

BEFORE THE COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

Iao Ground Water Management Area High-	)	Case No. CCH-MA-06-01
Level Source Water Use Permit Applications	)	
and Petition to Amend Interim Instream Flow	)	TESTIMONY OF TY P. KĀWIKĀ
Standards of Waihee, Waiehu, Iao, & Waikapu	)	TENGAN, PH.D.
Streams Contested Case Hearing	)	
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TESTIMONY OF TY P. KĀWIKĀ TENGAN, PH.D.

1. My name is Ty. P. Kāwika Tengan. My business address is University of Hawai'i at Mānoa, Department of Anthropology, 2424 Maile Way, Saunders Hall 314, Honolulu, Hawai'i 96822.

2. I received a B.A. in Anthropology modified with Native American Studies from Dartmouth College, and a Masters and Ph.D. in Anthropology from the University of Hawai'i at Mānoa. I am currently an Assistant Professor in the Departments of Ethnic Studies and Anthropology of the University of Hawai'i at Mānoa. My background and experience focus on traditional, historic, and contemporary Hawaiian cultural practices. As part of my doctoral research on a Hawaiian men's cultural group called the Hale Mua o Maui (based in Wailuku), I conducted oral history interviews and archival research on the cultural and historical significance of sites in Nā Wai 'Ehā (including Waihe'e and Pihana). I am publishing a major scholarly book on the Hale Mua o Maui and the cultural significance of Maui and have published numerous articles on Hawaiian history, culture and land. I have further worked with the Māui and Lāna'i Burial Council, Hui Alanui o Mākena (a non-profit cultural and environmental stewardship organization), and various Hawaiian language immersion programs. I myself was raised on

Maui in Waiehu, and my grandmother's Kamaka 'ohana comes from Wailuku and Pihana where our ancestors are buried in ancient sand dunes and a historic family cemetery. My expertise thus derives from scholarly research, community involvement, family traditions, and personal experience. My C.V. is Exhibit "C-1."

3. Exhibit "C-2" is a report entitled A Report on the Archival, Historical and Archaeological Resources of Nā Wai 'Ehā, Wailuku District, Island of Maui" that I prepared for the Office of Hawaiian Affairs in collaboration with Research Specialist J. Lahela Perry, MA (Anthropology Department, Bishop Museum) and Researcher Nanea Armstrong, MA (Library and Archives, Bishop Museum), with the assistance of Jason Jeremiah (Native Rights, Land, and Culture Hale, Office of Hawaiian Affairs, who provided the historic site maps.

Report on the Archival, Historical
and Archaeological Resources of
Nā Wai `Ehā , Wailuku District, Island of Maui

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Kaulana Nā Wai `Ehā – Famous are the Four Great Waters of Waikapū, Wailuku, Waiehu, and Waihe`e. This well-known saying attests to the traditional, historical, and cultural significance of the four ahupua`a (land divisions) and their streams that comprised “the largest continuous area of wet taro cultivation in the islands” (Handy and Handy 1972, p.496) and served as the primary ritual, political, and population center of Maui. In the following pages we summarize the legendary, historical, oral, and archaeological data derived from our documentary research of records held by the Bishop Museum Archives; previous surveys conducted by Connolly (1974), Cordy (1978), Kelly and Hee (1978) and Na Pūlapū and Maly (1994); studies by Sterling (1998), Handy (1940), and Handy and Handy (1972); oral history interviews; and Hawaiian language newspapers. These sources reveal that Nā Wai `Ehā is a region of Maui with a rich history connected to and enabled by the abundance fresh water in this area. Within this windward valley setting, the original gods endowed the land with cultural features, ritual chiefdoms developed and expanded, and the populace thrived on wetland kalo and gathering of streamlife, including `o`opu, `opae and hīhīwai.

This report is divided into five general sections:

- I. Storyed Landscape
- II. Society of the Four Waters
- III. Customary Practices
- IV. Transformations
- V. Conclusion

In Section I, we describe the legendary setting that includes the tales of the most ancient ancestors and gods of the land as well as the remembrances of long-time

residents who recall place and names associated with their kulaiwi – native land of their ancestors’ bones. In Section II, we focus on important moments in the expansion of Hawaiian society up through proto-historic times, a period marked by the establishment of ritual chiefdoms and complex agriculture. Section III details the gathering and fishing traditions carried out in Nā Wai ‘Ehā. Section IV recounts the transformations that resulted from sugar plantations’ displacement of lo‘i kalo and diversion of fresh water. In Section V, we conclude with a restatement of our key findings that reiterate the importance of fresh water in this region.

I. Storied Landscape

Located within the district of Wailuku¹, Nā Wai ‘Ehā consists of the four streams of Waihe’e², Waiehu³, ‘Īao and Waikapū.⁴ The mountainous region from which these great waters emanate is called Kahālāwai for the “meeting” of not only the waters but also of the heavens and earth as the rains feed these life-giving streams. The first inhabitants of the islands were remembered as akua “gods” for their capacity to endow nature with cultural features and “create” society. Nineteenth century Hawaiian historian S.M. Kamakau (1991, p.112) wrote that “Kāne and Kanaloa...were perhaps the first who kept gods...to come to Hawai‘i nei and because of their *mana* [spiritual power] they were called gods.” These two were among the four primary akua in the Hawaiian pantheon; Kāne was associated with fresh water and taro, and Kanaloa with the ocean and fishing.

¹ Literal translation is water [of] destruction. Site of the battle in the late eighteenth century in which the army of Kalani‘ōpu‘u was nearly annihilated by Kahekili of Maui (Pukui and Elbert 1974).

² Literal translation is squid liquid (ibid).

³ Literal translation is water spray (ibid).

At Waihe`e, as they did throughout the islands, they “broke open rocks so that water would gush forth – sweet, flowing water” (ibid, p.112). Kane and Kanaloa are also known to have introduced the ritual, social, and medicinal use of drinking `awa (kava), a brew that required the waters of Kane. Stokes records a large pit in Waihe`e reported to be their Kanoa (`awa bowl). He also notes a site named Alae after an alae bird pinned to a cliff wall by a projectile thrown by one of the two gods, from which spot “water now flows” (Stokes n.d.).

As the foregoing example aptly demonstrates, place names are significant and are remembered because they encode stories of legendary feats and figures on the landscape. Writing in the Hawaiian language newspaper *Ka Nupepa Kuokoa* on 21 September 1872, W. K. Kaulililehua explained that the origin of the name Waikapū (Water of the Conch) derived from a magical conch shell trumpet in a cave that could be heard all around the islands until one day the dog Puapualenalena stole it. Significantly, the Waikapū Stream serves to spatially locate both the cave (“away up the stream, about a mile or more from the village” and “on the left side”) as well as Puapualenalena (“on the northeast side of that stream and opposite the cave”). This underscores the fact that knowledge of history also entailed an intimate knowledge of the stream’s flows and contours.

Such place-based knowledge has been handed down through the generations and can be found in oral histories collected in the 20th century. The oral testimonies of Pia Cockett (n.d.), a Kama`āina from Waikapū, are important here. Most interpretations of Wailuku as “Waters of Destruction” make reference to the massive

⁴ Literal translation is water [of] the conch (ibid).

floods created by torrential downpours. In addition to this, Cockett notes that the name marks the watery graves laid by Kamehameha in his historic battle of Kepaniwai that dammed the stream with bodies (see next section). Cockett relates the name of Waichu to the fact that when water from the upland “came down the cliff, the sprays [ehu] fly just as it does over the sea.” Explaining the meaning of Waihe’e, Cockett further testified that “there is something in the stream of Waihee...that is slimy, slippery” and that “some people who go there to bathe, slip.”

Rebecca Nuuhiwa’s (n.d.) oral history reveals culturally significant practices and beliefs connected with the Spring of Eleile near Waihe’e Stream (which she notes was “formerly called Wailua by the old timers”). She explains that when going to swim at Eleile, whose “water is very dark and deep”, one needs to first toss in a ti leaf; “if it goes around and around you are permitted to jump in. If it goes once or twice and is taken then don’t jump in lest you be seized by the mo’o.” The mention of mo’o verifies a commonly-held belief of supernatural reptilian beings that populated fresh water ponds and related areas. Maui was famed for its mo’o, including the powerful Kihawahine mo’o goddess that Kamehameha adopted as his own during his campaign of conquest. Nuuhiwa goes on to explain that the spring Eleile contained an underwater cave where the people of the area would hide the piko (umbilical cords) of their babies after birth. Tradition held that in an earlier time, a young woman named Eleile and her sister Wailua lived at the cave making tapa. One night when “it stormed,” the neighboring stream “flowed until it reached the women” who “were washed away by the waters...After this time...those who could hold their breath dived down and hid the piko.”⁵ The location of

⁵ Bishop Museum Archives Audio Collection, HAW 84.2.3

where one buries or hides the piko is a traditional custom that represents Native Hawaiian cultural beliefs about an individual's connection to the land. Here, the waters are important because they allow the parent to hide the piko; likewise, traditions of underwater caves in 'Īao (see next section) highlight the need for deep fresh water bodies to maintain and enable cultural practices.

The floods at Waihe'e figure prominently in the stories of the most significant akua and ancestor to settle in these lands – the earth mother Haumea (also known as Papa). S.M. Kamakau writes that of all the “ancestral chiefs to sail” from Kahiki (the ancestral foreign lands) to settle in Hawai'i, “Haumea is the very first” (Kamakau 1991, p.2). In one legend, she actually “flies” from Kahiki carrying a magical tree called Kalauokekahuli, upon whose branches are the flowers Kanikawa and Kanikawi (later famed as medicines used for birthing). After finding no suitable place on Hawai'i Island, Haumea lands on Maui in Waihe'e to “drink of water – the water of Kane” (ibid, p.7). There at Pu'ukuma the tree roots, and Haumea proceeds to build a wall around it that stretches “from Pihana to Kaho'omano Pt” (ibid) She returns to Kahiki, and a man named 'A'ala'au (from Nakohola, Waihe'e) goes upland to gather wood and cuts down the tree. Twenty nights and twenty days of fierce storms ensue, and “there were rushing streams where no streams had been before” (ibid). The wall breaks down into mounds or falls into the streams, and the tree washes out into the ocean for six days before landing ashore in pieces at Niukukahi in Waiehu. The branch named Kahakaiki becomes “a rack on which wooden bowls or netted calabashes were slung;” the branch Keoloewa becomes “a shelf on which bundles were placed;” and the branch Makalei becomes a powerful fishing stick used in salt and fresh water at Kailua and Kawainui on

O`ahu (ibid, pp.7-8). The trunk Kuho`one`enu`u, who had become a dung heap for waste disposal, visited a man named Waila`ahia and his wife Halelau in their dreams, instructing them to retrieve and carve him into a god for them; up until then, they had been “people without gods” (ibid, p.8). Waila`ahia first offers sacrifices of pig, coconut, red fish, and kohekohe grass, then takes the log upland to Polipoli in Napoko (Waiehu) and dedicates a heiau to the god. Kuho`one`enu`u is the first carved god of the islands and becomes renown as an akua of mana and “as one who seized kingdoms.” The O`ahu chiefs from the most ancient to the most recent adopt Kuho`one`enu`u as their own (as does the eighteenth century Maui king Kahekili, whose center of power was in Nā Wai `Ehā). Kukeoloewa (the second branch of the tree) later becomes the god for Maui chiefs.

In short and metaphoric form, this story represents the broad historical sweep of Hawaiian social development from the point of initial settlement up into the historic period of unification as the Hawaiian Kingdom. Nā Wai `Ehā figures centrally in this story as the source of life (growth fed by the water of Kāne), farming and subsistence activities (marked by the use of branches for the support and storage of poi bowls, calabashes, and food bundles), religious evolution and order (as people without gods create one out of the “waste”), and the highly stratified chiefly society associated with a ritual class of priests presiding over the populace of farming and fishing commoners. This is the time of abundance in the land where an extensive population is supported by a complex agricultural system of wetland kalo cultivation supplemented by fishing and gathering. Wealth is designated by the term “waiwai” – literally “water-water” – in reference to those lands rich in fresh water resources that enable economic and customary

activities to occur. Significantly, this account of Hawaiian social growth emanates from the waters of Nā Wai `Ehā.

II. Society of the Four Waters

In addition to the rich and fertile landscape of Nā Wai `Ehā, historical records highlight the society of the four waters, both natural and cultural. In this section, the evidence gathered also focuses on the population growth and how water played an integral part in Nā Wai `Ehā's many large agricultural complexes. Moreover, this expansion will also reference the ritual chiefs, battles that took place, and people residing in this area, all in conjunction with water and intensive agriculture.

Favourable for the combined enterprises of planting potatoes and fishing. The flat north coasts, eastward from Wailuku, had fishing settlements here and there in ancient times and presumably sweet potato plantations...From Waihe`e to Waikapu there is much good land below and bounding the ancient terraces are on the kula and in the lower valleys which would be ideal for sweet potato culture, but it is said that little was grown in this section because there was so much taro

(Handy 1940, pp.159-160).

The abundance of water in Nā Wai `Ehā enabled extensive lo`i kalo (wetland kalo) complexes, including varieties favored for poi making. For instance, in preparation for a gathering in Lahaina, the following request is made: “all of Kona will be touched and there will be bundles of dried *pānuhunuhu* from that lively one of Kona and throat-moistening lehua poi from the fiery one of Wailuku” (Kahā`ulelio 2006, p.259). The cultivation of such a desirable variety of kalo, however, requires specific knowledge and resources to yield a successful crop, including an abundant supply of cold, fresh water. In *Ka Hae Hawai`i* on 12 August 1857, L. Pule offers a detailed description of kalo cultivation in the wetlands of Wailuku and Waiehu:

1. The wet land taro patches are constantly planted and the water is not allowed to dry up in them.

In preparing the wet patches, the weeds are removed from the banks, and when that is done, it is well to bank up the borders again. If the banks are shallow, dig the patch deeper and if there is a break in the bank, it is well to remove any stones at the breach and mend it with earth alone to make it solid. It is well to mend with stones and Earth together lest the breach open again. In cleaning the patch it is not well to clear it entirely of trash, for that is good mulch. Remove only the weeds and throw them away. It is not good to leave them in the patch. If there are several small patches they could be combined into one large patch.

Dig the feeding ditch deeper because it is likely to carry earth and fill the patch again. If the ditch is too low, make a new one and cover up the old.

2. Concerning the newly dug wet patch -

This concerns patches that had been frequently cultivated and then allowed to dry up for a year or more. Before deepening, moisten with water and when it is wet, dig. Dig next to the break first to make room and then it could be refilled later with mud and sugar cane leaves and then coconut leaves. In digging in the soil, heap the earth in small heaps so that it would not harden when trodden upon. It is all right to leave it leveled but it must not be walked upon again while digging, lest the soil harden once more. After it has been softened, allow the water to fill the patch. The patch is ready for treading and tread until the earth is soft and the foundation of the patch solid....

6. Irrigating - From the time of planting until there are two or three leaves on the stalks, allow only a little water to flow in and from the time there are a few leaves until the taro sends out new shoots allow more water to flow in. After the offshoots have grown, let the water fill the patch. Dam the irrigation ditch at the entrance to make it flow more.

7. Turning off the water in the ditch - If there is a patch of full-grown taros, let the water run in there or along the bank. If there are no matured taros in the patch allow the water to run into the dry patches, etc...

This newspaper article highlights the basic requirement for successful wetland kalo cultivation for this region. Pule's advice concerning irrigation is significant; it is vital to keep an abundant supply of fresh water flowing through a lo'i to prevent the water from stagnating. Without a continuous flow of fresh water, rising temperatures can

lead to crop rot. A continuous flow of water facilitates successful kalo cultivation. The success of wetland kalo cultivation in this area supported the historically large populations in Nā Wai 'Ehā.

Whether a new comer to Maui or a kama'āina in the 1800s, when traveling to and from 'Īao valley it would be hard to miss two very important agricultural feats of Kama'auwai and Kalani'auwai, famous 'auwai (irrigation ditches) that fed many if not all of the kuleana lands claimed in the Māhele (Land Division). Once commenter in *Ka Nūpepa Kū'oko'a* (4 February 1898) recounted a recent visit to Nā Wai 'Ehā: "We ascended, guided by our friend, on entering the valley, we saw two ditches, one on either side. Their names were Kama-auwai and Kalani-auwai."

As the fresh water from Wailuku flowed towards the bays of Pi'ilani, numerous springs feeding lo'i kalo were also utilized. Thrum (1909, p. 46) writes, "Several hundred yards from the base of Pihana is Wailuku spring and taro patch, reserved in ancient times for choice plantings for royal tables only, and from this spring the town and district is said to derive its name."

The water resources of the region sustained the second largest population for the island of Maui (Kelly and Hee 1978, Schmitt 1973, p.18). As Cordy (1978, p.59) recounted, "In 1831-32, 827 people resided in Waihe'e ahupua'a, representing a very large population. Waihe'e was the second largest of the four large valley communities of Waihe'e, Waiehu, Wailuku, and Waikapū, being surpassed only by Wailuku...Waihe'e contained almost as many people as several other districts that included a large number of communities."

These large populations were sustained and fostered by productive lo'i kalo. Kelly and Hee's account of the cultural significance of Waihe'e valley concludes that:

All indications are that Waihe'e Valley was traditionally a rich, fertile valley supporting a substantial population. Hawaiians constructed extensive lo'i (irrigated taro terraces) and elaborate 'auwai systems to provide water for the lo'i. In addition to taro, they probably grew sweet potatoes, bananas, wauke, 'ie'ie, and other life-sustaining crops. Across the lower portion of the stream, they built at least one dam, which no longer functions because of the lack of water in the river. Many lo'i can be seen today, although most are not in use.

(Kelly and Hee 1978, p.21).

The concentration of heiau sites provides additional evidence of Nā Wai 'Ehā's cultural significance. The presence of heiau (places of worship, temples) in a windward environment indicates large populations and agricultural pursuits. For Nā Wai 'Ehā, there are a total of 36 documented heiau for the region: 13 heiau for Waihe'e; 6 heiau in Waiehu; 17 heiau for 'Īao (Walker 1931, Thrum 1909, Bruce 1973, Stokes 1918). Cordy's (1978) analysis of Nā Wai 'Ehā heiau indicates that the region contains the largest number of heiau among all Maui island communities. Due to the agricultural productivity of this region, these heiau are likely devoted to the akua of Lono, god of fertility and agriculture. This is confirmed by the volume of kalo terraces documented throughout the Nā Wai 'Ehā region.

Near the muliwai or river mouth of Wailuku, in the 'ili of Paukūkalo stand Pihana and Haleki'i the two largest of the 36 documented heiau located in Nā Wai 'Ehā. Here W. M. Walker describes both with maps following each description.

Location: West side of Iao Stream on the sand ridge about half a mile from the sea, about opposite the Wailuku Sugar Co.'s mill.

Description: A large heiau partly eroded away by the action of the Iao Stream. Stokes in 1916 described it as follows: "This heiau occupied the top and upper slopes of a high lime-sand-dune, its floor being about 70 feet above the stream bed on the southeast. The dune is one of a series paralleling the coast line of Wailuku bight. The dunes on the west, on one of which Pihana stands, are hardened on the surface for a depth of 2 to 6 feet, the underlying sand being loose. Probably since the heiau was built, floods in the Iao stream (the bed of which was formerly more to the southeast) have cut through the hardened portion of the base of Pihana dune, and are now gradually removing it together with the heiau....the southwestern end of the dune is very precipitous, the floor of the heiau being about 60 feet above the ground at the foot of the terraces. The only local information obtainable was that the heiau had been built by Kahekili."

There is some doubt as to whether the part of the heiau shown as B is really a part of the ancient structure. Mr. Stokes in 1916 made no mention of it, yet as shown in the plan it is centrally located with reference to the high platforms at the south so that it seems reasonable to assume that it was an open court connected with the heiau. It is bounded by low walls and has suggestions of a number of small enclosures at one side. The court measures 90 by 166 feet, whereas the undisturbed side of the heiau proper (A) is about 300 feet in length. This portion consists of high terraced facings built of large beach stones.

Pihana Heiau, Site 43

Location : N.N.W. of Pihana 350 feet on another sand dune.

Description: A large heiau of the same type as Pihana but it has resisted erosion more successfully. It shows massive wall facings in ruins of four terraces on the south side. Water-worn boulders are used in its construction. It measures 300 x 150 feet.

Halekii Heiau, site 44

In the upper realm of `Īao (situated in Wailuku) were the royal residences of chiefs in both life and afterlife. The use of this valley by the ali`i as well as the maka`āinana is recorded in the storied landscape. Ke`alāholo and Kīnihāpai were the names of the two rivers splitting at what is known now as Kepaniwai Park. According to Hattie Yoshikawa (n.d.), "The chief Kaka`e (brother of Kaka`alaneo) was born and

reared in Ka'alāholo. The work of Kaka'e was to care for the spring for the fish which the runners brought to the upland chiefs. Kaka'e took care of the large stone in which there was a depression."

The royal residence at Wailuku which existed had been greatly researched and documented. An example of this is from J. F. G. Stokes in his Maui site notes:

Daughters and Sons of Hawaiian Warriors Report to Historical Comm: Loiloi and Hauna-aka, on right side of stream when ascending. Terrace still (1924) in good condition—level as a platform for a large house. Royal residence from time immemorial. Place where royal corpses were prepared for burial. Flesh was stripped from the bones, burned to ashes which were placed in a deep pool in the upper stream. The pool was called Kapela. The bones were dried on a large rock called Kapili-o-Kakae, and then wrapped in tapa and encased with braid.

(Anthropology Department Records, Grp 7, 10.10.c9.)

Although the royal residence of Maui lay at `Īao, another very important aspect of its history lies in warfare as well. Kamehameha's war canoes land on Maui's shores to conquer not only an island but a rich fertile district more wealthy in kalo production than any other in Hawai'i. The battle that took place in `Īao is further described by S. M. Kamakau (1992, p.148):

After his [Kapa-kahili] death the fighting ceased, and Kamehameha and his chiefs went on to the principal encounter at Wailuku. The bay from Kahului to Hopukoa was filled with war canoes. For two days there was constant fighting in which many of the most skilful warriors of Maui took part, but Kamehameha brought up the cannon, Lopaka, with men to haul it and the white men, John Young and Isaac Davis, to handle it; and there was a great slaughter. Had they fought face-to-face and hand-to-hand, as the custom was, they would have been equally matched. But the defensive was drawn up in a narrow pass in `Īao, and the offensive advanced from below and drew up the cannon as far as Kawelowelo`ula and shot from there into `Īao and the hills about, and the men were routed. The victors pursued them and slew the vanquished as they scrambled up the cliffs. There was a great slaughter, but mostly among the commoners; no important chief was killed in this battle. "Clawed off the cliff" (Ka-`uwa`u-pali) and "The damning of the waters" (Ka-pani-wai) [Kepaniwai]

this battle was called.... Ke-ku`i-apo-iwa, Ka-lani-akua, and Ke-opu-o-lani were taken over the pass in `Īao Valley to Olowalu where they met Ka-lola's party and sailed o Moloka`i.

The sacred burial caves of `Īao were also well documented early on as S.

M. Kamakau explains in a Hawaiian language newspaper article in *Ke Au Okoa* on 6 October 1870:

Iao is the famous secret cave of (the island of) Maui. It is at Olopio close to the side of the burial place of Kaka'e and Kalahiki ["Kalakahi" in original]. The main entrance is said to be under water, the second opening on a steep precipice on the left [hema] side. This was the famous cave in the old days. There were (laid) all the ruling chiefs who had mana and strength, and the kupua, and all those attached to the ruling chiefs who were famous for their marvelous achievements. There were several hundred in all who were buried there. The first of all the well-known chiefs to enter the famous cave of `Īao was Kapawa, a famous chief of Waialua, O'ahu, and the last was Kalanikuikahonoikamoku (The-chief-standing-on-the-peak-of-the-island). In the year 1736 the last of them died and no one now alive knows (the entrance to) the secret cave of Iao.

Again in 1911 one finds mention in a June 28th *Ke Au Hou* article:

The secret cave of Kapela in Iao was Maui's noted burial place and is situated at Olopio, close beside the cliff of Kaka'e at Kalahiki. It is said that the entrance is under water and another one is on the sheer precipice on the left side. There the well known ruling chief, those with supernatural traits, strong men and famous persons who served their chiefs in a marvelous way were buried.

`Īao valley and the water which flowed out from its lush precipices were very important for the ali`i and their funerary practices. The placement of these high ranking chiefs within the depths of Wailuku's river shows the vast amount of water created from this vicinity. As with the practice of burying the piko – though on a dramatically higher scale – the burial of sacred chiefs required a deep fresh water body to ensure utmost protection of their bones.

III. Customary Practices

Within the Four Great waters were found not only the mana of ancient chiefs, but also valuable resources that allowed for the customary gathering and fishing practices of the maka`āinana. In addition to kalo, the freshwaters of the Waihe`e ahupua`a yielded invaluable protein source in the form of `o`opu nakea, hīhīwai and `ōpae.

According to informants, Waihe`e Stream once had a rich biota. Residents of the valley used to catch the `o`opu nakea and the `o`opu nopili for food. There are no `o`opu in the stream today, apparently because Waihe`e Stream is almost dry below the 1936 intakes, and the `o`opu must be able to return to the sea to spawn. There are some `opae in the stream mauka of the intakes. The stream was once rich in hīhīwai, a freshwater limpet.

(Kelly and Hee 1978, pp.21-24).

However, it appears that by the latter part of the twentieth century, decreased stream levels negatively impact the native biota of the streams. Similar findings of significance and change are made for the ahupua`a of `Īao. Connolly (1974, p.5) indicates that the waters of the region provided for a diet which “consisted mainly of fish (napili and nakea), opae, hihi-wai (all obtained from `Īao Stream), and lehua (red) taro which was grown in lo`i (irrigated terraces) lining the banks of the stream.”

In Nā Wai `Ehā, the gathering of `o`opu was sometimes kapu (reserved) for the chiefs. Maka`āinana were willing to risk their own lives for this important aspect of their livelihood and sustenance and developed a method to hide the scent of the cooking `o`opu. The famous wind of Waihe`e pays tribute to this important practice of gathering `o`opu in Nā Wai Ehā. Rebecca Nu`uhiwa's oral history directly correlates the importance of gathering `o`opu and the name of the famous wind of Waihe`e.

The wind of Waihe`e – the Kili`o`opu (Faint [odors] of the `o`opu) was called thus because of the nopili (`o`opu) which were kapu to the chief alone when in season. If commoners went to fetch them they were punished by death. When the `o`opu were cooked in ti leaves by the people of the uplands the appetizing fragrance was wafted down by the wind to the chief's door and the culprits consequently hunted out in the uplands. However if the `o`opu were wrapped in `olena leaves when cooked, the aroma did not escape.

The rich nutrients from the streams fed into the ocean, and Kamakau notes that “Waihe`e had good fishing in ancient times; there were *maomao*, *a`ua`u*, *he`e*, and *ohua*, besides fish that came at special seasons, like *nehu* and *piha*” (1992, p. 83). Accounting for the varied customary and subsistence activities that occurred at Nā Wai `Ehā then allows us to more fully appreciate the impacts of sugar planting beginning in the 1850s-60s.

IV. Transformations

The development of the sugar industry on Maui started much earlier than most of the other islands. Nā Wai `Ehā was a prime location not only for fertile kalo lands that helped sustain Hawaiian culture for over 1,000 years, but also the creation of a complex irrigation system that the Hawaiian people properly managed and used to support robust communities. With Kalani`auwai and the Kama`auwai being two of the most elaborate ancient irrigation systems in Nā Wai `Ehā, it is not surprising that the area would soon become the focus of the sugar companies, especially Wailuku Sugar (SEE PHOTO). Native Hawaiian communities and agricultural systems felt the burden of the plantations almost immediately, and the rise of sugar initiated a period of great transformation in Nā Wai `Ehā and in Hawai`i.

In an article in the Nūpepa Kū`oko`a dated 13 January 1866, S. D. Hakuole from Kula noted the drastic changes of Wailuku's landscape as the activities of sugar planters resulted in dried up lo`i kalo and a threatened Hawaiian way of life:

DESPAIR! WAILUKU IS BEING DESTROYED BY THE SUGAR PLANTATION---A letter by S.D. Hakuole, of Kula, Maui arrived at our office, he was declaring that the land of Wailuku is being lost due to the cultivation of sugarcane. Furthermore, he states the current condition of once cultivated taro patches being dried up by the foreigners, where they are now planting sugarcane. Also, he fears that Hawaiians of that place will no longer be able to eat poi, and that there will probably only be hard crackers which hurt the teeth when eaten, a cracker to snack on but does not satisfy the hunger of the Hawaiian people. Although, let it be known that the Hawaiian people were accustomed to eating poi.

It is the small fraction of diverted waters that sustains any remaining population in the historic period for `Īao Valley.

Another mo`olelo from Waikapu tells of the place name, but also provides information about the transformation of the landscape due to decreased water levels. This particular mo`olelo was published in 1872 in Ka Nūpepa Kū`oko`a by W.K.

Kauailililehua:

All of Waikapū is a pleasant place to live but the plants grow half as well because of the insufficient supply of water, due to the drought these days. Taro patches have dried up, the earth has cracked. The sugar cane belonging to the plantation here in Waikapu has not dried up because they have a little water. Only in a few places do they dry.

Furthermore in Waikapū, Handy expresses the resulting effect of the sugar industry in the 1930s: "Spreading north and south from the base of Waikapū to a considerable distance below the valley are the vestiges of extensive wet plantations, now almost obliterated by sugar-cane cultivation."

However, even with the decreased water level, other ahupua`a such as portion of Waihe`e continued kalo cultivation into the early 1930s. Handy (1940, p.107) describes kalo cultivation under adverse conditions as follows,

From Waihe'e to Wailuku Valley, in ancient times, was the largest continuous area of wet taro cultivation in the islands.

Today (1930s-1940s) the northern and southern slopes and the mouth of Waihe'e Valley are well cultivated, about a third of the old patches used as commercial plantation, some worked Hawaiians, some by Japanese, some by Portuguese. Waihe'e, like Kahakuloa, takes its name from historic *lo'i*. This patch, named Waihe'e, formerly belonged to the alii and is a large patch near the sea.

An elderly *kamaaina*, William Kahalekai, says there are numerous abandoned terraces at Eleile, far up in the valley beyond the end of the road and above the new reservoir. He says that in ancient times the terraces were more or less continuous in a belt between the sand dunes and the present irrigation ditch. The section is now mostly under sugar cane, which has obliterated the terrace lines, though the canefields are in many places broke by *kuleana* still held by Hawaiians who have preserved the old terraces.

In many isolated plots taro is still grown by Hawaiians or Japanese; and a number of the terraces, dry or irrigated by little ditches, are now used by enterprising Japanese for growing their vegetables: lettuce, beans, onions, eggplant, and some Japanese and Chinese taro. The old terraces are satisfactory for truck farming except in a wet season, when they do not drain.

The terraces, interspersed through the canefields, are numerous between Waihe'e Valley and Waihe'e town. South of the town, the canefields are continuous on the lower slopes all the way to Waiehu.

He further explains crucial evidence of the destruction caused by the Sugar Plantations in the ahupua'a of Waiehu.

This is the second valley of the famous Nā Wai 'Ehā of western Maui, and it is watered by twin streams. The canefields now extend throughout this region, continuously from Waihe'e on the lower slopes;...,except for these few patches the old terraces of the upper slopes are entirely ploughed under.

(Handy 1940, p.108).

By 1931, Walker observes that substantial damage and sometimes complete obliteration of heiau sites were characteristic outcomes of the ever expanding sugar plantations (Walker 1931). In conjunction with decreased stream levels, and available fresh water biota, the human population shifted away from the region. Connolly observes that,

...the native population in the valley had diminished, but the people who remained lived as they always had, from the stream. Around that time, however, sugarcane was becoming a major factor in the economic growth of the Hawaiian Islands, and water was needed to nourish this growth. `Īao Valley was a convenient source of this needed commodity, so the plantations moved in. They bought the lands necessary to tap this valuable resource, then built a system of waterways to raise the water up to the cane fields. Some water, however, was still diverted to a few small lo`i in the stream bed.

(Connolly 1974, p.5).

Though water, people, and practices continued to be diverted at an even greater pace throughout the twentieth century, small communities of farmers struggled to maintain a way of life rooted in the deep historical and cultural traditions of Nā Wai `Ehā. The words of Hakuole remind us that Native Hawaiian culture is intimately tied to the land and the water, and the inability to access these resources threatens the life of a people. Yet it is also here that one might find hope, for in the water is life, and the return of the streams will promote a vigorous and healthy regeneration of land and people.

V. Conclusions

We have summarized the key elements required for understanding Nā Wai `Ehā's traditional, historical, and cultural significance. The landscape tells the story of Hawaiian creation through the waters of Kāne, the earth mother Haumea, and the emergence of a Native Hawaiian society sustained by the streams and lands that are the

“bodies” of the gods. Political and ritual structures centered around control and management of these resources; meanwhile, the common folk supplemented their own kalo cultivating with gathering and fishing. Due to the abundance of fresh water flowing in times past, Nā Wai `Ehā supported one of the largest populations on Maui and figured centrally in Hawaiian history and culture generally. Its rich history connected to wet-land taro cultivation and gathering of native fresh water species and marine life was affirmed by the concentration of heiau sites, a significant phenomenon due to their proximity to highly productive agricultural systems. Given these findings, Native Hawaiian and other communities in Nā Wai `Ehā may once again become more self-sustaining and vibrant if granted their customary rights and access to meaningful fresh water flows from mauka to makai and in the nearshore marine area. Even though the transformations brought about by sugar have greatly inhibited the ability of Native Hawaiians to continue such practices today, the memories contained in place names and legends are sources of inspiration and hope for all who seek restoration of the life-giving waters of Kāne. Moreover, Nā Wai `Ehā continues to hold the potential to once again support enhanced traditional and customary rights and practices if sufficient water is restored.

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Historic Sites Maps: Waihe'e Stream and Waihe'e Makai

SHPD Points

Site number	Description
00032	Kapokea (Kealakaihonua) Heiau
00033	Kapoho Heiau
01188	Golf Course Burials
01762	Agricultural Complex, Waihe'e Valley
01763	Agricultural Complex, Waihe'e Valley
01764	Agricultural Complex, Waihe'e Valley
01765	Agricultural/Habitation Complex, Waihe'e Valley
01766	Habitation Site, Waihe'e Valley
01767	Habitation Site, Waihe'e Valley
01768	Agriculture Complex, Waihe'e Valley
01769	Agriculture Complex, Waihe'e Valley
01770	Agricultural Site, Waihe'e Valley
01771	Agriculture Complex, Waihe'e Valley
01772	Agriculture Complex, Waihe'e Valley
01773	Agriculture Complex, Waihe'e Valley
02309	Rock-Filled Terrace, Waihe'e
02389	Terrace Wall, Waihe'e
02390	Terrace Complex, Waihe'e
02391	Rock-Filled Terrace, Waihe'e
02392	Agricultural/Habitation Complex, Waihe'e Valley
02393	Habitation Complex, Waihe'e
02394	Rock Pile, Waihe'e
02395	Partially buried alignment, historic bottle dump
02396	Alignment, Waihe'e
02397	Alignment, Waihe'e
02398	Retaining Wall, Waihe'e
02404	Japanese Cemetery, Waihe'e
02406	Historic Habitation Site, Waihe'e
02407	Historic features, terrace, mounds, alignment
02408	Irregular shaped soil features
02409	Alignment, Waihe'e
02412	Historic Site, dam
02413	Alignment Complex, Waihe'e
02414	Habitation Site, Waihe'e
02417	Habitation Site, Waihe'e
02418	Historic Habitation, Waihe'e
02419	Terraced Alignment, Waihe'e
02420	Refuse Dump, Waihe'e
02421	Surface Scatter, Waihe'e
02422	Agricultural/Possible Burial, Wailuku
02423	Terrace, Waihe'e
02423	Terrace, Waihe'e
02424	Alignment Complex, Waihe'e
02425	Alignment, Waihe'e
02426	Alignment Complex, Waihe'e
02428	Alignment, Waihe'e
02429	Habitation Site, Waihe'e
02430	Habitation Site, Waihe'e

02431	Habitation Site, Waihe'e
02432	Habitation Site, Waihe'e
02433	Habitation Site, Waihe'e
02434	Habitation Site, Waihe'e
02435	Burial, Waihe'e
02436	Historic Site, alignments, terraces
02437	Cemetery, Waihe'e
02438	Wailuku Sugar Company Trig. Datum
02439	Habitation Site, Waihe'e
02440	Burial, Waihe'e
02441	Alignment Complex, Waihe'e
02442	Habitation/Burial Complex, Waihe'e
02444	Terrace, Waihe'e
02445	Terrace, Waihe'e
02446	Animal Burial, Waihe'e
02447	Terrace Complex, Waihe'e
02448	Terrace, Waihe'e
02449	Burial, Waihe'e
02450	Cemetery, Waihe'e
02450	Cemetery, Waihe'e
02451	Terrace alignment
02452	Alignment Waihe'e
02453	Agriculture/Habitation Complex, Waihe'e
02454	Habitation Site, Waihe'e
02456	Habitation Site, Waihe'e
02457	Habitation Site, Waihe'e
02458	Habitation Site, Waihe'e
02459	Lithic Scatter, Waihe'e
02460	Lithic Scatter, Waihe'e
02463	Agricultural Site, Waihe'e
02464	Agricultural Site, Waihe'e
02465	Habitation/Ranching Site, Waihe'e
02466	Possible Burial, Wailuku
02467	Agricultural/Ranching Complex, Waihe'e
02468	Historic walls, (surveyed by Walker)
02469	Historic structure, north of Kapoho Heiau
02470	Cemetery, Waihe'e
02471	Waihe'e Dairy/Farm
02704	Historic Cemetery, Waihe'e
02707	Subsurface Cultural Deposit, Waihe'e
02800	Historic Cemetery, Waihe'e
02846	Historic Ag Complex, Waihe'e
02911	Site is part of the Kolea Complex
02912	Site is part of the Kolea Complex
02919	Probably Kukuipuka Heiau, Maluhia

SHPD Polygons

Site number	Description
01189	Waiehu Midden Area
01501	Waihe'e District
01774	Ag/Habitation Complex, Waihe'e Valley
01796	Waihe'e Midden Site

02403	Habitation Complex, Waihe'e
02405	Agricultural Complex, Waihe'e
Kelly Points	
Site number	Description
1	Terraces and Canal
2	Terraces and Canal
3	Terraces and Canal
4	Canals and Terraced Platform
5	Stone alignment
6	Enclosure (free-standing)
7	Terraces and Canals
8	Terraces and Possible Canal
9	Terraces, Canals, Terraced platform
10	Terraces and Canal
11	Terraces and Canal
12	Terraces and Canal
Kelly Polygons	
Site number	Description
13	Terraces, Canals, Terraced platform, Paving, and Enclosure (free-standing)
0	Area not surveyed
0	Area not surveyed
Walker Points	
Site number	Description
27	Kukuipuka Heiau
28	Ulukua Heiau
29	Ulukua Heiau
31	Kaleakahoomano Heiau
32	Kapokea or Kealakaihonua Heiau
33	Kapoho Heiau
34	Kakolika Heiau
35	Puukuma Heiau
36	Paulani Heiau

Historic Sites Map: Waiehu Stream

SHPD Points

Site number	Description
01172	Lower Main Street Midden, cultural deposit
01180	Wailuku Petroglyphs
01181	Wailuku Grindstone
01185	Waiehu Dune Burials
01186	Lower Waiehu Burial Cave
01810	Paukukalo Burial
01812	Paukukalo Burial Complex
02978	Iao Valley Agricultural Complex
02979	Iao Valley Agricultural Complex
02983	Waiehu Burials
02984	Waiehu Burials
03000	Hale Hoikeike (Old Bailey House)
04005	Disturbed burial

SHPD Polygons

Site number	Description
00592	Haleki'i-Pihana (Pi'ihana) Heiau
01189	Waiehu Midden Area
02983	Waiehu Burials
02984	Waiehu Burials
02995	Pi'ihana Sand Dune Burials

Walker Points

Site number	Description
35	Puukuma Heiau
36	Paulani Heiau
37	Halelau Heiau
38	Kamakoa Heiau
39	Malumaluakua Heiau
40	Kukuikomo Heiau
41	Puukoa Heiau
42	Kaluli Heiau
43	Pi'ihana (Pihana) Heiau
44	Haleki'i Heiau

Walker Polygon

Site number	Description
45	Keahuku Heiau
46	Olokua Heiau
47	Olopio Heiau
48	Malena Heiau
49	Pohakuokahi Heiau
50	Lelemako Heiau
51	Kawelowelo Heiau
52	Kaulupala Heiau
53	Palamaihiki Heiau
54	Oloolakalani Heiau

Historic Sites Map: `Iao Stream

SHPD Points

Site number	Description
01172	Lower Main Street Midden, cultural deposit
01180	Wailuku Petroglyphs
01181	Wailuku Grindstone
01500	Ka`ahumanu Church, Wailuku
01606	Maui Jinsha Mission
01810	Paukukalo Burial
01812	Paukukalo Burial Complex
02797	Maui Lani Burial Complex
02916	Maui Homeless Shelter Construction Site Burials
02978	Iao Valley Agricultural Complex
02979	Iao Valley Agricultural Complex
02983	Waiehu Burials
02984	Waiehu Burials
03000	Hale Hoiikeike (Old Bailey House)
03119	Wailuku Complex
03120	Habitation/Burial Complex, Wailuku
04005	Disturbed burial
04211	Central Park Burial

SHPD Lines

Site number	Description
03112	Railroad Bed, Wailuku

SHPD Polygons

Site number	Description
00592	Haleki`i-Pihana (Pi`ihana) Heiau
02797	Maui Lani Burial Complex
02953	Kahului Harbor
02983	Waiehu Burials
02984	Waiehu Burials
02995	Pi`ihana Sand Dune Burials
03112	Railroad Bed, Wailuku
04001	Richardson Family Cemetery
04232	Ag/Habitation Complex, Ukumehame

Walker Points

Site number	Description
37	Halelau Heiau
38	Kamakoa Heiau
39	Malumaluakua Heiau
40	Kukuikomo Heiau
41	Puukoa Heiau
42	Kaluli Heiau
43	Pihana (Pi`ihana) Heiau
44	Halekii Heiau
45	Keahuku Heiau

Walker Polygon	
Site number	Description
45	Keahuku Heiau
46	Olokua Heiau
47	Olopio Heiau
48	Malena Heiau
49	Pohakuokahi Heiau
50	Lelemako Heiau
51	Kawelowelo Heiau
52	Kaulupala Heiau
53	Palamaihi Heiau
54	Oloolakalani Heiau
Connolly Polygon	
Site number	Description
MA-C9-23	North Terrace System Complex (terraces, free-standing walls, stone mounds)
MA-C9-22	Wallace System Complex (terraces, free-standing wall, house sites)

Historic Sites Map: Waikapu Stream	
SHPD Points	
Site number	Description
02904	Waikapu Ag/Habitation Complex
SHPD Polygons	
Site number	Description
02019	Waikapu Wall and Ditch
02020	Waikapu Agriculture Complex
02021	Waikapu Ag Site
02022	Waikapu Ag Complex
02023	Waikapu Ag/Habitation Complex
02024	Agriculture/Habitation/Burial Complex
02027	Waikapu Complex
04001	Richardson Family Cemetery

Historic Sites Nā Wai 'Ehā

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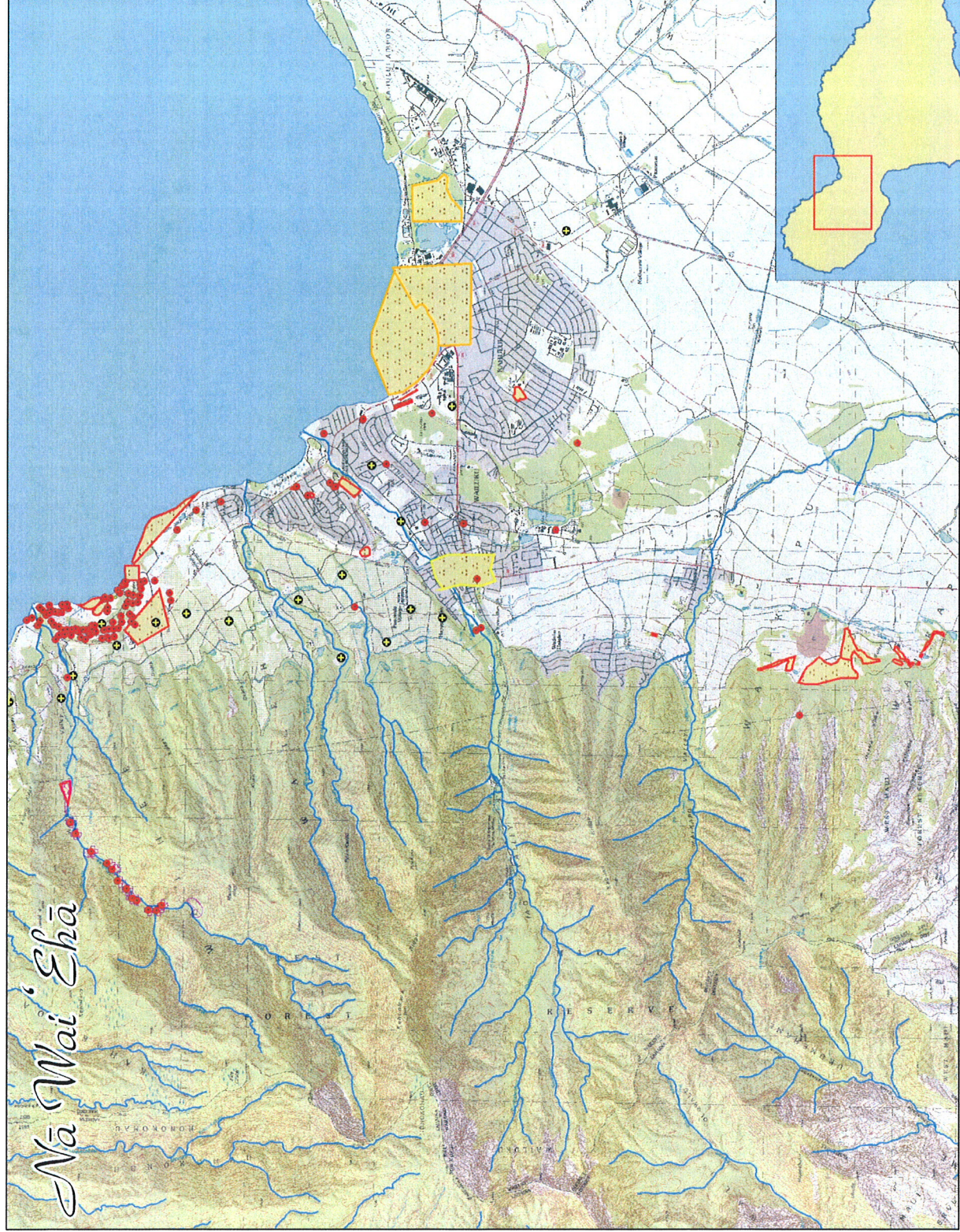
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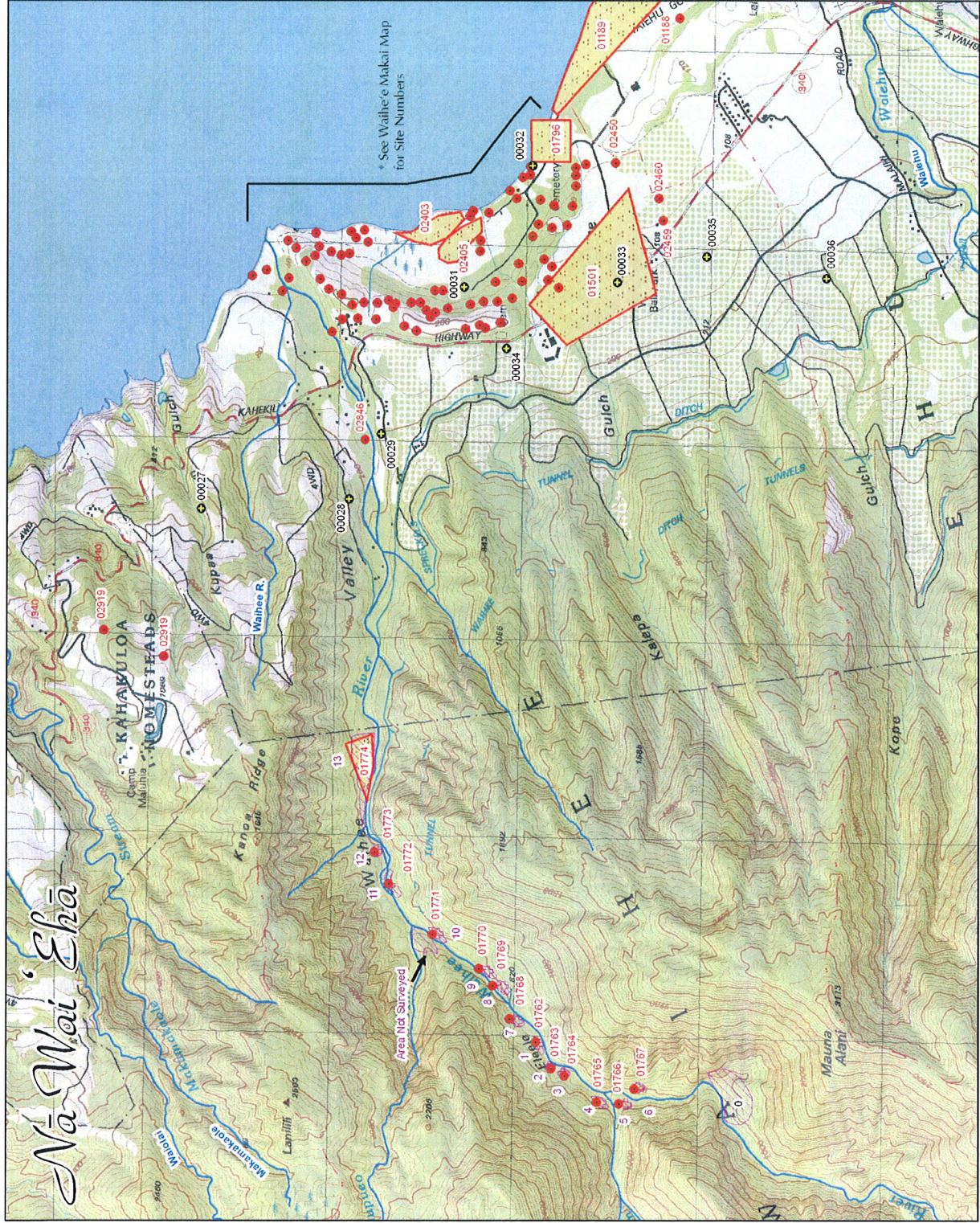


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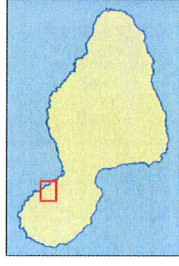




Historic Sites Waihe'e Stream

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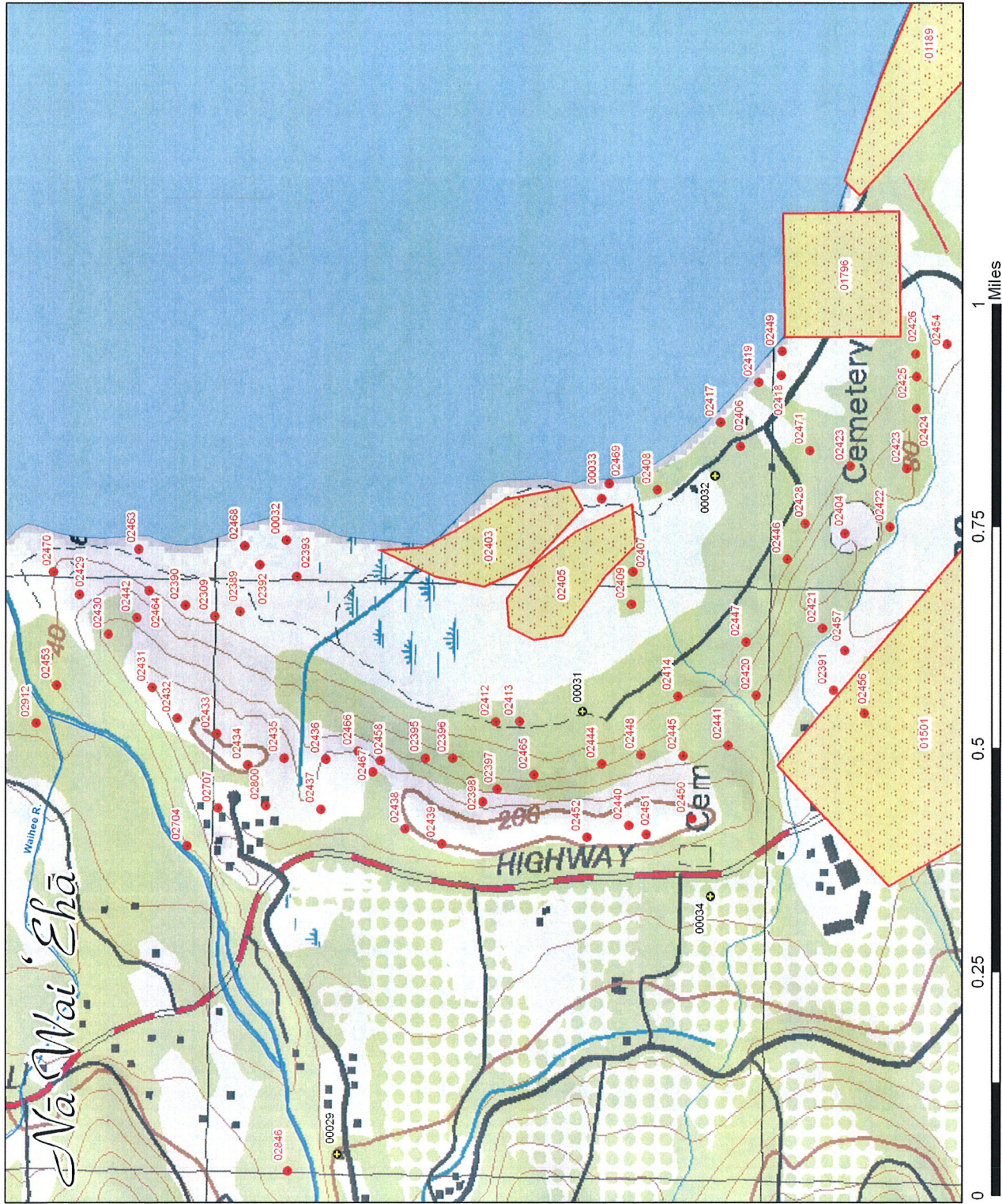
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- Walker Polygons
- ▨ Kelly et al 1978 Polygons
- SHPD Districts
- Perennial Streams and Water Features



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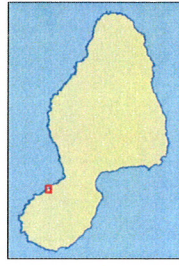
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Historic Sites Waihe'e Makai

Legend

- SHPD Points
- ⬮ Walker Points
- SHPD Lines
- ▨ SHPD Polygons
- ▨ Walker Polygons
- ▨ SHPD Districts
- Perennial Streams and Water Features



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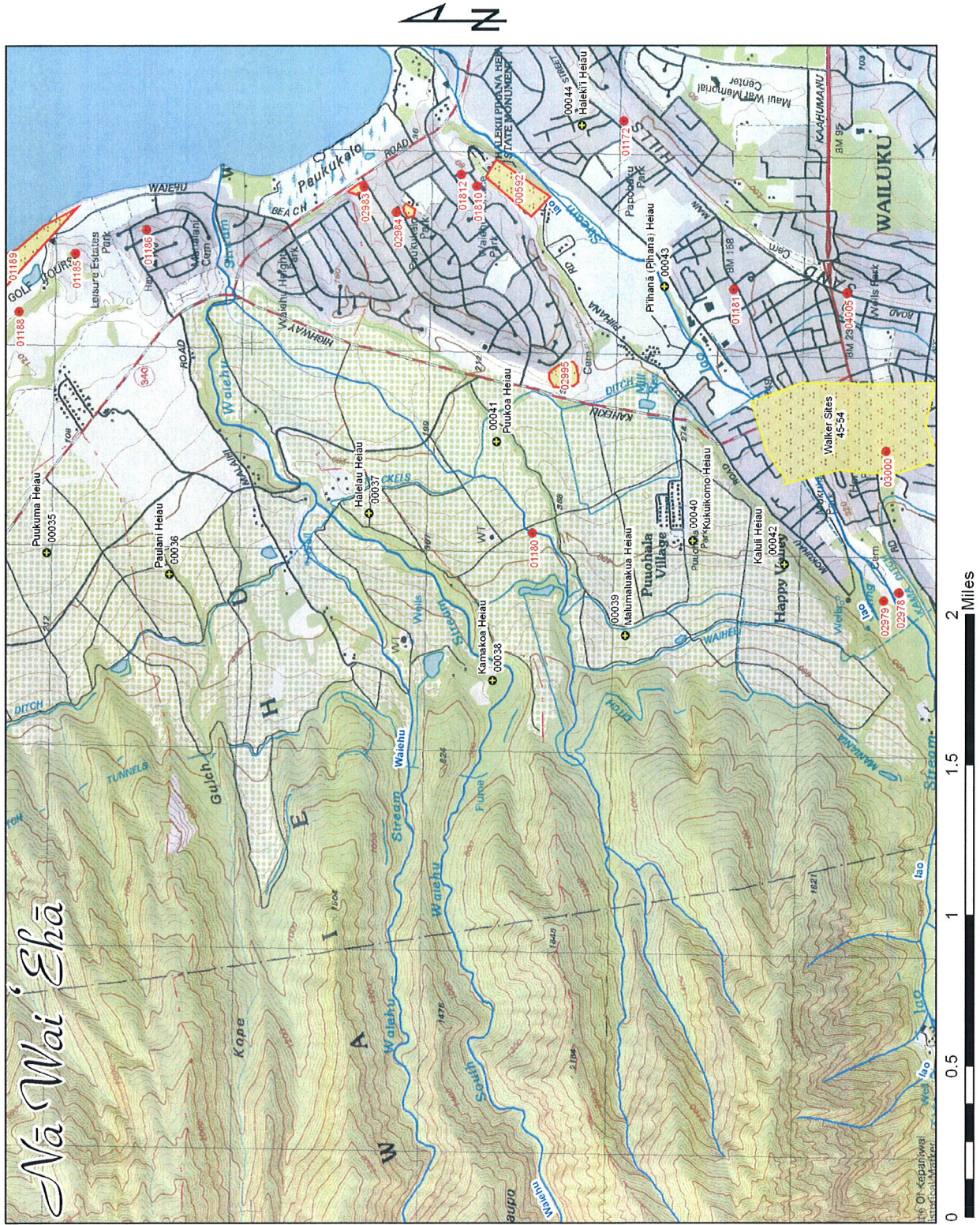
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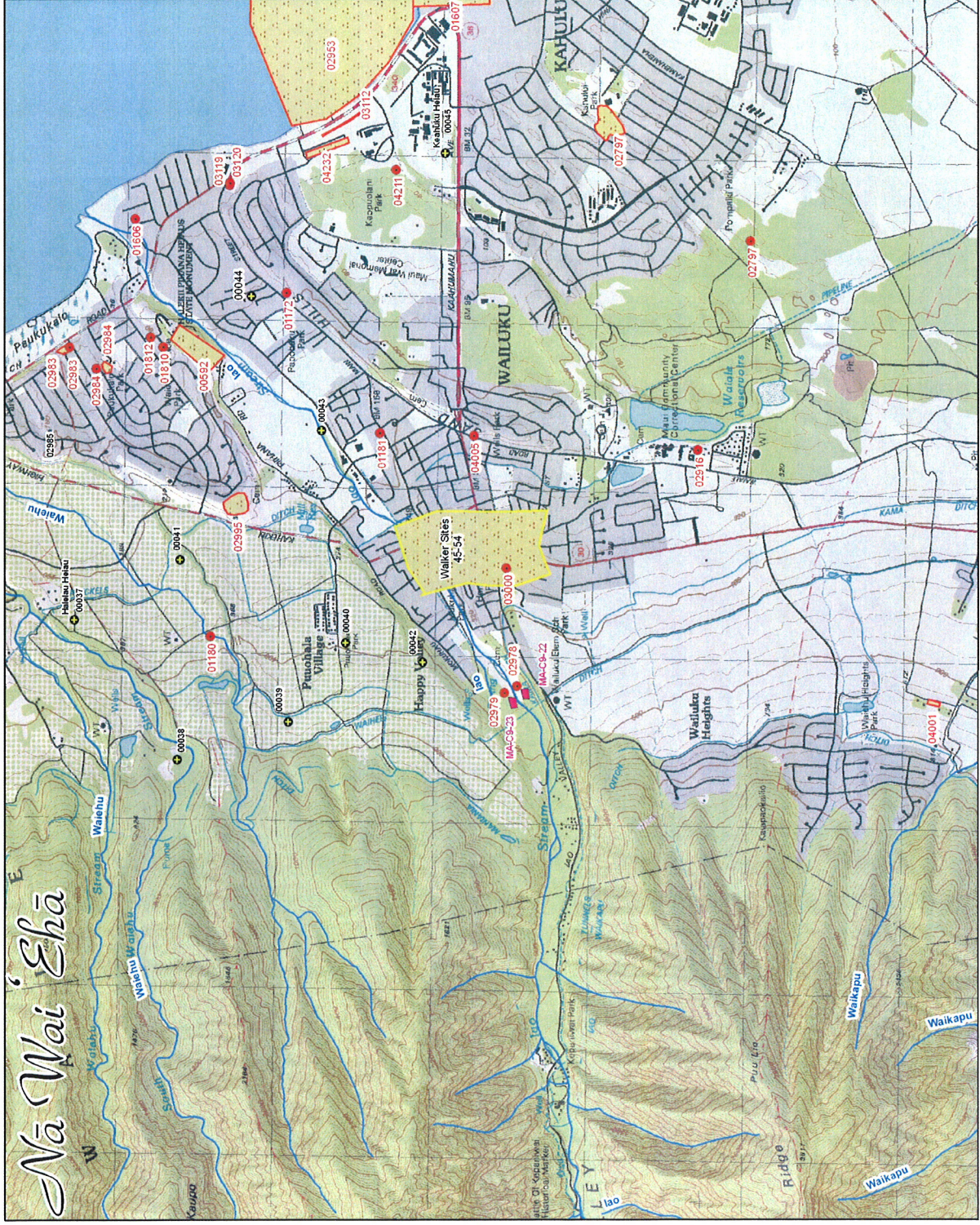
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|  | SHPD Polygons |
|  | Walker 1931 Polygons |
|  | SHPD Districts |
|  | Perennial Streams and Water Features |



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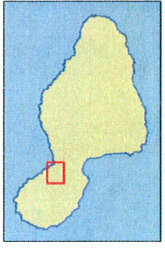
Nā Wai 'Ehā



Historic Sites 'Īao Stream

Legend

- SHPD Points
- Walker 1931 Points
- Kelly et al 1973 Points
- Connolly 1974 Polygons
- SHPD Lines
- SHPD Polygons
- Walker 1931 Polygons
- Kelly et al 1978 Polygons
- SHPD Districts
- Perennial Streams and Water Features

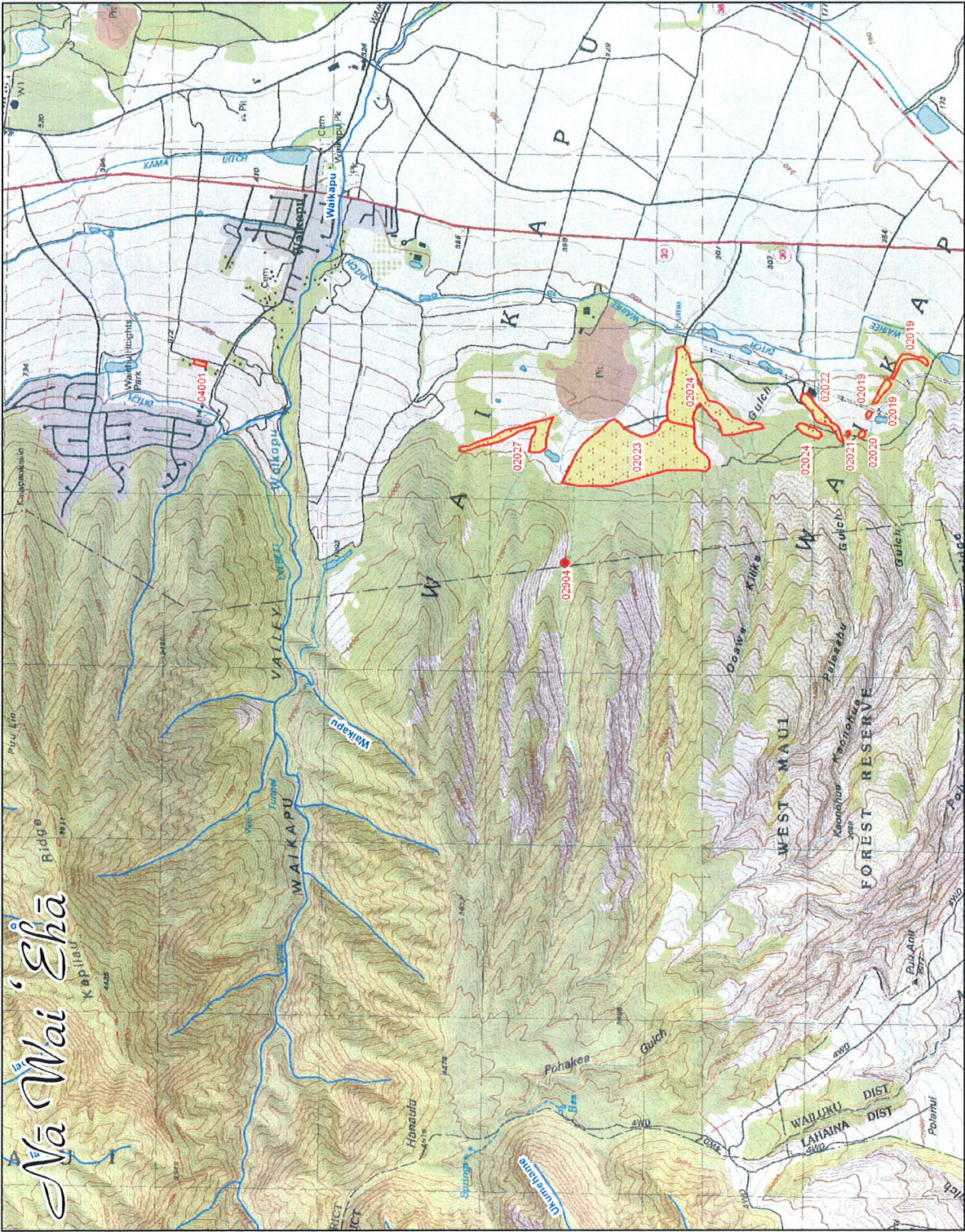


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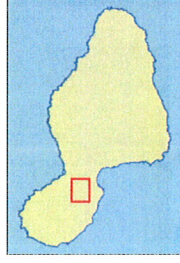




Historic Sites Waikapū Stream

Legend

- SHPD Points
- SHPD Lines
- SHPD Districts
- SHPD Polygons
- Perennial Streams and Water Features



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