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WATER USE PERMIT APPLICANT PRO SE

COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAI'I

Surface Water Use Permit Applications,) Case No. CCH-MA15-01
Integration of Appurtenant Rights and)
Amendments to the Interim Instream Flow) TESTIMONY OF DUKE A. SEVILLA;
Standards, Nā Wai 'Ehā Surface Water) EXHIBITS "2275-SEVILLA-1" - "2275-
Management Areas of Waihe'e, Waiehu,) SEVILLA-8"
'Īao, & Waikapū Streams, Maui)
)
)
)

TESTIMONY OF DUKE A. SEVILLA

1. This testimony is provided in support of Surface Water Use Permit Application ("SWUPA") No. 2275, filed with this Commission on Water Resource Management on April 23, 2009, for several parcels in Wailuku, including Tax Map Key ("TMK") Nos. (2) 3-3-001:041 and (2) 3-3-001:054. Our 'ohana has lived on and used our land in Paukūkalo, including Waiola spring, since my father bought it in 1953. My wife, Jean, and I are the owners of TMK No. (2) 3-3-001:041, and my sister and her husband, Christina and Lorin Smith, own TMK No. (2) 3-3-001:054 (collectively, "Our Parcels"). We manage our parcels collectively as an 'ohana and we applied for a single water use permit. Attached as Exhibit "2275-SEVILLA-1" is a true and correct copy of a map depicting Our Parcels.

2. We are a Native Hawaiian 'ohana who are descendants of native Hawaiians who inhabited the Hawaiian Islands prior to 1778. Pursuant to Article XII, Section 7 of the Hawai'i

Constitution and Hawai'i Revised Statutes ("HRS") section 174C-101(c), our uses of fresh water are traditional and customary Native Hawaiian practices and, thus, protected public trust purposes.

3. Our domestic water uses are also protected public trust purposes.

4. Because our land contains culturally significant springs (including one named Waiola) that are fed by 'Īao Stream and that flow naturally into Ka'ehu Bay, and we had an existing use of that water on April 30, 2008, we are an existing riparian user under Hawai'i law, which is protected by Article XI, Section 7 of the Hawai'i Constitution.

5. This testimony provides further information, in addition to that contained in my SWUPA, detailing my 'ohana's appurtenant rights, based on water use at the time of the Māhele.

I am aware of no evidence that anyone has ever tried to reserve the water rights appurtenant to Our Parcels.

6. Based on the information set forth below, which supplements SWUPA No. 2275, I request recognition of appurtenant rights for Our Parcels in the amount of 414,300 gallons per day ("gpd"). I also request a Surface Water Use Permit for our current reasonable-beneficial use of 1,200 gpd, plus an additional 100,000 gpd, to restore the ancient lo'i kalo on Our Parcels, bringing our total request under SWUPA No. 2275 to 101,200 gpd.

QUANTIFICATION OF APPURTENANT RIGHTS

7. Our Parcels comprised a portion of Royal Grant No. 3343 to Claus Spreckles, a true and correct copy of which is attached as "2275-SEVILLA-2." This Grant included 24,000 acres of former crown lands, but does not describe the land use at the time of the Māhele. We therefore attached various other sources and documentation to this testimony, which confirm the cultivation of kalo on Our Parcels at the time of the Māhele.

8. Attached as “2275-SEVILLA-3” is a true and correct copy of an excerpt from Ka Lahui Hawaii (a Hawaiian Language Newspaper) with an accompanying English translation. That article recounts the extensive lo‘i kalo cultivated throughout the area where Our Parcels are located, stretching from Nehe Point along the shoreline all the way to the cliffs of ‘Īao.

9. Attached as “2275-SEVILLA-4” is a true and correct copy of a screen shot from the Office of Hawaiian Affairs’ Kīpuka Database. This map depicts the approximate location of Our Parcels. In addition, it includes the Land Commission Award (“LCA”) boundaries for LCAs abutting our parcels, including LCA No. 1759:9 and LCA No. 3253, both of which describe the areas in the vicinity of Our Parcels as a “poalima.” Having consulted with experts in Nā Wai ‘Ehā land tenure at the time of the Māhele, I understand that pō‘alima in Nā Wai ‘Ehā were cultivated in lo‘i kalo. This makes perfect sense and is consistent with the historic features of our land that are still visible today, including ancient terracing, walls, and ‘auwai.

10. Attached as “2275-SEVILLA-5” are true and correct excerpts from an Archaeological Inventory Survey (“AIS”) prepared for TMK No. (2) 3-3-01:001, which is adjacent to Our Parcels. That report was prepared for the previous landowner of TMK No. (2) 3-3-01:001 and Neighborhood Place of Wailuku, a non-profit organization that I have worked closely with and that provides social services to the local community and Native Hawaiians in particular. This AIS indicates that the entire alluvial fan area, within which Our Parcels are located, was used for lo‘i kalo and loko i‘a (fishponds) at the time of the Māhele, and that stream water in the area was diverted for these important uses during that same period. This is corroborated by Exhibit 2275-SEVILLA-4, which shows the high concentration of lo‘i kalo and loko i‘a (fishponds) in and around Our Parcels as well as Exhibit 2275-SEVILLA-3, the Ka

Lahui Hawai'i article from the 1800s, which describes this same area as being blanketed in lo'i kalo from the shoreline all the way to the back of 'Īao Valley.

11. Attached as "2275-SEVILLA-6" are true and correct excerpts from a wetland determination for TMK No. (2) 3-3-01:001 confirming the presence of hydric soils (soil that is permanently or seasonally saturated with water) throughout the area between 'Īao and Waiehu Streams. This is precisely the type of soil that supported lo'i kalo at the time of the Māhele.

12. Attached as "2275-SEVILLA-7" are true and correct copies of photographs: (1) from 2008, that accurately depict the conditions of the springs in and around our parcels prior to implementation of the Interim Instream Flow Standards for 'Īao Stream; and (2) in 2015, after the restoration of flow to 'Īao Stream. With this partial restoration, the flow in our spring has increased and become more consistent, remaining saturated throughout the hot summer months. You can see the water seeping out of the ground in different areas and based on my lifetime of living on and working this land, I have observed a correlation between the flow in our spring and the amount of water in 'Īao Stream. When the stream is flowing on a consistent basis, we have more water in our spring. As you can see, the area in and around our spring is once again a fully-functioning lo'i kalo, as it was at the time of the Māhele.

13. In addition, as described in our SWUPA, ancient Hawaiians built terraced lo'i on Our Parcels, in and around Waiola spring in particular and its natural drainage course to the ocean. As shown in the true and correct copies of photos attached as "2275-SEVILLA-8," and which accurately depict the conditions of Our Parcels, the terracing and rock work remains visible today and we continue to use these ancient features for kalo and other cultivation as detailed in our SWUPA. These historic rock walls created several pools that flow into Ka'ehu Bay. Moreover, numerous historical and other texts have documented the fact that this spring

and the Native Hawaiian cultural and other uses associated with it have existed since time immemorial. As just one example, a book by Inez Ashdown, a noted historian, documented that the spring existed since ancient times and “still flows there,” pinpointing its location as “just below the house of AB. Sevilla,” my father.

14. Based on all of the foregoing, as well as the information contained in our SWUPA and my previous testimony before this Commission, the overwhelming weight of evidence indicates that Our Parcels were in lo‘i kalo at the time of the Māhele.

15. Our Parcels, TMK Nos. (2) 3-3-001:041 and (2) 3-3-001:054, consist of 0.933 and 0.448 acres, respectively, for a total of 1.381 acres. Therefore, the quantification of the appurtenant rights is the amount of water sufficient to grow kalo on 1.381 acres using traditional methods.

16. It is my understanding that, on average, taking into account fallow lo‘i and uncultivated areas such as banks between lo‘i, healthy wetland kalo requires between 100,000 and 300,000 gallons of water per acre per day (“gad”), and that areas such as Our Parcels, with greater proportions of lo‘i in cultivation, will require an amount closer to the upper end of this range.

17. Thus, in my best estimation, the water right appurtenant to TMK Nos. (2) 3-3-001:041 and (2) 3-3-001:054 is:

$$(1.381 \text{ ac}) \times (300,000 \text{ gad}) = 414,300 \text{ gpd}$$

AMOUNT REQUESTED UNDER PERMIT

18. As described in SWUPA No. 2275, ever since my father purchased Our Parcels, our ‘ohana has used water from Waiola to irrigate crops for our basic livelihood. Our family used ancient terraces to grow kalo, ung choi, watercress, and various other crops, which

physically and spiritually nourished our 'ohana. We also maintained ti leaf, coconut, papaya, banana, and other fruit and flower trees on the property, which we irrigated with water from the spring. Over the years, we have also raised fish in pools fed by the spring. Our 'ohana declared these uses with the Water Commission back in 1989. We currently grow kalo in ancient terraces in and around our property and raise other crops, including bananas.

19. I believe that the 2002 State of Hawai'i Water System Standard for Maui County of 600 gpd for each of our two single family homes is sufficient for our existing domestic water uses, described above, which total 1,200 gpd.

20. Now that flow has been returned to 'Īao Stream, our 'ohana requests sufficient water to restore one third of an acre of lo'i kalo on Our Parcels, which was likely in cultivation at the time of the Māhele. We therefore request an additional 100,000 gpd ($0.33 \times 300,000$) for these reasonable-beneficial uses and traditional and customary Native Hawaiian practices, bringing our total request under permit to **101,200 gpd** (100,000 for lo'i kalo + 1,200 gpd for domestic uses).

REASONABLE-BENEFICIAL ANALYSIS

21. Our existing use is "reasonable-beneficial," defined as: "the use of water in such a quantity as is necessary for economic and efficient utilization, for a purpose, and in a manner which is both reasonable and consistent with the state and county land use plans and public interest." HRS § 174C-3.

22. The quantity we are requesting is necessary for the economic and efficient irrigation of our home gardens and for the Māhele-era lo'i kalo we are in the process of restoring. Our use of the stream water is economic and efficient, as we use only the amount needed to

irrigate these crops, and we implement measures to minimize water loss, including use of traditional and customary Native Hawaiian irrigation methods.

23. Our use of this fresh water is also consistent with the state and county land use plans and the public interest. Our land is classified by the State as urban, and zoned by the County as agricultural and residential. Our water uses for domestic and subsistence cultivation are in the public interest and fulfill public trust purposes, such as traditional and customary Native Hawaiian practices and domestic water uses.

ALTERNATIVES ANALYSIS

24. Because our land has appurtenant rights to stream water in the nature of an easement that was conveyed at the time of the Māhele and our uses are traditional and customary Native Hawaiian practices, we are not required to provide an alternatives analysis to show that we have no practicable alternative source of water. Our rights are to water from our sacred spring, which ultimately is connected to 'Īao Stream, not for water from any other source, and our exercise of these rights enjoy maximum protection and first priority under the law. Nonetheless, the Alternatives Analysis set forth in our SWUPA remains applicable, true, and correct.

25. We have always used a reasonable amount of water to maintain our non-commercial garden, and will continue to do so with the lo'i we are restoring as well. As described in detail in our SWUPA, other alternatives, such as municipal water, reclaimed wastewater, water from other ditch systems, desalinized water, and groundwater, are not practicable alternatives to use of water from our spring. Requiring us to pay for these alternatives instead of diverting the small amount of water would impose an unfair and impracticable cost on us, given that we are small, non-commercial, Native Hawaiian water users.

SUMMARY

26. In sum: (1) our domestic water use is a protected public trust purpose; (2) our 'ohana's traditional and customary Native Hawaiian right to grow kalo is a protected public trust purpose; (3) we are existing riparian users under Hawai'i law; (4) the exercise of our appurtenant right is a protected public trust purpose; (5) based on our appurtenant rights for TMK Nos. (2) 3-3-001:041 and (2) 3-3-001:054, we are entitled to at least 414,300 gallons per day; (6) at this time, I request a permit for our current reasonable-beneficial uses on Our Parcels of 1,200 gallons per day, and this modest amount will be used to irrigate our non-commercial garden, which is a reasonable-beneficial use of water and for which there is no practicable alternative; and (7) we also request an allocation of 100,000 gallons per day, to restore the ancient lo'i kalo that were present on Our Parcels, bringing our total request to 101,200 gpd.

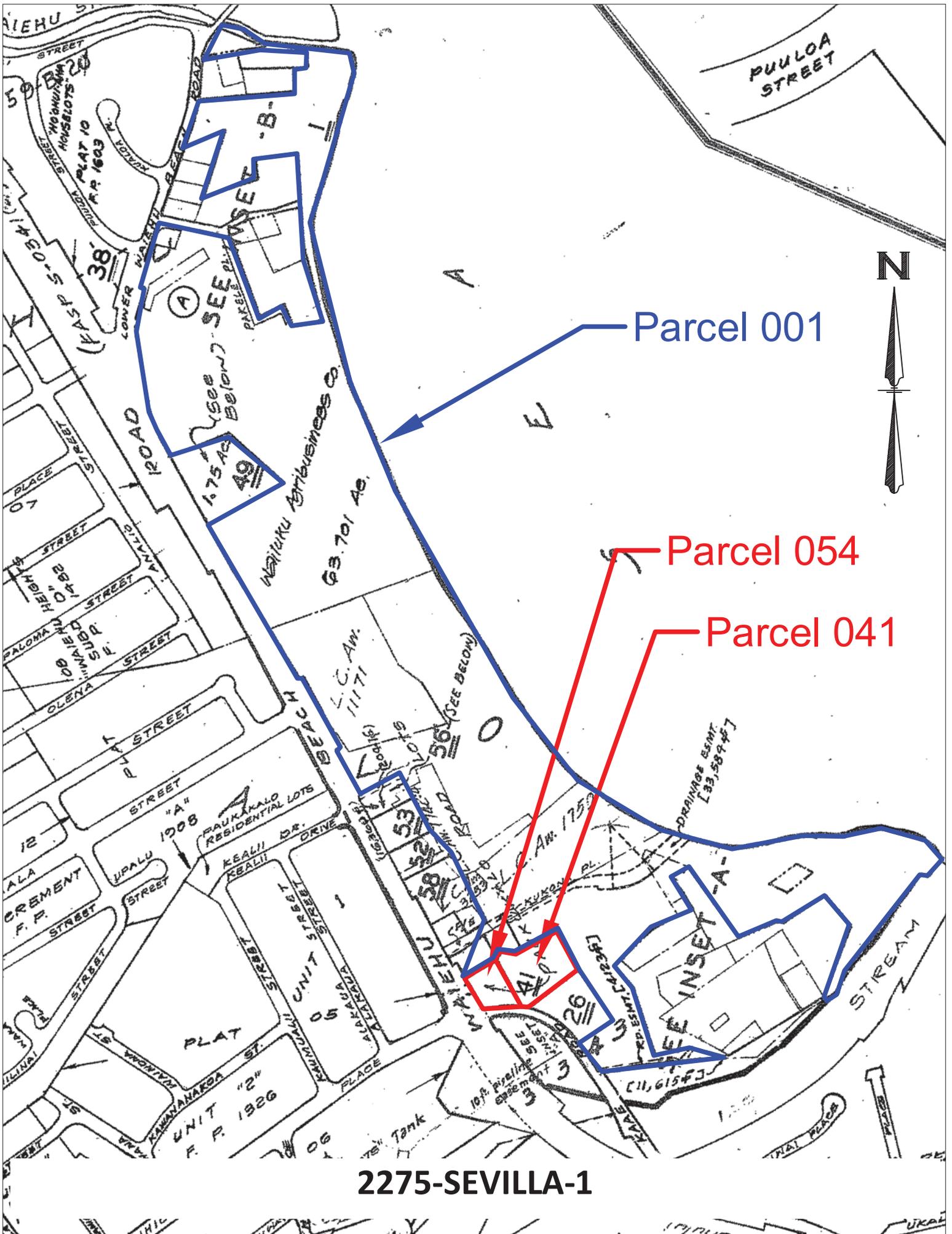
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I, DUKE SEVILLA, do declare under penalty of law that the foregoing is true and correct.

Dated: Wailuku, Hawai'i, February 2, 2016.



DUKE SEVILLA
WATER USE PERMIT APPLICANT PRO SE



2275-SEVILLA-1

ROYAL PATENT.

(GRANT)

Kalākaua, By the Grace of God, King of the Hawaiian Islands,

By this His Royal Patent, makes known to all men, that he hath for himself, his heirs and successors, this day granted and given unto *Oliver Spradell* under and by virtue of the provisions of an Act of the Legislative Assembly of the Hawaiian Islands approved on the 21st day of July 1882 entitled an Act to authorize the Commissioners of Crown Lands to convey certain portions of such lands to *Oliver Spradell* in satisfaction of all ~~for the consideration of claims he may have on such lands~~

~~paid into the Royal Exchequer, all that piece of Land situate ~~at~~ on *Waialeale*~~

and known as the *Ohupuna of Waialeale*, with the *Hea* thereon or thereunto belonging and described as follows:

Beginning at a red wood post and pile of stones on the sea shore adjoining the land of *Kamamakaopoko* at the place called *Kapukamuhia* from which post the Government survey station on *Puuone* bears *S 8° 18' W true* and measuring *3959* *E true* *1062* feet along *Kamamakaopoko* to *Kamakaopoko* *S 61° 7' E true* *3013* feet along *Kamamakaopoko* to pile of stones, at *Sukakohani* *S 22° 3' E true* *934* feet to a large rock called *Olouma*, which forms the corner of *Waialeale*, *Kaliimaha* and *Kamamakaopoko* thence *S 1° 41' E true* (*S 35° E mag*) *1304* feet along *Kaliimaha* to *Puupehi* thence *S 21° 17' E true* (*S 1° E mag*) *1892* feet along the ravine to marked rock called *Kaiokakalani*, about *170* feet South of the road to *Kahului*, thence *S 7° 4' E true* (*S 25° E mag*) *1892* feet to a pile of stones at *Kauhiamoo* on West side of ravine, thence *S 28° 18' E true* (*S 25° E mag*) *1391* feet to a marked rock by the path at *Puhani* *S 35° 7' E true* (*S 25° E mag*) *1578* feet to a *uhia* tree on West bank of the gulch which is the corner of *Kaliimaha* and the district of *Kula*, thence *S 36° 27' W true* *5346* feet along *Kula*, *S 29° 21' W true* *6159* feet along *Kula*, *S 58° 36' W true* *982* feet along *Kula* to a concrete post marked with cross at the South West corner of *Kaliimaha* and *Waialeale*, from which the Government survey station on *Puu o Kaha* bears *S 38° 25' E true*, thence *S 21° 36' W true* *1376* feet along *Kaliimaha* to top of a large rock called *Puhani*, thence *S 16° 41' W true* *3050.5* feet along *Kaliimaha* to a granite post at the corner of *Kaliimaha*, *Waialeale* and *Puhani*, from which the Government survey station on *Puu Kila* bears *S 22° 6' W true* thence *N 67° 5' W true* *3600* feet along *Puhani* and *Waialeale* to *Pohaku* a marked rock a short distance N of road to *Waialeale*, thence *N 73° 45' W true* (*N 15° W mag*) *5326.3* feet along *Waialeale* up ridge *N 62° 30' W true* (*S 16° 15' W mag*) *1108.8* feet along *Waialeale* to stone post on the crest of the ridge known as *Kalapahekeheke*, thence along up the centre of this ridge along *Waialeale*, always following the water shed to the ridge forming the head of *Olouma* Valley thence following said ridge descending

then from Colorado Valley Thence around by the ridge forming the head of Washuta
 Valley to the head of the land of Waichee Thence along the dividing ridge between
 the Washuta and the Waichee Valleys to the head of Waichee Thence $S70^{\circ}59'$ E true
 3366 feet along Waichee down ridge $N.66^{\circ}36'$ E true 2161.5 feet along same
 to junction of ridges called Kachoolawa $N.63^{\circ}36'$ E true 6385.5 feet along same
 $N.45^{\circ}6'$ E true 3445.3 feet along same to end of ridge Thence $N.49^{\circ}51'$ E true
 1039.5 feet along same to black rock marked thus \rightarrow at edge of gulch Thence
 $S71^{\circ}21'$ E true 4277.7 feet along Waichee along edge of gulch $N.16^{\circ}51'$ E true
 587.6 feet along same to point near a large black stone marked \rightarrow
 $N.11^{\circ}36'$ E true 1039 feet along same $N.41^{\circ}6'$ E true 957.2 feet along Waichee
 $S.18^{\circ}21'$ E true 1027.6 feet along Waichee $N.49^{\circ}36'$ E true 1025 feet along Waichee
 to stone marked thus \rightarrow $N.26^{\circ}50'$ W true 128 feet along Waichee $N.26^{\circ}15'$ E true
 294 feet along Waichee $N.11^{\circ}24'$ W true 310 feet along Waichee $N.53^{\circ}50'$ E true 364
 feet along Waichee $S.44^{\circ}30'$ E true 753 feet along Waichee along stone wall
 $N.73^{\circ}00'$ E true 674 feet along Waichee along stone wall to tall stone marked
 \rightarrow From which the above mentioned marked stone \rightarrow bear $S71^{\circ}21'$ W true
 1456.6 feet Thence $S.16^{\circ}6'$ E true 1874 feet crossing the Government road to stone
 marked \rightarrow at sand hills Thence $N.77^{\circ}52'$ E true 1549.3 feet along Waichee
 across sandy hollows to stone marked \rightarrow Thence $N.65^{\circ}45'$ E true 1013
 feet along Waichee to a stone marked \rightarrow at sea shore Thence along sea
 shore to initial point Subject to all existing leases and tenancies and
 to the rights of Native tenants

Containing *24,000* Acres,
 more or less; excepting and reserving to the Hawaiian Government all mineral or
 metallic mines of every description.

To Have and to Hold the above granted Land in Fee Simple, unto the said
Maus Spreckels his Heirs and Assigns forever.

Witness Ourselves at Honolulu, this *30th*
 day of *September* 1882, in the *Seventh*
 year of Our Reign.

BY THE KING:
 The Minister of the Interior,

King Kalakaua

King John B. King

ROYAL PATENT

ROYAL PATENT.

(GRANT)

No

Grade

District

Island

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COSTS.

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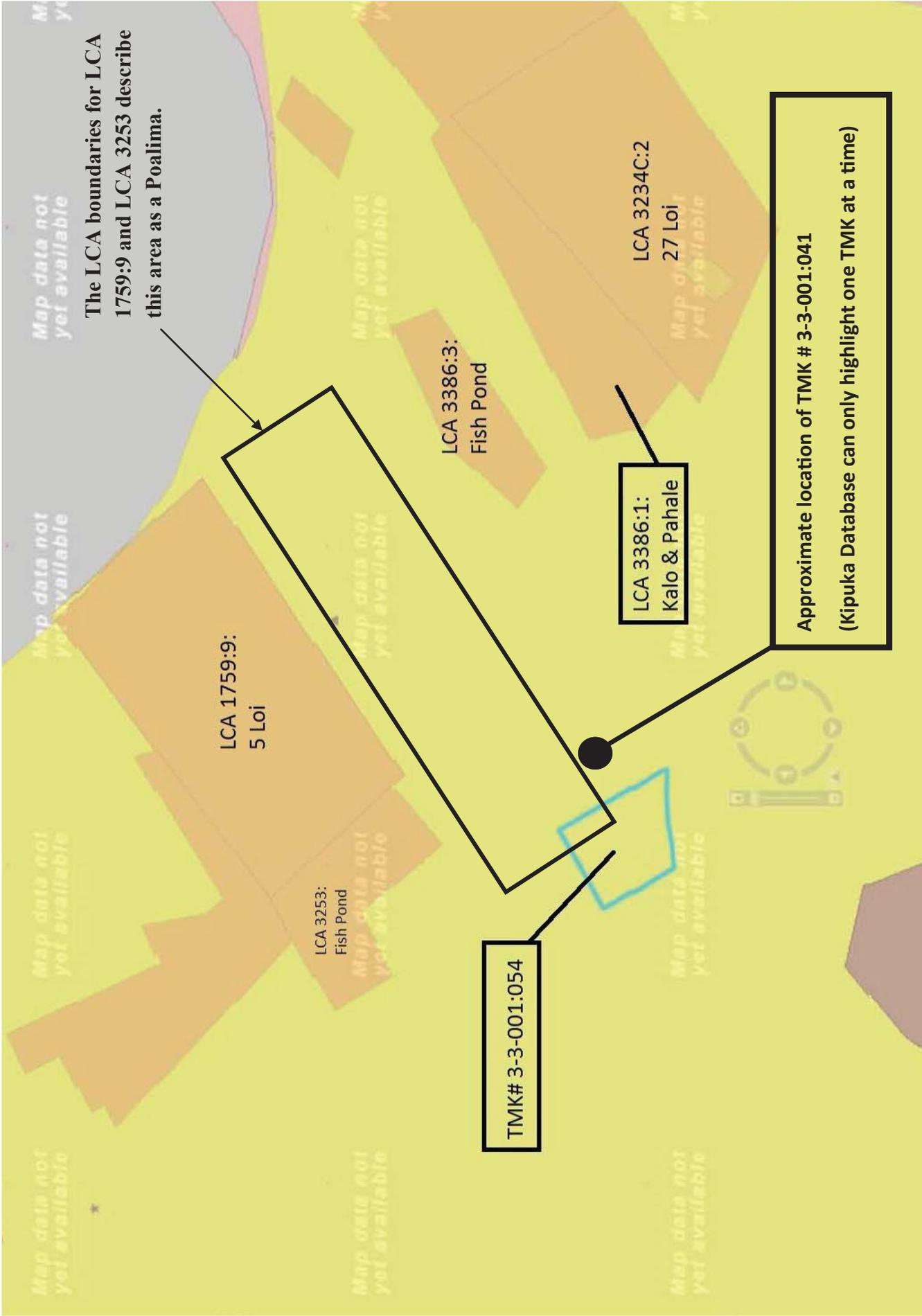
NA LOI KALO

O Wailuku ke kahawai i palahalaha no ka mahi kalo ana, no ka mea, he nui na kau papa loi, mai kai mai o Nehe, a komo i uka o na pali o Iao. I keia wa nae, ke hookamaaina mai la ke ko, ma kahi o ke kalo, a ke ne mau mai la ke ko e hoopiha i na loi. Me he mea la, he mau makahiki hou aku i koe, e pau loa ana paha na loi kalo, a he ko wale no. Elua no nae kumu e koe ai ka aina aole paa i ke ko. 1 O ke aloha i ka poi kalo, ka ai makuahine o keia aina. 2. O ka aua i ka aina taro, aole e kuai a hoolimalima aku me ka haole.

Translation:

THE TARO PATCHES

Wailuku is the river that is spread out for the farming of taro, because, the taro patches are many, **from the ocean of Nehe, entering the cliffs of 'Iao.** However in this time, sugar is becoming acquainted with instead of taro, and sugar is nagging to fill the taro patches. It is as if there are a few years left and all the taro patches will be done and there will only be sugar. There are two reasons that the land is not in sugar. 1. Love for taro poi, the mother food of this land. 2. The withholding of taro land, not to be sold or leased to the foreigner.

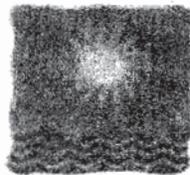


**ARCHAEOLOGICAL INVENTORY SURVEY FOR A
PORTION OF LAND WITHIN TMK 3-3-01: 001
DESIGNATED PARCEL A PHASE I,
LOCATED AT PAUKUKALO, KA'EHU WETLANDS,
WAIEHU AND WAILUKU AHUPUA'A,
WAILUKU DISTRICT, ISLAND OF MAUI
TMK 3-3-01: 001 PORS.**

FOR: North Shore at Waichu LLC.
and Neighborhood Place of Wailuku

BY: Lisa Rotunno-Hazuka, B.A.,
and
Jeffrey Pantaleo, M.A.

MAY 2007



ARCHAEOLOGICAL SERVICES HAWAII, LLC
1930A Vineyard St.
Wailuku, HI 96793

"Protecting, Preserving, Interpreting the Past, While Planning the Future"

Kawelowai at Wai'ehu" (Pukui:1983,121). Another proverb is *Ka Makani ka 'Aha'aha la I o Niua*. The peaceful 'aha'aha breeze of Niua that drives in the 'aha'aha fish. The gentle breeze begins as kilioopu in Waihe'e, Maui before reaching Niua Point in Wai'ehu. Fisherman launch their canoes and go forth to the fish, for that is the time when the 'aha'aha fish arrive in schools (*ibid*:251). There are certainly more legends and stories about the area and it is highly recommended that the local residents and families whom lived in Paukukalo be interviewed to compile a detailed oral history of the area. The Maio, Kekona, and Rinehart *ohana* reside adjacent to the project area. Mr. Joe Gavin who performed backhoe work, grew up at the project area, Mr. Charles Maxwell resided on the Wai'ehu Stream side in the 1960's, and the Naeole Ohana who still dive in waters adjacent to the project area.

LAND USE

Several Land Commission Award (LCA) claims and two grants (Table III) are within and adjacent to the original project area. The grants were awarded to Prince Lunalilo (8559 B:2) and Claus Spreckels (3343). The majority of the LCA in the project area were *lo'i* and fishponds, only one claim was made for kula land and house lot.

Table III. LIST OF LCA'S AND GRANTS

L.C.A. #	R.P.#	CLAIMANT	LAND USE
1759 Ap. 9	7184	Kaupa	Taro Land
2447 Ap. 2	6164	Kaawa	Taro Pauku
2447 Ap. 3	6164	Kaawa	Taro Pauku
3441 Ap.3	6092	Kapaula	Fish Pond
11171 (2 pcs)	5069	Kalaikoa	Fish Pond
	"	" "	6 Lo'i
7742 Ap. 4	7433	Kahale	???
3253	6293	Hiona	Two Ponds or 6 lo'i
3274 Ap. 2	5982	Wanaoa	Taro Patch
Gr. 8559 B:2	-	Lunalilo	-
3234 C Ap. 2	4256	Kaianui	Taro Land & Fish Pond
Gr. 3343	-	Spreckels	-
3386 Ap. 1	5150	Pehuino	Taro Mo'o, House & Kula
3386 Ap. 2	5150	Pehuino	Fish Pond

It is unclear which of the ponds listed above was Nehe pond, and exactly how many ponds existed during the Mahele. Ashdown mentions Nehe pond as a single entity, however she also tells us Tutu Kaha was the last caretaker of these ponds, suggesting that there were more than one. Also of interest is the land description for Kalaikoa's parcel-LCA 11171, (densely vegetated in hau today), the LCA is a fishpond bounded on the *makai* side by another fishpond. Both of

these sites are located within the current wetland boundaries. This inventory survey confirmed a ditch or *'auwai*, which was assigned Temporary Site (TS) 39 that parallels the *makai* boundary of the Kalaikoa parcel. There are also remnant alignments, TS 40-42 that are located along the coast, which may have functioned as walls for a fishpond, or water diversion structure.

Parcel A

Parcel A Phase I is primarily within Grant 3343 to Spreckels and a small section is within L.C.A 1759 to Kaupa which was utilized for taro land. Phase II is within L.C.A. 1759 to Kaupa and 7742 to Kahale.

SETTLEMENT PATTERN

The foregoing information which includes the history of the area, past land use, previous archaeology, radiocarbon dates, combined with the documentation of numerous *heiau* along this coastline, clearly exemplifies a lifestyle of permanent habitation within this coastal component of the Wailuku and Waihee *ahupua'a*.

SITE EXPECTABILITY

The project area is composed of four main environmental zones, where each landscape would be expected to demonstrate a specific land use for that zone. Within the 59.7 acre parcel, the following zones have been identified:

- | | |
|----------------------------|-------------------------|
| 1. high dunes | 3. wetlands and ditches |
| 2. coastal dunes and flats | 4. alluvial fans |

Within the high dune category the type of sites or uses to be expected would be religious structures and or shrines, burial sites and habitation features. The coastal dunes could also contain religious structures consisting of *heiau* and burials, fishing structures including *ko`a*, canoe shelter (*hale wa`a*) and inland fishponds as well as habitation sites. The coastal areas would support exploitation and harvesting from the sea and harvesting of native coastal plants for various uses (medicinal, cultural and habitation). The wetlands and ditches and sometimes the alluvial fan category would be typical areas of agricultural uses whereby stream diversion is necessary for *lo`i* (taro patches) and or *loko i`a* (fishponds). Alluvial fans would probably contain constructed terraces and be primarily utilized for plant growth. Parcel A is comprised of coastal dunes and flats as well as wetlands and ditches.

**WETLAND DETERMINATION FOR PAUKUKALO
TMK: 3-3-01:1
PAUKUKALO, WAILUKU-WAIEHU DISTRICTS, MAUI**

SURVEY CONDUCTED BY: ANNA PALOMINO AND JENNIFER CRUMMER

INTRODUCTION

This site is located between Iao and Waiehu Streams and extends inland from the shoreline. Private homes, a church, Waiehu Beach Road, and Lower Waiehu Beach Road bound the mauka (southern) edge. The project area is approximately 68 acres in size.

PROJECT INFORMATION

The project area was recently purchased from Wailuku Agribusiness. Landowners seek to develop the area for house lots, condominiums, an events area, parking lots, and various other structures.

METHODS

Consultants followed methods from the 1987 Army Corps of Engineers Wetlands Delineation Manual. A routine wetland determination was done for the core project area. Three transects were established through the core area, along each transect observation points were taken with each transition in major vegetation type. Major vegetation types were mapped and are presented in Map 1. A field observation form was filled out at each observation point. These data sheets are presented in Table 1. This data included detailed information on the presence/absence of hydrophytic vegetation, hydrological indicators, and hydric soils. A soil sample pit was dug using an auger at each of these sites. Soil samples were compared to the Munsell Color Chart. Wetland vegetation indicator status is based on information from the U.S. Geological Survey's Biological Resources Division (Table 2). A Garmin Global Positioning Unit (GPS) was used to pinpoint sample locations. These points were downloaded and mapped on a base map (Map 2). A wetland boundary was based on vegetation community types, hydric soils, and hydrologic indicators (Map 3). This map represents an approximate boundary and a more accurate map will be done by Unemori Engineering based on flagging laid out at the site.

This site is identified as a wetland by several sources. Elliot and Hall (1977) recorded several marshes in the area, some separated from others by fill material. They recorded an average of two feet of standing water within the main marsh area.

National Wetland Inventory Maps show the area as a palustrine emergent wetland (Map 4). The wetland boundary indicated is based solely on analysis of aerial photos, without the benefit of ground survey.

Soils maps indicate JcC (Jaucas sand, saline 0 to 12 percent slopes) classification for the majority of site soils. This classification is described as:

“...soil occurs near the ocean in areas where the water table is near the surface and salts have accumulated. It is somewhat poorly drained in depressions but excessively drained on knolls. In the depressions there is normally a layer of silty alluvial material flocculated by the high concentration of soluble salts. The water table is normally within a depth of 30 inches.”

Consultants worked with a 1999 aerial photo of the area (Fig. 1). Field surveys indicate changes to the site since 1999 in at least one area. A wetland area dominated by *Bacopa monnieri* was filled to create a road in the eastern portion of the property. An adjacent location also appears to have been filled for a road/parking area. On the western end of the site broken up asphalt was recently filled in a wetland depression. Map 5 shows wetland areas with alterations between the 1999 aerial photo and the 2001 survey.

This survey was conducted during an extremely dry period (a prolonged drought) between the months of June and July, 2001.

RESULTS AND DISCUSSION

Seven distinctive community types characterized the vegetation of the project area: Hau Thicket, Naupaka/Heliotrope/Pohuehue, Umbrella Sedge/California grass, California grass/Pluchea, Kiawe/Opiuma/Koa Haole thicket, and Elephant Grass. Another community type was created to encompass mixed cultivated areas (which included wetland obligate taxa such as taro). The entire site is predominantly non-native vegetation.

Data sheets were filled out for transect samples as well as for points around the wetland area. There were several sites around the wetland that investigators were unable to sample due to fill. This “fill” included old rubbish piles and newly consolidated piles of rubbish. In at least two cases, the wetland boundary was estimated around new piles of rubbish (rubbish piles were within the wetland).

Hau Thicket:

Vegetation:

This vegetation type is largely monotypic, dominated by a dense thicket of Hau (*Hibiscus tiliaceus*). Occasionally, Umbrella sedge (*Cyperus alternifolius*) occurred within this community type. Hau is listed as a facultative species.

Soils:

Hydric soils and gley dominated soils at this community type. 21 out of 23 samples within this community type indicated hydric soil conditions.

Hydrology:

Hydrology was typified by low lying areas, standing water, waterways, saturated soils in upper 12 inches, watermarks, sediment deposits, and drainage patterns. The majority of this community type indicated hydrologic wetland indicators (again 21 of 23 sample points).

Sometime during the 1970's sand from an adjacent development was dumped into the western end of the project area. This area is surrounded by hau. Some of that area does not meet the three criteria for wetland.

Determination:

The majority of this community type is wetland.

Naupaka/Heliotrope/Pohuehue:

Vegetation:

Native shrubs, vines and scattered trees, and non-native trees and herbs characterize this community. Naupaka (*Scaevola sericea*), Tree Heliotrope (*Tournefortia agentea*), and Koali (*Ipomoea pes-caprae*) dominate vegetation of this community. The majority of these species are non-hydrophytic. Naupaka is considered a facultative upland species.

Soils:

This community occurred along the shoreline and grows primarily on sand dunes.

Hydrology:

No standing water, saturated soils, watermarks, or other hydrologic indicators were observed within this community type.

Determination:

This vegetation community lacked the three wetland indicators and no sample points indicated a wetland within this community type.

Umbrella Sedge/California Grass:

Vegetation:

This vegetation type was dominated by hydrophytic vegetation. Umbrella Sedge (*Cyperus alternifolius*) is the dominant species of this community type occurring with California Grass (*Brachiaria mutica*), Indian Marsh Fleabane (*Pluchea indica*), and *Ipomoea*. Most of these species are considered facultative wetland species. Water hyssop or aeae (*Bacopa monnieri*) also occurred within this community type and is considered an obligate species. Much of the Umbrella Sedge was being overgrown by an aggressive *Ipomoea*, a tangled vine, that appears to be suppressing the sedge's growth.

Soils:

All soils within this community type were hydric soils or gley.

Hydrology:

Hydrologic indicators within this community type included drainage patterns, sediment deposits, soil saturation in the upper 12 inches, standing water, and water stains on leaves.

Determination:

This community type meets all criteria for wetland.

California Grass/Pluchea:

Vegetation:

This vegetation type is dominated by California Grass and *Pluchea*, with *Bacopa*, Hala, False Kamani, and Umbrella Sedge.

Soils:

The majority of soils within this community type (30 out of 33) were hydric soils or gley.

Hydrology:

Hydrologic indicators within this community type included drainage patterns, sediment deposits, soil saturation in the upper 12 inches, standing water, and other indicators. Of the 33 observation samples taken within this community type, 28 showed some type of hydrologic indicator.

Determination:

This community type meets all criteria for wetland.

Kiawe/Opiuma/Koa Haole thicket:

Vegetation:

This vegetation occurred primarily in drier, filled areas. This vegetation type was dominated by Kiawe (*Prosopis pallida*), Opiuma (*Pithecellobium dulce*), Koa Haole (*Leucaena leucocephala*), in association with other trees, shrubs and grasses such as Java Plum (*Syzygium cumini*), Guinea Grass (*Panicum maximum*), and others.

Soils:

In general, this vegetation type occurred on disturbed sites where fill has been deposited. Soil for this type was primarily sand.

Hydrology:

Well-drained soils and areas of higher elevation typified hydrology associated with this vegetation type.

Determination:

This community type did not meet all criteria for wetland.

Elephant grass:

Vegetation:

A thick stand of Elephant grass, or Napier grass, (*Pennisetum purpureum*) dominated one area. This vegetation formed a monotypic stand along the southern portion of the property. Elephant grass is considered a facultative upland + species.

Soils:

This vegetation type occurred on soils ranging from hydric to sandy. Sand dunes and fill from the Waiehu Beach Road slope down along one side of the property. Elephant grass covered the transition from hydric soils to sandy soils.

Hydrology:

Elephant grass was found along the edge of the wetland extending up-slope to the edge of Waiehu Beach Road. Lower portions included hydric indicators such as sulfic odor and low-chroma soils.

Determination:

This vegetation was found on a transition zone between wetland and non-wetland.

Cultivated vegetation:

Vegetation:

As this site is surrounded by and includes urbanized areas, a category was created to include cultivated vegetation. This category includes several taro (*Calocasia esculenta*) patches and other wetland obligate species. This category also includes miscellaneous species found in backyard landscaping such as banana, coconut, ulu, mango, and plumeria. The majority of this category is typified by wetland vegetation though some non-wetland vegetation was lumped into this category.

Soils:

Two sites were sampled that fall into this category both contained hydric soils.

Hydrology:

Both test sites showed hydrologic indicators such as soils with sulfic odors, low-chroma colors, and soils saturated in the upper 12 inches. Observations of these areas also include the presence of standing water.

Determination:

This category includes both wetland and non-wetland areas.

DISCUSSION

This wetland area has been altered in both long-term, the gradual change of vegetation from native to non-native, and through human activities such as filling and diverting water. The dominant vegetation of the central wetland area is non-native, with peripheral areas of native *Bacopa* patches. Many coastal wetlands in Hawaii are composed of non-native, invasive wetland plants. Wetlands found in most areas of the property have some type of human modification, especially near existing homes.

This study did not include a qualitative evaluation of the various wetland areas, though the southern portion of the property probably has more alterations from long-time residents of the area. Such an evaluation would include some type of investigation into water flow through the region (i.e. springs, sources), how and when the wetland was altered, and the desired functions an "optimal" wetland would serve.

It should be noted that there are relatively few natural wetlands on the island of Maui. This wetland has significant value in terms of wildlife habitat, cultural resources, open space, sediment filtration and the many other benefits wetland habitats provide. Many programs are available to landowners that wish to enhance wetlands on their property.

CONCLUSIONS

Hydrophytic vegetation, hydric soils, and hydrologic indicators dominated large portions of this site. Areas lacking these indicators were areas of 1) sand dunes along the coast, 2) areas of historic fill, or 3) areas of recent fill.

The southeastern and northwestern portions of the property contain wetland areas that are most disturbed, these areas support ongoing human activities such as housing, fill, recreation and rubbish dumping. Much of these areas have been severely altered and in many cases are devoid of plant life.

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Dryland kalo prior to restoration of 'lao stream flow (note stressed vegetation) (2008).



Restored to wetland kalo upon partial restoration of 'lao stream flow (note healthy vegetation) (2015).

2275-SEVILLA-7



Ancient rock walls create the large pool (foreground) downstream of the small pool at the spring source (background).



Water is routed to successive pools and terraces by the ancient rock walls.

2275-SEVILLA-8-P.1



Healthy lo'i kalo (foreground) has been established by the water retained by the ancient rock walls (background).



Ancient rock walls pool the water to a level suitable for use in irrigation (note elevation of land behind the wall is approximately equal to the water elevation).

2275-SEVILLA-8-P.2



Ancient swales and miniature dams direct the water to various pools and terraces between the spring and the ocean.

2275-SEVILLA-8-P.3

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WATER USE PERMIT APPLICANT PRO SE

COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAI'I

Surface Water Use Permit Applications,) Case No. CCH-MA15-01
 Integration of Appurtenant Rights and)
 Amendments to the Interim Instream Flow) WITNESS LIST
 Standards, Nā Wai 'Ehā Surface Water)
 Management Areas of Waihe'e, Waiehu, 'Īao)
 and Waikapū Streams, Maui)
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WITNESS LIST

PARTY: DUKE A. SEVILLA

NAME/ ORGANIZATION/ POSITION	SUBJECT MATTER	EXHIBIT(S) TO BE INTRODUCED BY WITNESS
Duke A. Sevilla	Need for and use of Nā Wai 'Ehā water	2275-SEVILLA-1 to -8

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 and Waikapū Streams, Maui)
)
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EXHIBIT LIST

PARTY: DUKE A. SEVILLA

EXHIBIT NUMBER	DESCRIPTION	REFERENCES	REC'D INTO EVIDENCE
2275-SEVILLA-1	County Tax Map	Testimony of Duke A. Sevilla	
2275-SEVILLA-2	Royal Patent No. 3343	Testimony of Duke A. Sevilla	
2275-SEVILLA-3	Excerpt from Ka Lahui Hawaii	Testimony of Duke A. Sevilla	
2275-SEVILLA-4	Screen Shot Showing Pō'alima	Testimony of Duke A. Sevilla	
2275-SEVILLA-5	Excerpt from Archaeological Inventory Survey	Testimony of Duke A. Sevilla	
2275-SEVILLA-6	Wetland Determination	Testimony of Duke A. Sevilla	
2275-SEVILLA-7	Photos of Existing Lo'i Showing Dryland And Wetland Kalo	Testimony of Duke A. Sevilla	
2275-SEVILLA-8	Photos of Ancient Lo'i Kalo Features	Testimony of Duke A. Sevilla	