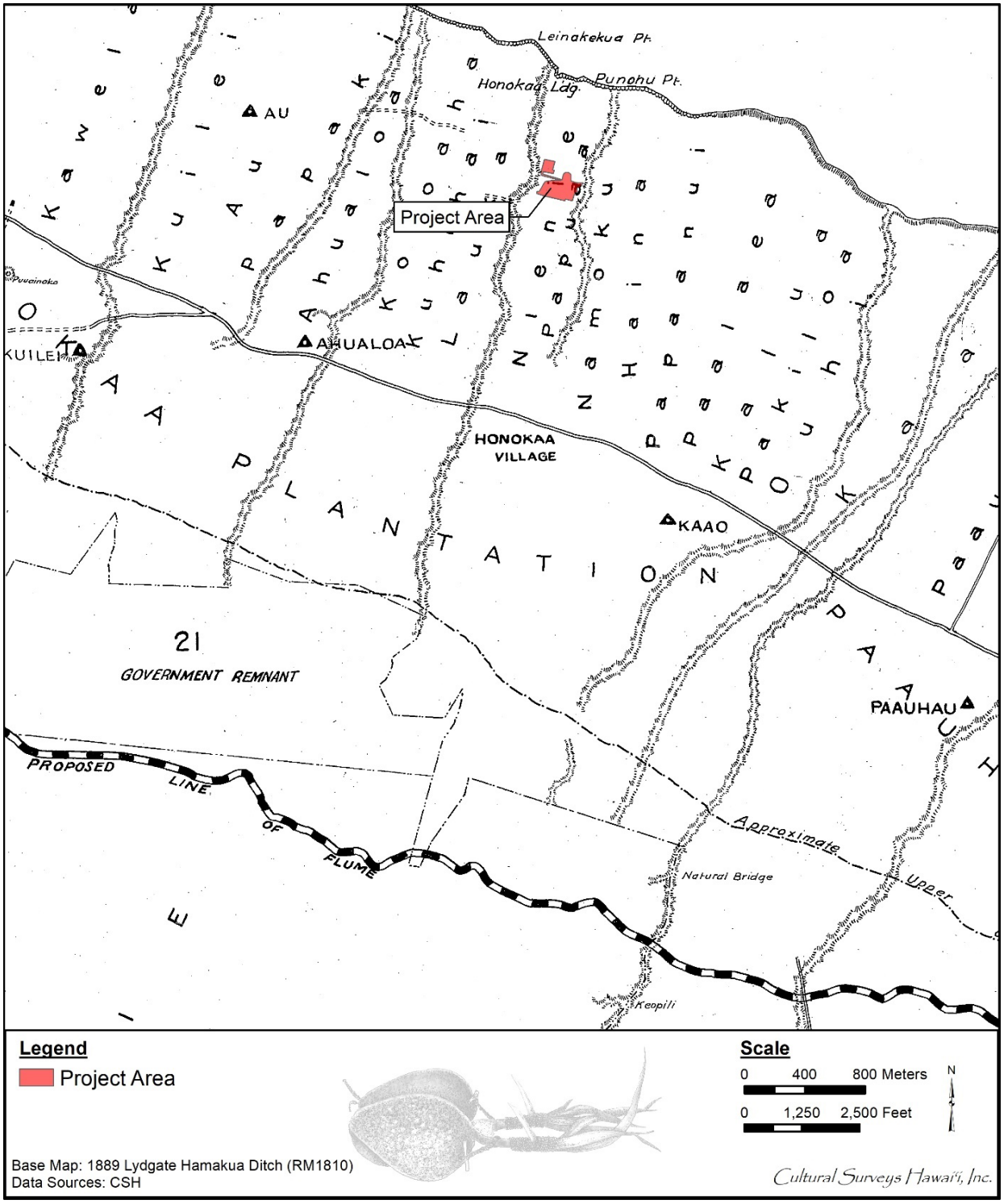

Figure 7. Portion of the 1889 Lydgate map of Hamakua Ditch (RM 1810) showing the location of the project area in relation to Honoka‘a Village and Landing, the Upper Hamakua Ditch and a proposed flume line, and the main government road

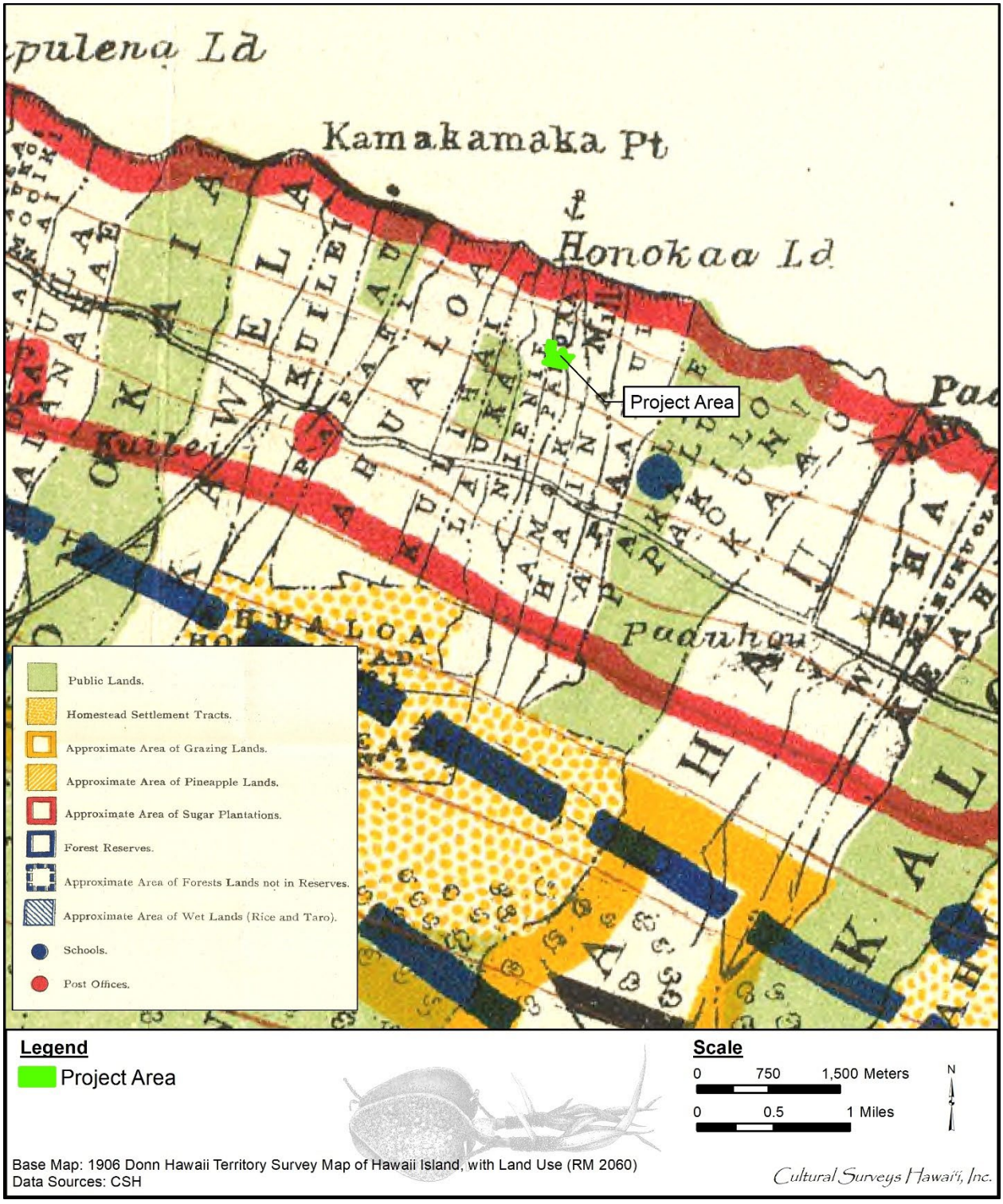

Figure 8. Portion of the 1906 Donn Hawaii Territory Survey map of Hawai‘i Island showing the project area within sugar plantation lands

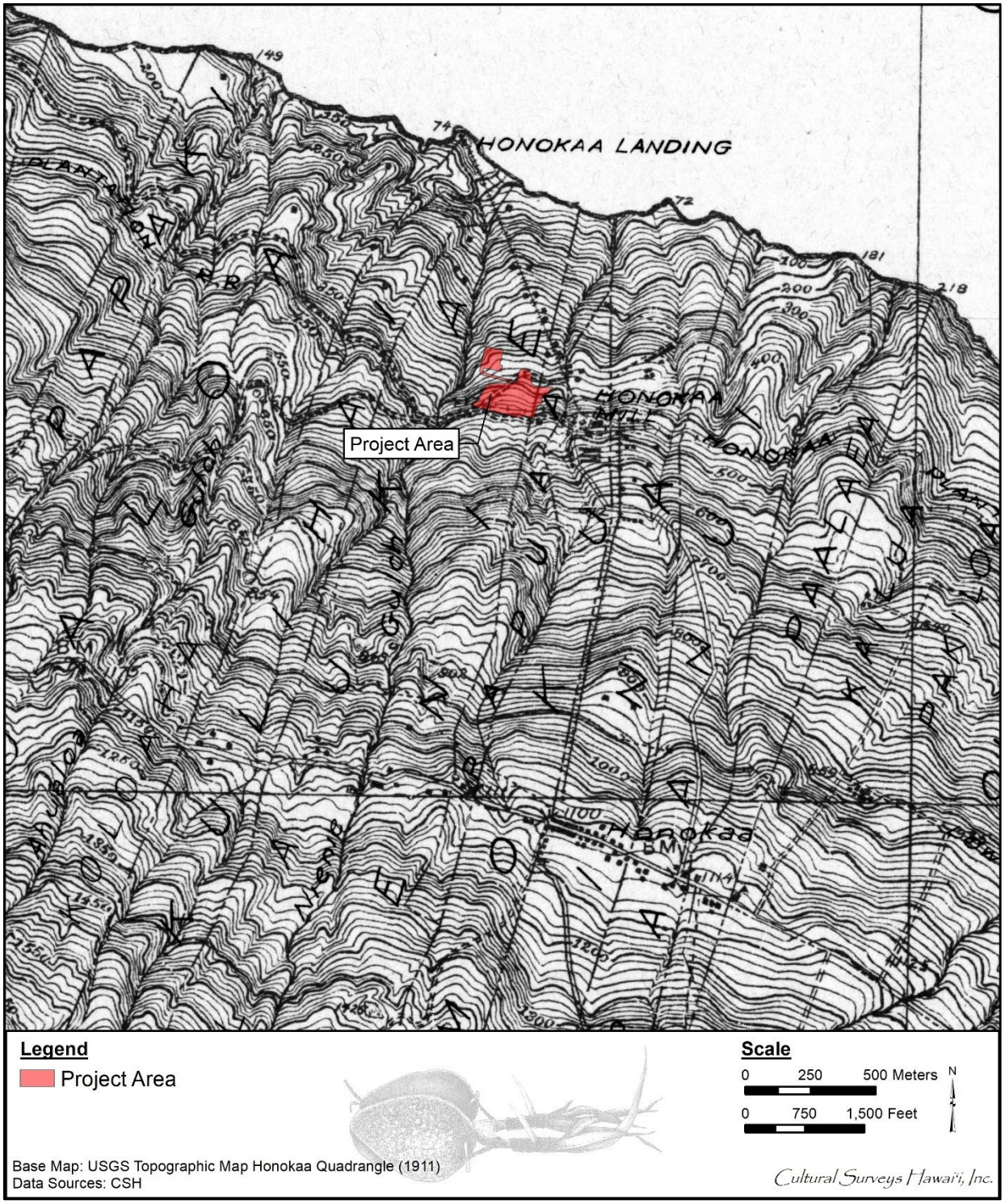

Figure 9. Portion of the 1911 Honokaa USGS 7.5-minute topographic quadrangle showing the project area in relation to Honoka‘a town, mill, and landing; railroad lines; and transportation routes

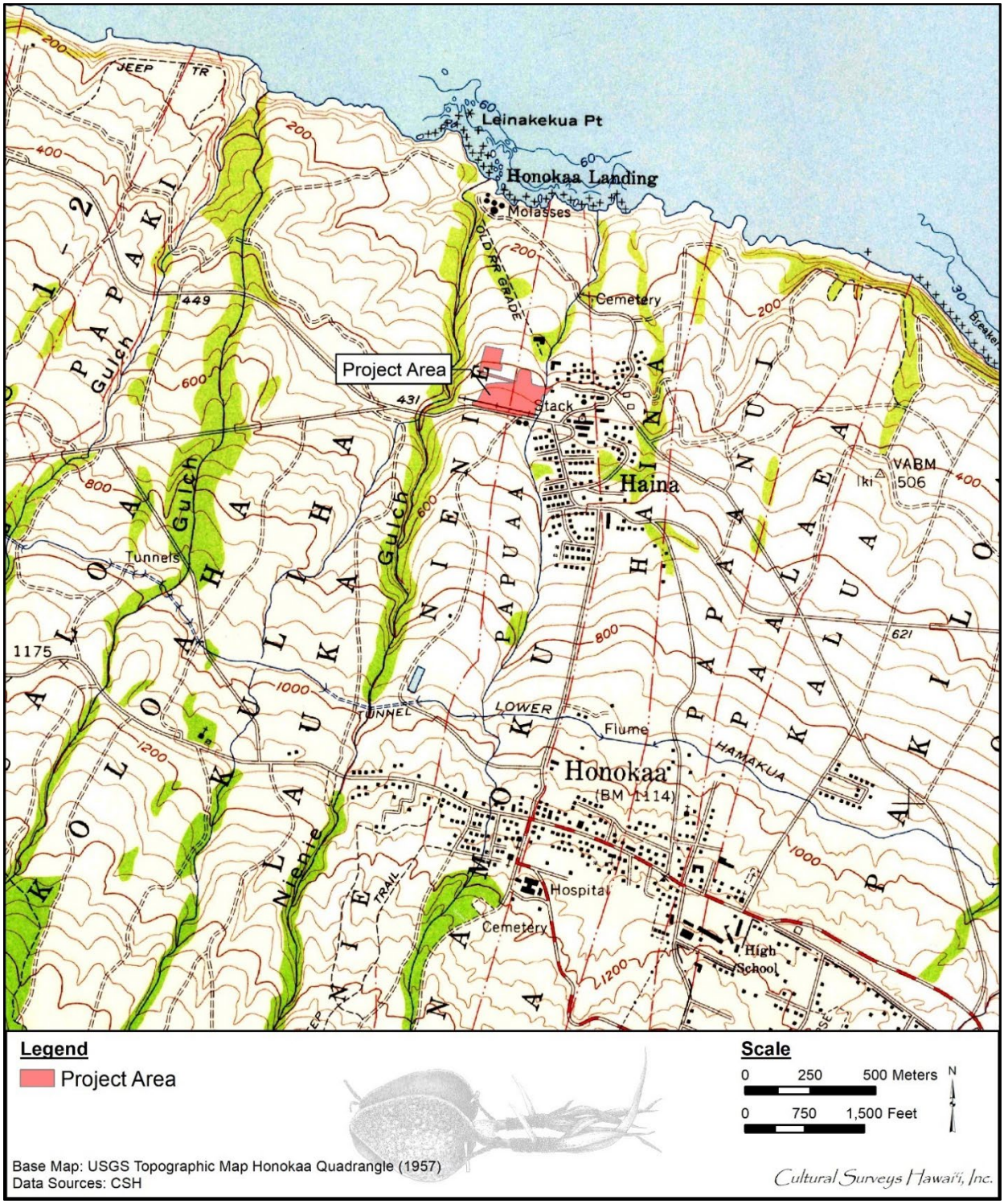

Figure 10. Portion of the 1957 Honokaa USGS 7.5-minute topographic quadrangle, showing continued development in the vicinity of the project area

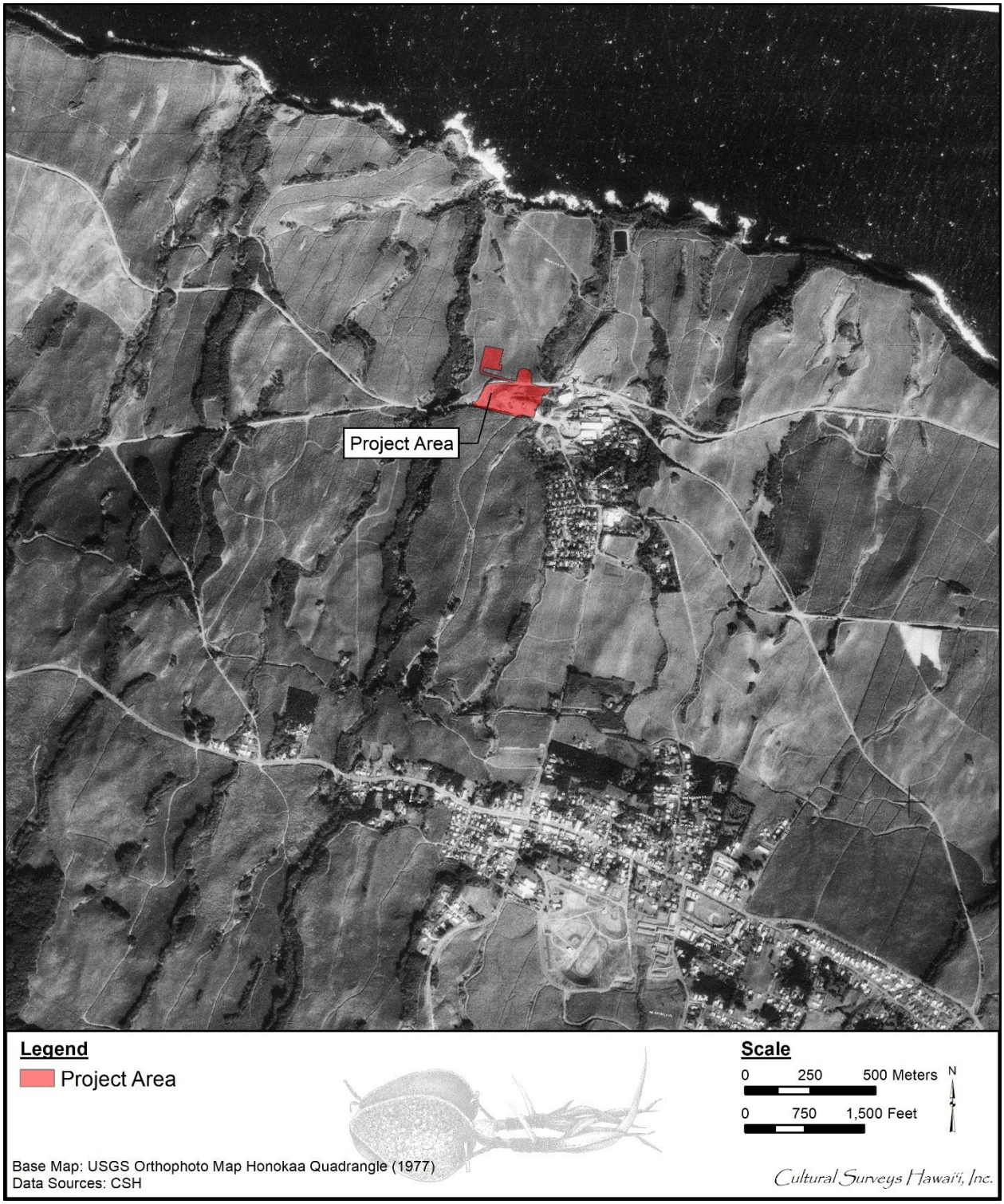

Figure 11. Portion of the 1977 USGS Orthophotoquad aerial photo (Honoka‘a Quadrangle) showing the nature and extent of development in the vicinity of the project area

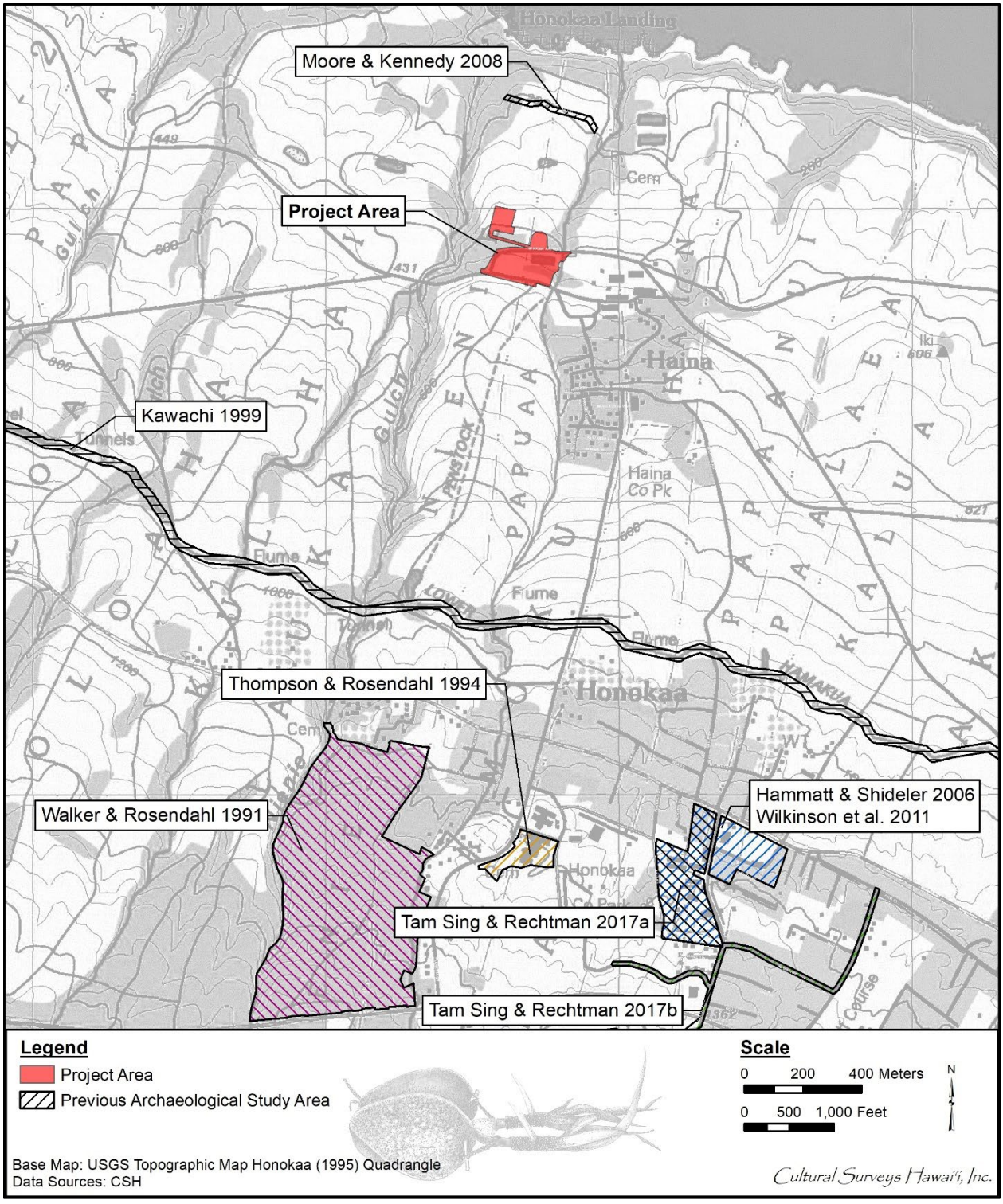

Figure 12. Portion of the 1995 Honokaa USGS 7.5-minute topographic quadrangle, showing previous archaeological studies located within 2.5 km of the project area

Table 2. Previous archaeological studies located within 2.5 km of the current project area

Reference	Type of Study	Location	Results
Walker and Rosendahl 1991	Archaeological inventory survey	Approx. 186 acres in Papa‘anui, Pa‘alaea, Haina, Nāmoku, Pāpua‘a, and Nienie Ahupua‘a, TMKs: (3) 4-5-010:003, 005, 092	Documented two newly identified historic properties: SIHP #s 50-10-08-15143 (complex) and 50-10-08-15144 (omplex); SIHP # -15143 consists of a wall (Fea. A) and an alignment (Fea. B); SIHP # -15144 consists of a wall (Fea. A), cairn (Fea. B), and an upright (Fea. C); both sites generally in good to excellent condition and likely functioned as habitation sites
Thompson and Rosendahl 1994	Archaeological subsurface testing	5.235 acres in Haina and Nāmoku Ahupua‘a, TMK: (3) 4-5-010:091	Study included excavation of 16 backhoe trenches; no archaeological features or cultural materials identified
Kawachi 1999	Preliminary archaeological Survey	Lower Hamakua Ditch	Observed one feature along Lower Hamakua Ditch (SIHP #s 50-10-7, 8, 9-07513): a platform on north side of the ditch in Kapoaula Ahupua‘a, which may have redated ditch construction and appears to have been modified for recent use
Hammatt and Shideler 2006	Archaeological literature review and field inspection	Honoka‘a Elementary School and Honoka‘a High and Intermediate School, Papa‘anui and Pa‘alaea Ahupua‘a, TMKs: (3) 4-5-003:020; (3) 4-5-005:001,002; (3) 4-5-010:076; (3) 4-5-012:021, 025	Honoka‘a High and Elementary School is on Hawai‘i Register of Historic Places (SIHP # 50-10-08-7522, Thematic Group for Public Schools on Hawai‘i Island); no archaeological features or cultural materials observed during field inspection
Moore and Kennedy 2008	Archaeological assessment (no finds AIS)	1.29 acres in Nienie and Pāpua‘a Ahupua‘a, TMK: portions of (3) 4-5-002: 15, 019 and 059	No archaeological features or cultural materials identified

Reference	Type of Study	Location	Results
Wilkinson et al. 2011	Archaeological monitoring	Honoka‘a Elementary School and Honoka‘a High and Intermediate School, Pa‘alaea Ahupua‘a, TMKs: (3) 4-5-003:020; (3) 4-5-005:001,002; (3) 4-5-010:076; (3) 4-5-012:021, 025	No archaeological features or cultural materials identified
Tam Sing and Rechtman 2017a	Archaeological monitoring	Honoka‘a Elementary School, Papa‘anui Ahupua‘a, TMKs: portions of (3) 4-5-010:076, and (3) 4-5-005:001 and 002	No archaeological features or cultural materials identified
Tam Sing and Rechtman 2017b	Archaeological monitoring	Ahualoa Well Transmission Water Line, TMKs: (3) 4-5 various and (3) 4-6 various	Documented three isolated fragments of historic-era glass bottles; no significant archaeological features or cultural materials identified

Figure 13. Photo of the main Hamakua Energy Plant office building and energy-generating facility in background; view to northwest

Figure 14. Photo overlooking plant facilities; view to northwest

Figure 15. Photo of the fuel storage tanks in the northeastern portion of the plant; view to east

Figure 16. Photo overlooking the central portion of the plant; view to northwest

Figure 17. Photo overlooking the fenced eastern portion of the plant; view to south

Figure 18. Photo of a staging area at the western edge of the plant, with fuel storage tanks and Kia Manu Street in background; view to northeast

Figure 19. Photo of the paved driveway leading to the Haina Substation and proposed battery storage site; view to west

Figure 20. Photo overlooking the existing Haina Substation and adjacent asphalt lot (proposed battery storage site); view to northeast

Figure 21. Photo overlooking Kia Manu Street at the plant entrance; view to west

Figure 22. Photo of Kia Manu Street along the western side of the plant; view to northeast

Figure 23. Photo of Kia Manu Street along the *mauka* side of the plant; view to southeast

Figure 24. Photo of Kia Manu Street as it enters into the plant; view to west

Figure 25. November 1999 photo on display at the existing Hamakua Energy Plant, showing the beginning of construction for the plant in 1999, note extensive ground disturbance; view to east

Figure 26. Photo on display at the existing Hamakua Energy Plant, showing the Haina substation shortly after completion ca. 2000; view to north

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