Culture & Agriculture in Hawai'i

Future celebration of diversity through the sharing of culturally significant food plants: Lessons from the Native Hawaiians.

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Future Celebration of diversity through the sharing of culturally significant food plants: Lessons from the Native Hawaiians.

Masters Report by Lyle Lopez

In partial fulfilment of the requirements for the degree of
Master's of Landscape Architecture
in the College of Art and Architecture
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1: Kalo Field

ABSTRACT

Hawaii, although a contested site through the overthrow of its indigenous monarchy and influx of different ethnic groups, ended up becoming a culturally mixed society. In a large part, this can be attributed to the sugar industry that thrived on the island chain from the mid-1850's to the early 1990's. Which had brought together farm laborers from countries all over the world. Some of the most notable were Chinese, Japanese, Filipino, Korean, Portuguese, and Spanish, who all came looking to better their lives. The result of the one hundred fifty odd years of working and interacting on the remote island chain is a 'Local' culture where language, customs, and food melded together in a very unique way. Borrowing, omitting, and changing became common place as the bumpy road to multiculturalism developed to become the norm.

On the flip side, environmental and cultural challenges followed the sugar industry. Importation of non native plant species, people, agricultural practices, social norms, and world views rapidly changed Hawaii's landscape and native peoples. To the Hawaiian, the mo'olelo (stories) of Papa (earth mother), Wakea (sky father), and daughter Ho'ohokukalani (to create stars in the heavens) was that of parents of the 'aina (land), kalo (taro), and the first Hawaiian (kanaka). Their connection to the land was familial in nature. Regardless the sugar industry acted as the glue that allowed for the intermingling of cultures as people had to work daily with each other. And with the closing of the mills in the mid 1990's, a bond has broken.

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Committee Members:
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I am thankful for her guidance and support.

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INTRODUCTION

RESEARCH PROBLEM

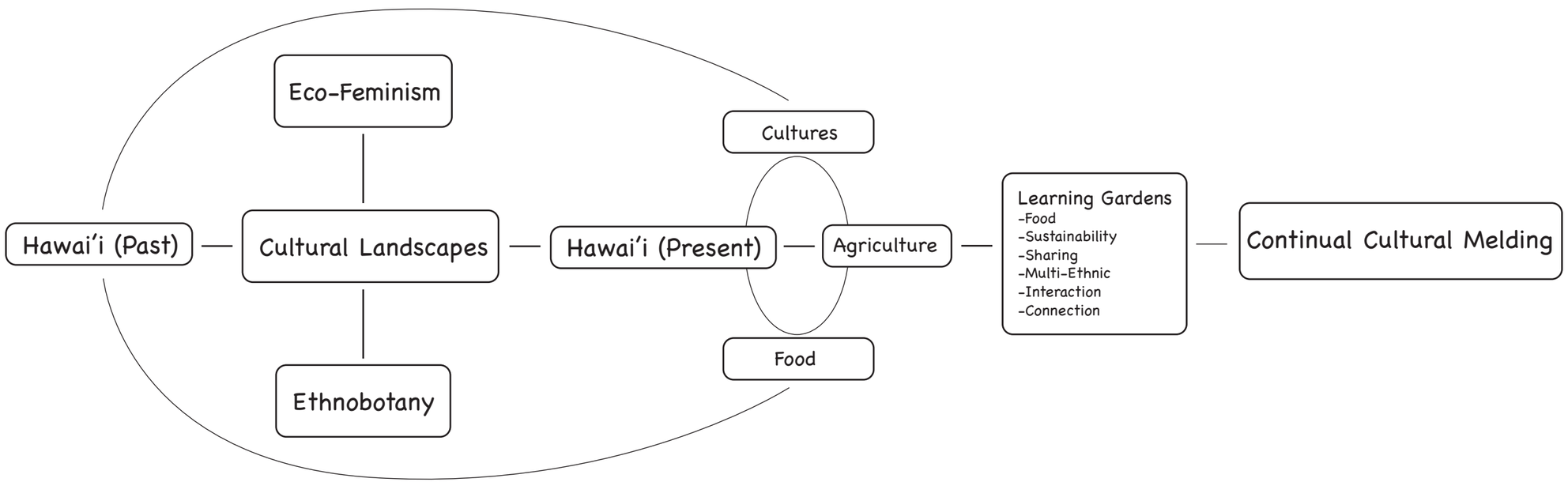
A common denominator between the positive and negative aspects related to the historical events that unfolded is agriculture. More specifically the food plants and their importance to the Hawaiians as well as immigrants, as we often use food to communicate with others and as a means of demonstrating personal identity, group affiliation, disassociation, and socioeconomic class.

RESEARCH QUESTION

How can the cultural relationships between the multi-ethnic people of Hawaii and their relationships with food plants be showcased in a way that helps keep a cultural melding process going as new ethnic and cultural backgrounds move to Hawai'i?

PROJECT FRAMEWORK

Specific methods that I plan to use in this project are a literature review, and case studies. The information gathered will then be used to inform the creation of a designed master plan. The literature review looks at a range of topics based on the overarching theme of the project, that of culture and the built environment. It first sets out to look at the historical events that eventually led to the overthrow of the Hawaiian monarchy. Focusing on the effects that western contact had on the Native Hawaiian culture. Specifically, the introduction of the sugar industry and as a result, the disconnection that happened between the Hawaiians and their culture. A look then at the setting of a reconnection is set forth as the concepts of cultural landscapes and ethnobotany are used to argue how humans are connected to the landscape and the plants that inhabit that landscape. This prompts another look at Native Hawaiian culture and how that has played a pivotal role in the multiracial society that exists in Hawaii today, as well as setting the ground for understanding why a learning garden can be used as a tool to help connect people to the culture, food, and place.



SIGNIFICANCE

There is a need for spaces in which people can come together and learn about different cultures. Hawai'i is a unique laboratory in this sense where knowledge around plants and food have influenced the culture that exists today. Lessons learned on the island chain can help designers create such spaces that promote cultural exchange.

3: Local Meal

PROJECT DESCRIPTION

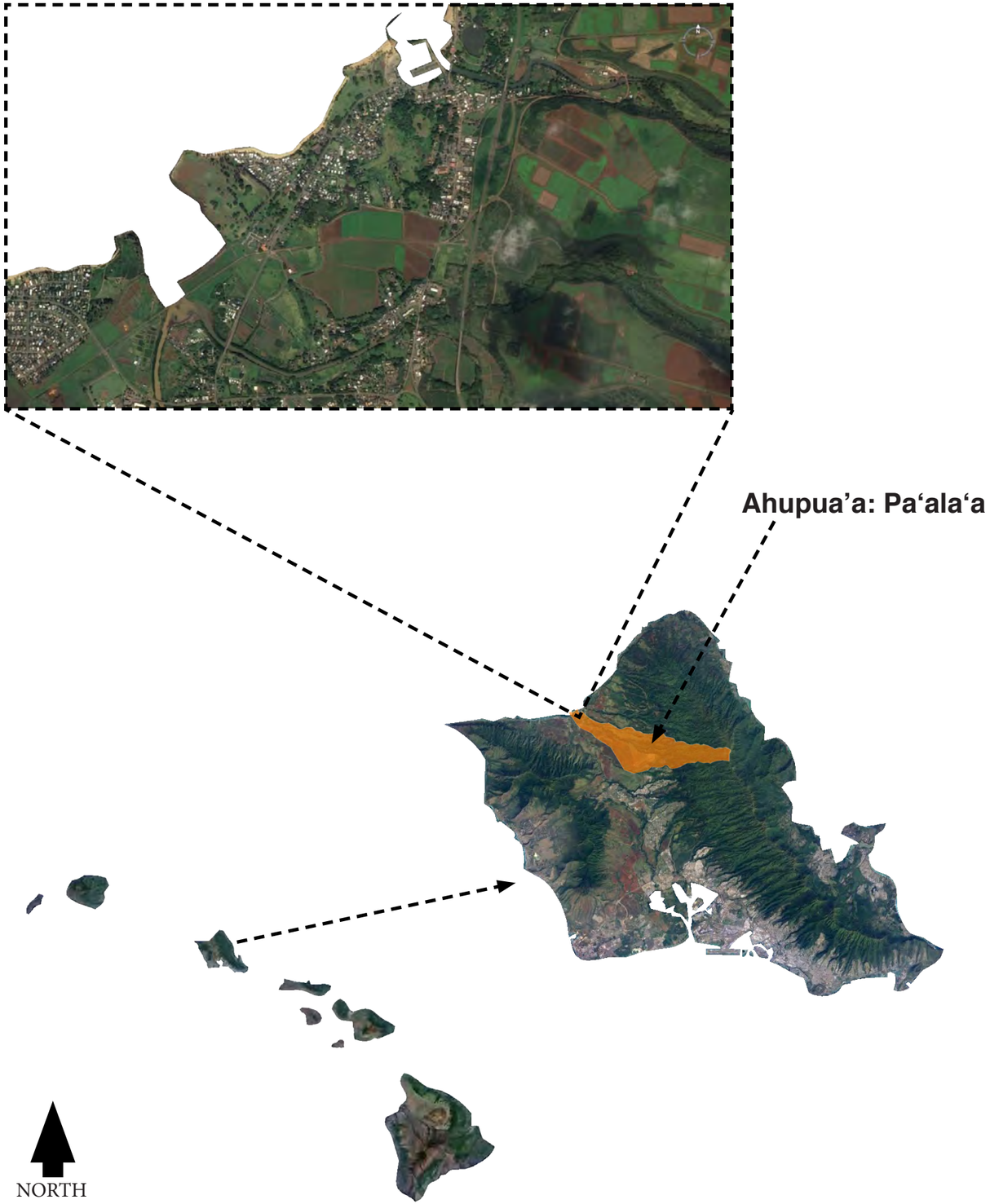
This project explores landscape design through agriculture, food, and the relations between individuals and their broader community. It addresses culture first as a means to understand our relationship with the land and as a critical look at the western colonial world view that underlines that relationship.

4: Kalo Landscape

PROJECT GOALS

The major goal of this project is to create a master plan of an outdoor educational/learning garden that incorporates Native Hawaiian concepts to grow contemporary food plants, with the intent of educating by having people interact with and learn about why those plants are significant as foods to different people/cultures.

5: Two Women Farming in Learning Garden



GEOGRAPHIC LOCATION

Hawai'i, located about 2,300 miles from the continental United States, is one of the most remote land masses on the planet. It ranges in height from sea level to around 14,000 feet in elevation. It was created by ocean volcanoes building layer upon layer of lava until finally cresting above the surface of the water. It now consists of sandy beaches, snow capped mountains and everything in between.

The main island of Oahu occupies 597 square miles and is home to a population of over 900,000. Honolulu, the state capitol is also located on the island, and is the center of trade and commerce through the port of Pearl Harbor.

Traveling through the central valley to the north shore and the historic town of Hale'iwa in the ahupua'a of pa'ala'a, one enters the agricultural hub of the island. Once the home of a major sugar plantation, the fields have in recent history been converted to pineapple and genetic seed testing fields, and boasts a thriving tourist industry fueled by world class waves and surfing competitions.

6: Ali'i Beach

PHYSICAL ENVIRONMENT

Nestled between two mountain ranges the Wai'anae to the west and the Ko'olau to the east, the north shore spans unbroken to the eye headed down the hill from Honolulu. Green from vast tracts of pineapple and coffee fields contrast stunningly the iron rich red soils and cerulean hues of the ocean that span out into the distant horizon. And the white sandy beaches that line the coast buffer the land from winter swells that show us the true power on this planet.

HISTORY OF HALE‘IWA

The town of Hale’iwa, which translates to the house of the ‘Iwa bird, and as noted by the North Shore Chamber of Commerce, maintains one foot in the old world and one in the new that provides a chance to savor the past while enjoying the present to the fullest. (http://www.gonorthshore.org/history-and-tours,2016) Hawaiians originally moved to the area around 1100 A.D. Settling there because of the fertile land dotted with natural springs in which to grow crops such as taro (kalo), and sweet potato (‘uala). The first western settlement was established by Protestant Reverend John and Ursula Emerson in the mid 19th century. Later that century Benjamin J. Dillingham built a railroad, sugar mill, and hotel. The “Hale’iwa Hotel” became the first resort to be build in Hawai’i and the Waialua Agricultural Co. would go on to employ laborers from China, Japan, Korea, Norway, Scotland, Portuguese, and the Philippines to work the sugar cane fields until they closed their doors in 1996.

7: Group of Plantation Workers (ca.1885-1941)

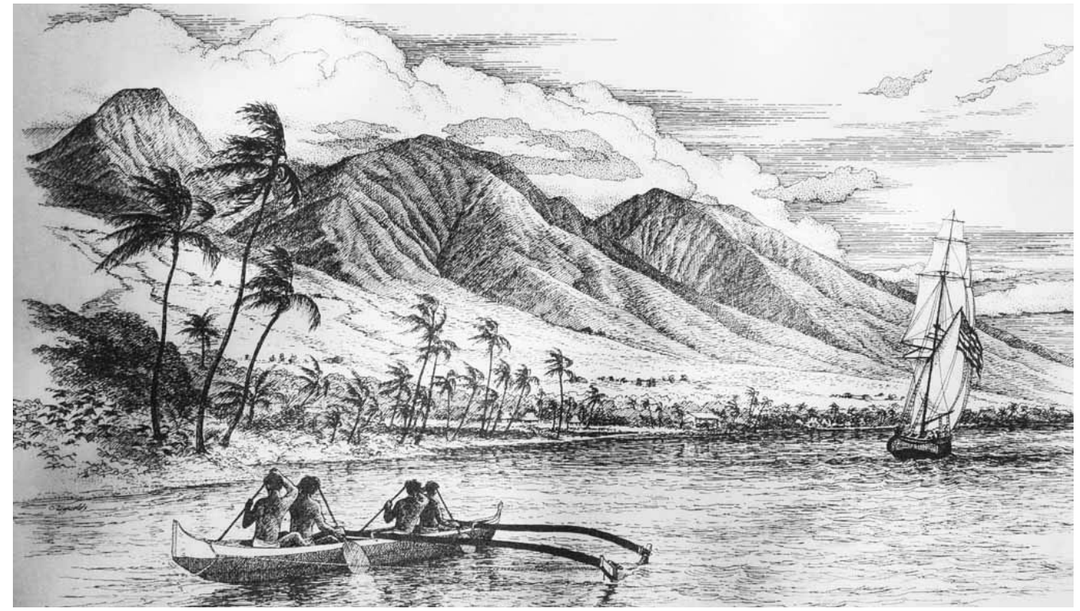
8: Hale’iwa Hotel (ca.1902)

10: Men Pounding Pai’ai (ca. 1890)

9: Hale’iwa Town (ca.1950)

LITERATURE REVIEW

A critical time in Hawaii's history for the sake of this project is the mid 1850's. Almost a hundred years had passed after the arrival of Captain Cook in 1778. It is then that the sugar industry began ramping up, bringing laborers in waves from around the world. However, in order to understand the underlying conditions, the displacement and loss of culture of the Native Hawaiians, a better look at the events that happened between the 1850's and 1778 needs to be undertaken. Eager to expand their commerce, the English began to dock in Hawai'i as a stopping point between North America, China and Australia. (Haas, 2011,p.45) Motivated by the growing fur trade in the Pacific Northwest, Hawai'i proved to be an attractive alternative to Spanish ports in South America, with its benign climate, friendly people, and ample amounts of salt to cure hides. (Beechert,1991,p.21) It was not long after that sandalwood became another reason for western traders to increasingly use Hawai'i as a major stopping point. And the Hawaiians, with no concept of market other than their traditional bartering system, were thrust into the world marketplace. (Beechert,1991,p.22) In the 1820's, as the sandalwood was just about exhausted, the whaling industry stepped in to fill the gap. (Beechert,1991,p.43) Along with this came the influx of law and order as the Hawaiian chiefs increasingly came under the influence of the missionaries. (Beechert,1991,p.48) Then toward the 1850's, just as the rise and fall of the sandalwood industry due to exhausted resources, the whaling industry eased and taking its place was the more stable agriculture industry. (Beechert,1991,p.69) Such rapid change had devastating effects to the Native Hawaiian culture and landscape. A reasoning behind such a cultural clash and disconnection between the two cultures is emphasized by ecofeminists.



11: First Contact Etching

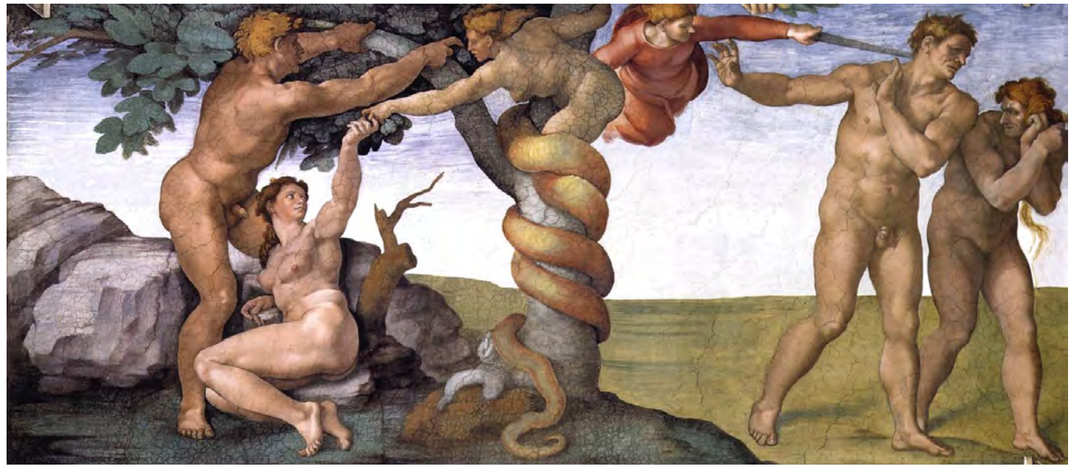
12: Cutting Cane Sugar (ca.1900)

13: Industrial Revolution Tractor (ca.~1900)

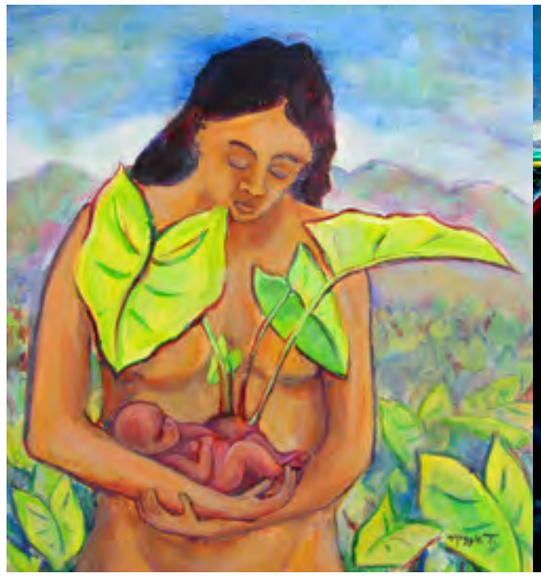
14: Terraced Lo'i

Looking to the west, between the 1500's and 1700's, the organic conception of the cosmos gave way to a mechanistic model that reinforced and accelerated the exploitation of nature and human beings as resources. (Merchant,1980,p.42) Cooperation and interdependence, which at one time, maintained the health of the ecosystem in the agrarian society gave way to technology and security issues due to increasing populations. (Merchant,1980,p.44) In turn some began to increase their economic power through controlling more and more land and the technologies that allowed the land to become productive. There was a fear that nature would interdict her own laws, that the cosmic frame would crumble, and that chaos and anarchy would rule, fostered by the competitive practices of the new commercialism that lay just beneath the sheen of apparent order. (Merchant,1980,p.126) This is a theme that increasingly gained momentum, until it's culmination in what is referred to as the Scientific Revolution codified by Francis Bacon.

Francis Bacon, known as the 'father of modern science', is seen as the antithesis to the organic and communal lifestyles of old Europe. Through vivid metaphor, he transformed the magus from nature's servant to its exploiter, and nature from a teacher to a slave. (Merchant,1980,p.169) Merchant (1980) comments on a passage of his stating, "By art and the hand of man, nature can then be forced out of her natural state and squeezed and molded," noting, in bold sexual imagery, his modern experimental method is explained. (Merchant,1980,p.171) And thus his program, so important to the rise of Western science, contained within it a set of attitudes about nature that reinforced the tendencies toward growth and progress inherent in early capitalism. (Merchant,1980,p.185) Going a little further, a general comparison of the type of mindsets between the Indigenous and the Westerners will help to clarify the disconnection.



15: Michelangelo's Adam and Eve (ca.1508-1512)



16: Hāloanakalaukapalili (First Kalo Plant)

17: Pele the Fire Godess

The concept of narrative begins to demonstrate the disconnect that has happened in the western world from nature. This is a form of teaching that native/ traditional cultures have been using to pass on knowledge from generations past to current ones. And it is a tradition that the Native Hawaiians also practiced. Merchant notes a Penobscot Indian story where a wife saddened her husband by her infidelities with another lover, a snake. She tells her husband to plant a blade of grass from her ankle after he kills her and buries her bones in the center of a forest clearing, in which a corn plant will sprout, (Merchant,1996,p.27) noting that this agricultural story taught the people how to plant corn and that the underpinnings of the story is positive. It is one depicting the earth as an agent of regeneration. (Merchant,1996,p.28) The western story of Adam and Eve, conveys a different overall message whilst having a similar theme. Eve, tempted by a snake convinces Adam to pick the forbidden fruit with her, resulting in their banishment from Eden. Thus, it is creating a story about human disconnection from nature. Its plot is declensionist and tragic, not progressive and comic as in the Indian story. 'Fall and Recovery,' is a theme found in the Christian religion, capitalism, and modern science. (Merchant,1996,p.27) An example from Northeastern Thailand, shows how the market driven agricultural economy affected the indigenous people.

Northeastern Thailand is a place widely known for its non-domesticated, gathered food practices, where food acted as a link between families and their communities. (Moreno-Black,1994,p.93) Effects of the increased market based agricultural economy is changing the culture and traditions of people. The increases in deforestation accompanied by the increase in the market economy has changed the once communal gathering practices to a more privatized one. As farmers, with a decreasing area from which they gather plant materials, have had to move and cultivate those same plants in personal garden areas because they were afraid that those resources would disappear (Moreno-Black,1994,p.103). This ex-

ample takes note of changes that happen as disconnections emerge between ideologies. And how food and food procurement practices can generate and transform social life, create social relationships, affect social control, instill power or prestige, and alter human-environment relationships. (Moreno-Black,1994,p.105) A look now at the setting for building a reconnection.

The dualistic view, that emerged in western culture, one of human separated from nature has had devastating effects to many cultures and environmental settings around the world. It has evolved to take on different subjects over time. They are often stored in our conceptual framework as residues, refined and deployed for new uses. (Plumwood,1993,p.43) A current example from Hawai'i is the fight over genetically modified taro. To the Hawaiians, taro is seen as an older brother, and through selective breeding and care had developed hundreds of varieties. Cultivars that could grow in brackish water and others that could grow in arid conditions. Western scientists sought to create a "super" taro that would grow in all conditions. This is a notion that Hawaiians found to be disrespectful and suspect because they had already done those things.

Dismantling a dualism based on difference requires the reconstruction of relationship and identity in terms of a non-hierarchical concept of difference. (Plumwood,1993,p.60) This must be a reconstruction that entails giving a positive value to what has been traditionally devalued and excluded without simply reversing values and rejecting the sphere of culture. (Plumwood,1993,p.10) With the disconnection that happened between the Native Hawaiians and the western colonizers, culture and the environment had for ever been changed for the good or the bad depending on the perspective taken. So it is here that the landscape in which the sugar industry had its effects on the culture will now be reviewed.

18: After Western Contact (ca.~1900)

Land designated to be used for in the sugar industry has had an enormous effect on the landscape in Hawai'i. Hundreds of thousands of acres were plowed and water diverted away from traditional lo'i (pond agricultural systems). Even the ownership of the land itself was a foreign concept. This is where a problem arises in modern day, a problem which as learned can lead to duality, and one in which the Hawai'i of the past and present clash, with the same underlying mentality that created the problems in the first place. Resolution of dualism requires not just recognition of difference, but recognition of a complex, interacting pattern of both continuity and difference. (Plumwood,1993,p.67) There is not much of the environment in the world that humans have not touched, and the fact that the environment is not a static entity, we should be focusing on human interactions with the environment and placing value to those environments so as not to disregard the everyday landscape environments that we interact with. (Arntzen & Brady,2008,p.10) When we ignore the human factor in the landscape and the richness of the human-nature relationship developed through engagement with nature, it often leads to an impoverished conception of the environment. (Arntzen & Brady,2008,p.20) Thus the cultural landscape is one that is expressive of a dynamic relationship of reciprocal influence and dependence of humans and non-humans, of culture and nature, and of present and past. (Arntzen, 2008,p.40) A theme that is inherent in agriculture as the food it produces can represent a relationship of reciprocal influence and dependence.

19: Sugar Cane Factory

20: Irrigation Ditches

21: Coppicing

22: Ahupua'a

A way of looking at agriculture is as a specific activity and profession, a way of life, and as such a part or form of culture. As it gives rise to meaning and values that articulate the world in a certain way. (Von Bonsdorff,2008,p.161) The word 'culture' has its roots in the word 'cultivation'. And if cultivation, implies a long term relationship of tending and transforming something then long term agriculture is likely to give rise to the connections between farmer to land and of land. (Von Bonsdorff,2008,p.162) This is not however to negate the reality that agriculture can have or be associated with negative effects on the land, only to note that deeper connections can happen as a result of practicing agriculture. Agriculture and other types of cultural landscapes involve practices where humans shape and modify nature in explicit ways, and can be valuable rather than something that should be discourages as an intrusion. (Brady,2008,p.139) And when practiced in accordance to sustainable practices like many indigenous communities, can enable interactions with with the environment that create stronger ties to it. (Brady,2008,p.139) Two examples of traditional agricultural practices, one from Europe and the other from Hawai'i, coppicing and the ahupua'a demonstrate this idea. Coppicing is a type of forest agriculture where trees are cut close to the ground so as to allow for shoots to sprout, which in tern enhances biodiversity as sun is able to reach the forest floor. The ahupua'a is a Native Hawaiian land division scheme based around watersheds. Water that flows from the mountain peaks is diverted into lo'i patches to grow kalo (taro) and then recycled back into the main stream. From there the water travels down to ocean fish corrals and finally out to sea. These are traditional processes that utilized a sustainable source of timber and water to help create biodiversity on the one hand and aesthetic appeal on the other. Going a little further, plants play an important role in the way culture develops and can provide meaning to often complicated issues.

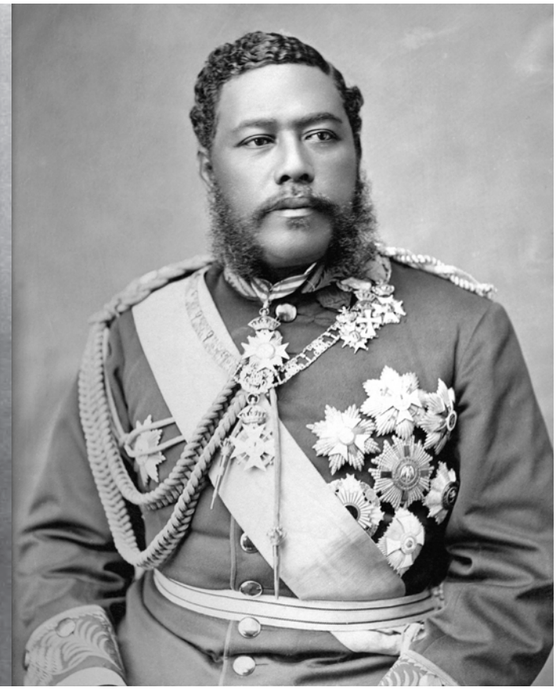
23: Learning about Banana

24: Kukuila Estate Farm

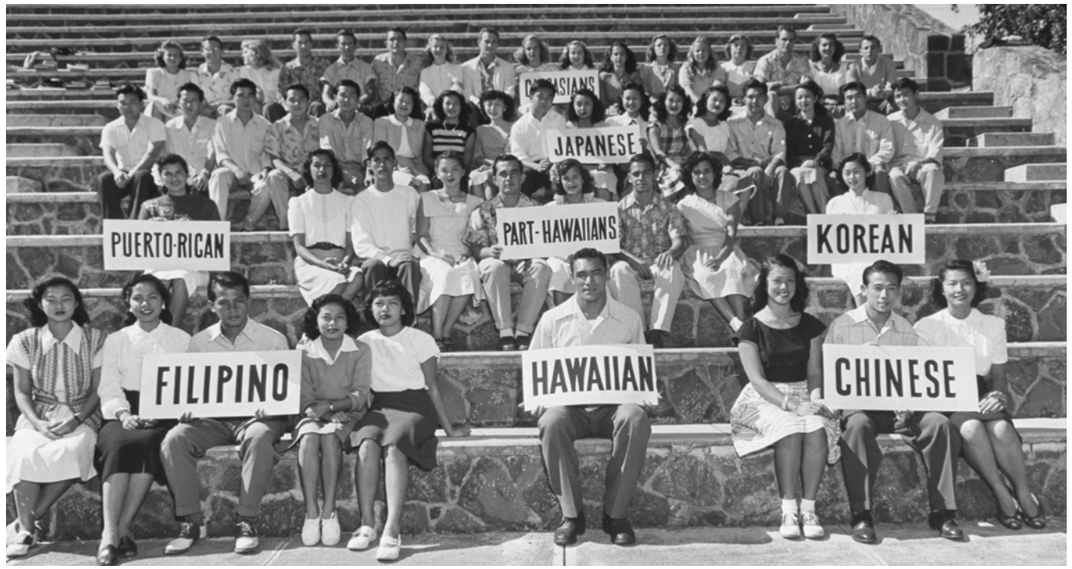
Plants themselves have had many uses for people around the world are often associated with liberation and colonization. Ethnobotany, which is commonly defined as the study of the use of plants by aboriginal peoples, (Cotton,1996,p.1) can and has helped to navigate and provide bridges. The fact that even after the 'Green Revolution' of western science, many of the most successful innovations in food-crop production have been based on indigenous knowledge. (Cotton,1996,p.13) It is one instance that takes note of knowledge as something that is fluid and not created by one source only. Well informed communication can help to avoid the build-up of tensions and misunderstandings. And one of the ways to do this is to focus on elements of commonality between cultures. Thus looking at their relationship with plants and the place gardens play in their culture is an easy entry. (Mock,1994,p.118) If plants and agriculture are a part of and play an important role in culture, and gardens are the easy entry point, Landscape Architecture can become a tool used to develop dialogue between competing entities. For gardens are part of cultural landscapes which reflect people's tastes, values, aspirations, and where all cultural elements including history, philosophy, art, and architecture intersect plant life. (Ikagawa,1994,p.110) Thus a designed garden can help fill the gap in Hawaii that the sugar industry filled, a bridge between cultures.

Thinking about the the disconnection that happened between the Hawaiians and the West, a realization is reached; one that never would have happened if the history of Hawai'i unfolded in any other way. That is the creation of a multicultural people and culture. It is unique in that different and in some cases historically embittered cultures in their own right mixed and created a unique culture. This, all by sharing and adopting aspects of each others cultures. This can be exemplified in two words 'Aloha', and 'Lokahi'. 'Aloha', unlike the singular western commercialized definition, represents a sense kindness and compassion. And 'Lokahi' denotes a sense of unity. These words that represent the undercurrent of the Hawaiian ethos. From the time of first contact, disregarding the disputes and skirmishes, the Hawaiian kingdom had set the tone as a tolerant and open society, consciously multiracial, with no quotas, and no mandated separation of the races. Intermingling happened regularly, with many such interactions resulting in intermarriages and birthing of mixed heritage children. (McDermott,2011,p.xiv) A way of life influenced the the 'Local' culture of present day Hawai'i. It also helped that with out the presence of a clear majority group, assimilation did not occur along the lines of the contemporary Unites States melting pot. (McDermott,2011,p.317) As the immigrant groups with each passing generation could choose which aspects of their culture to retain, discard, let lie dormant, or activate. (McDermott,2011,p.317) One of those aspects, food, has played an important role in Hawai'i.

25: Princess Victoria Kaiulani (ca.1892)



26: King David Kalakaua (ca. 1882)



27: Racial Mixes (ca.1950)

Food is an easily shared part of every culture, and does not require extensive knowledge of a communities language, history, rituals, religion, or other belief systems. (Flamming,2009,p.273) It extends thoughtfulness and generosity beyond immediate acquaintances to more expansive spheres that allows for common things to discuss. (Flamming,2009,p.214) It can take us from the domain of the individual and families to that of groups where at that level, issues of identity and culture are worked through. (Greene & Cramer,2011,p.xii) In Hawai'i for example, the 'manapua', which is the word for the Chinese steamed pork bun in the local creole English, is reported to have its etymology rooted in the Hawaiian phrase 'mea'ono pua'a', which translates to delicious pork thing. (Eye on Hawaii,2009) Changed phrases like this happened because of the close working conditions on the sugar plantations, and this has contributed much to the diversity that is in Hawai'i. So it is important then that spaces which promote this kind of mixing to occur be created. This is where a learning garden focusing around food plants comes in.

28: Cane Workers Eating (ca. 1885-1941)

29: Manapua Man (ca.1970)

30: Working in the Kalo field

31: University of Hawaii West Oahu Service Learning Garden

Learning gardens can be used as pathways toward partnerships that link life with learning, schools with neighborhoods, neighborhoods with bioregions, and nature with culture. (Williams & Brown,2012,p.15) Students are engaged in an understanding with their communities on how culture and nature might thrive in diversity, and building on the vibrant local and regional experiences, they also develop understandings that advance ecological and cultural awareness. (Williams & Brown,2012,p.20) Thus adding a cultural dimension to our understanding of food brings gardens to life as symbolic spaces connected with our inner lives. (Williams & Brown,2012,p.106) It is especially important in a time and place where the dominant culture has shifted people to the grocery stores and thus away from any connection to the land. One in which science and technology were used as tools to create separation based on that culture. This project argues that focusing on the culture aspect first, specifically its connection of food plants, will help to foster a realization that we are connected to each other and to the land.

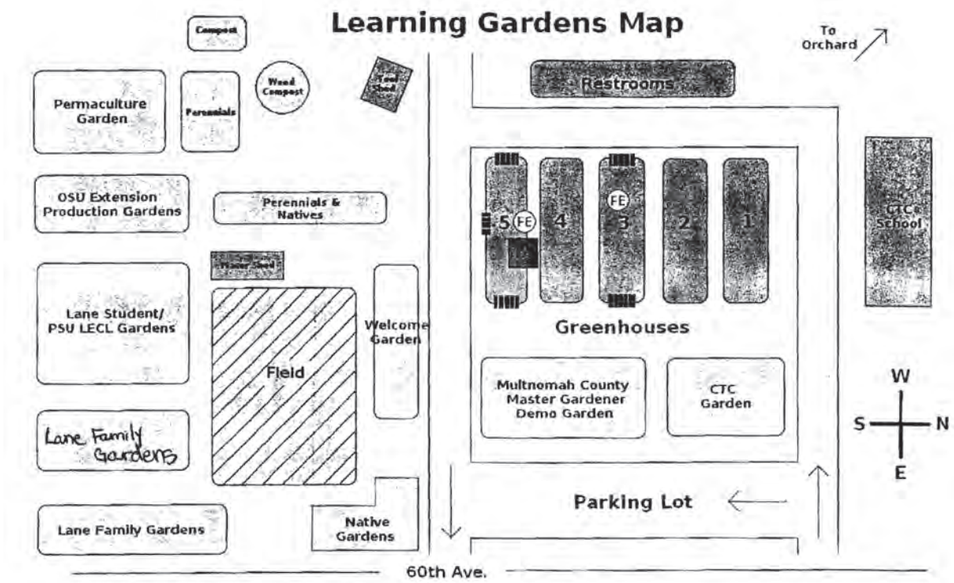
LEARNING GARDENS LABORATORY

Context:

The Learning Gardens Laboratory site is located with in the Brentwood-Darlington neighborhood in south east Portland. It was first settled 1882 by single family homesteaders and eventually saw a boom in population growth after WWII. (History of BDNA,2017) The area was once known as the 'felony flats' neighborhood. And schools in the area, like Lane Middle School, located adjacent to the site were known for gang violence and low academic performance. The community is also home to members of various cultural and ethnic backgrounds and is a moderate to low income neighborhood and the Learning Gardens Laboratory site is twelve acres on what was once a dairy farm in the 1950's.

Project Background and History:

In 2004-2005 Dr.'s Dilafruz Williams and Pramod Parajuli officially leased the 12-acre plot from the Portland Public School District and city to create the Learning Gardens Laboratory. Prior to the establishment of the organization, the land was home to the Green Thumb program in the 1990's which was a horticultural training site for high school and adult learners wanting to get into the nursery business. (Morris, 2010) The program has also created and maintained partnerships with Portland State University, Portland Public Schools, Portland Parks and Recreation, and Oregon State Universities Agricultural Extension Program. As of 2009, Heather Burns, a Portland State University faculty member has served as the coordinator between LGL and PSU and Weston Miller, the Oregon State University Extension employee.



32: Learning Gardens Laboratory Map

Site Analysis:

The Brentwood-Darlington neighborhood is laid out on a grid pattern consisting of long blocks and is defined by its geographical features, including Johnson Creek, Douglas Fir trees, and the bluff along Favel Drive. (History of BDNA,2017) It also slopes to the south east and sits on a plateau above and running toward Johnson Creek. The Learning Gardens Laboratory site is flanked on three sides; its north, west, and south by residential homes and the Brentwood City Park and Lane Middle School to the east. The northern half of the site consists of five greenhouses, each one dedicated to a specific organization within the program and garden plots for the Master Gardner and CTC adult education programs. The southern half of the site is primarily dedicated to the the LGL university and Lane Middle School partnerships. Consisting of a permaculture, native and perennial, family gardens, and associated utility areas.

33: LGL Master Gardener Demo Plot

Program components:

The main programmatic focus' of the Learning Gardens Laboratory is hands-on, place based education in sustainable gardening, healthy nutrition, and permaculture practices for K-12 students, university students, and community members in the neighborhood. With the goals of increasing academic achievement, leadership development, and sustainable local food systems. Focusing in the garden they have created courses and workshops for PK-12 educators, service learning capstone projects for Portland State University graduate and senior students, digital story telling projects for PSU freshmen, gardening and sustainable living classes for community members, a community farm stand, community events such as the fall harvest festival, and programs to help develop economic literacy for future farmers. (Learning Gardens Laboratory,2017) In their PSU educational efforts they have utilized graduate students from the Leadership for Sustainability Education program to facili-

34: LGL Entry Sign


35: Lane Family Garden Plot 1

tate weekly garden-based science curriculum for Lane Middle School focused around cooking, harvesting, and nutrition/ eating habits. As well as working with Dr. Ellen Skinner of the Psychology department to conduct ongoing quantitative research between the LSE program and Lane Middle School to assess how participation affects the students' motivation and academic achievement in school. Which is currently the only study of it's kind in the United States. The programs partnership with Lane Middle School also incorporates a multicultural family learning gardens for the parents of the students to increase family participation in their children's education. As Lane Middle School students who participate in gardening at LGL come from low income and racially and culturally diverse backgrounds. (Morris,2010,p.55) A partnership that annually donates around 1500 pounds of fresh produce to local food banks and schools in the area. Their beginning farmer apprenticeship program in conjunction with Oregon State Universities Agricultural Extension program maintains plots dedicated to a Master Gardner demonstration area and community garden that trains/mentors adult students in Portland's Community Transition Center in horticultural practices.

Use analysis:

The research done be Dr. Ellen Skinner, and her team in the Psychology department at PSU beginning in 2005 has so far shown that the Lane Middle School students who worked hard in the garden also had increased engagements in science and in school in general. Resulting in better overall school performance and also increased connections to Lane Middle School. In working with a multicultural group, Madelyn Mickeberry Morris, a PSU graduate student in the LSE program who was charged with recruiting multicultural farmers had found it difficult to reach every single ethnic group in the neighborhood. Their initial recruiting efforts focused around Lane Middle school as it would be easier to make contact since the LGL already had established ties with the school. And while it was easier to incorporate Spanish speaking individuals due to the availability of bilingual speakers, she found it difficult to recruit Russian, Ukrainian, Vietnamese, and others culturally divers families due to an inability to translate recruitment materials into those languages. (Morris,2010,p.60) Madelyn, in also working with PSU undergraduate capstone students found that it was difficult in creating a worthwhile experience for adult learners, as many didn't realize that efforts like weeding was a crucial part in the functioning of the farm. (Morris,2010,p.65)

Lessons Learned:

-Effective communication is the most important factor in a successful gardening program.
-Communication expectations and the value of contribution from the beginning.
-Goals set in the beginning.
-Generating funding for translating materials is important.
-Identifying multilingual resources to serve as conduits to pass on information.
-Recognition that travel, schedules, and weather are all factors that contribute to participation.
-Pairing beginning farmers with experienced farmers to create meaningful experiences.

36: Amy B.H. Greenwell Ethnobotanical Garden Map

37: Amy B.H. Greenwell Ethnobotanical Agricultural Zone

AMY B.H. GREENWELL GARDEN

Context:

The Amy B.H Greenwell Ethnobotanical Garden is located in the Kona district near Captain Cook on the island oh Hawai'i. It consists of 15 acres in the Kealakekua ahupua'a, a traditional land division system oh the Native Hawaiians. Five acres of which is part of an ancient terraced agricultural complex that spanned 54 square miles.

Project Background and History:

In the 1850's, her grandfather Henry Nicholas Greenwell moved to Hawai'I and became a successful merchant and rancher. Amy B.H. Greenwell was born in 1920 to Arthur Greenwell and Beatrice Holdworth. She later attended Stanford University and went on to serve as a nurse in World War II. After the was she worked on a book entitled "Flora Hawaiiensis" which documented Hawaiian plants and did archaeological work on early Hawaiian habitation sites on the island of Hawai'I and later landscaped her property with native and Polynesian introduced plants. It is this property that would eventually become the Amy B.H. Greenwell Ethnobotanical Garden after she passed in 1974 and willed it to the Bishop Museum. Currently the garden is closed to the public as Bishop Museum and Friends of Amy Greenwell Garden are looking for a suitable organization to take over the management of the property. (N.Lincoln, personal communication, December 30, 2016)

Site Analysis:

Captain Cook, Hawai'i is located in south Kona and is home to many coffee farms. The Amy B.H. Greenwell Ethnobotanical Garden site lies just off Mamalahoa Highway that runs through the Captain Cook area and is flanked by a few farms and some what rural suburban neighborhood. It contains over 200 species of endemic, indigenous, and Polynesian introduced plants that grew in Kona before Captain Cooks arrival. And represents four major ecological zones important to the native Hawaiians, the costal, dryland forest, agricultural, and upland forest. The Kealakekua ahupua'a, know as the 'path of the gods' is a historically significant area for not only the Hawaiians but for western history as well. At the costal area of the ahupua'a lies a large natural harbor where Captain James Cook first set anchor in Hawai'I and was the home for many high ranking chiefs of Kona. Planted at the shoreline area of the ahupua'a were coconut trees and 'uala (sweet potatoes). Above this till about 500 feet in elevation wauke (paper mulberry) was planted for use in craft work. Between 500 to a 1000 feet 'ulu and other understory plantations were planted and served as a minor food gathering area. The area from 1000 to 3000 feet was known as the 'apa'a or agricultural zone, which is the main agricultural hub and where the Amy B.H. Greenwell garden is located. Within this zone the Native Hawaiians utilized what is known as the 'Kona Field System', a system of terraced planting beds formed by stacking rocks to create walls or kua'iwi in which they planted kalo (taro), 'uala, mai'a (banana), and ko (sugar cane). The kua'iwi were created so mulch could be added to retain moisture in the semi-arid Kona area. And finally, above the 'apa'a zone was the dense forested area up the the peak of the mountain range know as the wao akua or realm of the gods, which was unaltered by the Hawaiians. They gathered feathers from the native honeycreepers and koa wood to create crafts and build canoes

Design:

The overall design of the garden was based on the ahupuaʻa land division system, sectioning the garden out into four ecological zones: costal, dryland forest, agricultural, and upland forest. Plants were then grouped together in accordance to those zones. However, the planning and implementation of supporting features like paths developed in a more organic manner as the garden has had a few different managers over the past 35 years. (N.Lincoln, personal communication, December 30, 2016)

Program components:

The garden hosted a few programs based around education, teaching students and community members about the use and significance of the plants in the garden. Around 3000 elementary and high school students visited the garden and lessons were planned in conjunction with the garden manager and teachers to supplement the students education. For example, lessons on conservation, agriculture, water sheds, and Polynesian history. University students also visited the garden to supplement their education on topics ranging from soil science, ecosystem development, and human bio-complexity in relation to agriculture. Working with knowledgeable community members, the garden also hosted workshops around ethnobotany, were visitors could learn about grafting, dye making, and poi pounding. Daily themed tours were also conducted and the garden also hosted yearly festivals like its seed exchange, arbor day, and horticultural festival. (N. Lincoln, personal communication, December 30, 2016)

Use analysis:

Lessons Learned:

-Ahupuaʻa system was an ingenious land division system that promoted community and environmental health.
-Themed sections around the ahupuaʻa system is a good organizing factor.
-Initial master planning can help future development to transition smoothly.
-Getting knowledgeable community members involved can enrich programs.
-Connection with local school and universities can help develop programs.

38: Amy B.H. Greenwell Ethnobotanical Upland Forest Zone

39: Amy B.H. Greenwell Ethnobotanical Agricultural Zone

ROOTS KALIHI

Context:

The Roots Kalihi site is located in Kalihi Valley on the island of Oahu. The program runs two community gardens, one at the Hoʻoulu ʻAina Nature Preserve and the other at the Towers at Kuhio Park called the Mala O Kaluaopalena Community Garden. Kalihi Valley its self was created by the Kalihi stream and was designated as an ahupuaʻa in ancient Hawaiian times which ran from the top of the Koʻolau mountain range down to the ocean. (Returning to our Roots,2017)

Project Background and History:

The Roots project is a program under the Kokua Kalihi Valley organization, which is a 501(c)(3) nonprofit created in 1972. Its aim was to provide affordable and proper health care to the low income Asian and Pacific Islander population in the valley. And to address the social determinants underlying the health of the community members by listening carefully and reflecting the values of its residents. As part of that initiative, two land based programs were created focusing land stewardship and food, Hoʻoulu ʻaina and Roots Kalihi. The Roots program is an ʻaina-to-table initiative that aims to strengthen the Kalihi Valley community through growing, preparing and sharing food that is grounded in Hawaiian traditions and practices of land stewardship and collective work. (Who We Are,2017)

Site Analysis:

There are two community gardens associated with the program, the Hoʻoulu ʻAina Community garden and the Mala O Kaluaopalena Community Garden. The Hoʻoulu ʻAina garden was started in 2008 by a group of Micronesian elders who were attending classes at the Kokua Kalihi Valley Medical Center to learn about managing diabetes. They were learning about the benefits of exercise but to them the concept of 'exercise' was foreign to them, however farming was a part of their culture and entailed exercise. And the Mala O Kaluaopalena Community Garden began in 2003 at the Kuhio Park residential towers on a ¼ acre plot to provide access to community members is what is considered a food desert. (Mahi'Aina,2017)

Program components:

"Food is powerful, through preparing and sharing food, we strengthen the roots that connect us to the land, the sea, our cultures, our community, our family, and each other. The Roots Project strives to improve the social, physical, and mental health of the people of Kalihi Valley and its visitors through three tenants: Grow, Prepare, and Share." (Returning to our Roots,2017) Growing entails becoming a farmer of the land, working in community gardens, and agroforestry projects. Preparing entails working with food and medicinal plants at the garden-side kitchen at Hoʻoulu ʻAina, the community kitchen at the Kokua Kalihi Valley Health Center, and in Kalihi schools. And Sharing entails sharing food and experiences by eating together with expanded minds and bellies. They do this through a multifaceted "Food Hub" that provides and facilitates the growing, storing, delivering, selling, and preparing food. All done by working with nine local farmers in Kalihi and around the island to supplement food grown on their two farms. Their primary resale venues are their mobile market, café, and farmacy. The mobile market, which started in 2015, travels around Kalihi Valley to schools and senior centers so provide better access to the community. There are also two open market at the Kalihi Valley District Park and the Kuhio Park residential towers. The café and farmacy, which are both located at the Kokua Kalihi Valley Medical Center prepare and sell that produce as well as provide programs in which community members can learn about the food service industry,

40: Roots Kalihi Learning to Cook

41: Roots Kalihi Poi Pounding Community Event

42: Roots Kalihi Mala O Kaluaopalena Community Garden

43: Roots Kalihi Kokua Kalihi Valley Center Vegetable Sale

44: Roots Kalihi Community Nutrition Event

nutrition. Some highlights are community led cooking days where people gather to share recipes and prepare food items for each other and community events in which people demonstrate the preparing of culturally relevant foods. (Roots Kalihi,2017)

Use analysis:

This case study was not able to obtain any official documentation, written or other wise due to policy restrictions set in place by Kokua Kalihi Valley. However, website and social media image and video sources produced by the organization show high community participation and a very diverse cultural involvement. Much attention is afforded to cultural sensitivity in the fact that it's overall focus on improving health is showcased in multiple ways. For example, focusing on nutrition, physical activity, and pediatrics in both a holistic and modern scientific way.

Lessons Learned:

-Health and wellbeing is a strong binding agent in soliciting and prolonging community involvement.
-Focusing on cultural difference can increase participation in multiple ethnic groups.
-Having a strong and clear general set of goals can allow for future program malleability.
-Having a genuine need in the community for certain services is important to organizational sustainability.
-Food can create spaces in which sharing in possible.

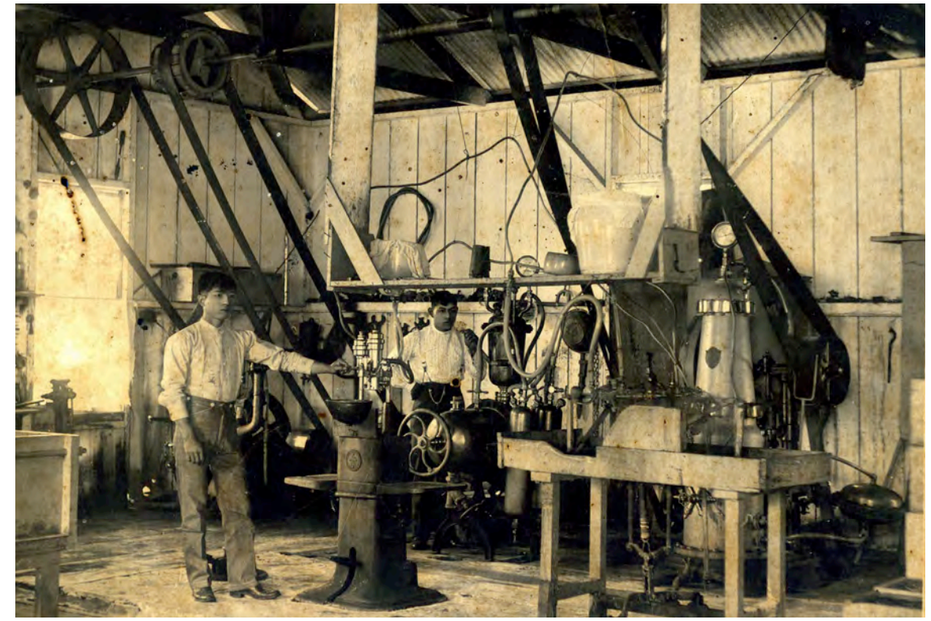
LESSONS LEARNED

-The reconstruction relationships and identities in terms of non-hierarchical differences is essential to overcome differences.
-Bringing positive value to what has been traditionally been devalued with out reversing or trying to dismantle current values.
-Learning from our ancestors about their relationship with the land and each other can act as a tool to remember the past but not dwell there.
-Agriculture can play a large role our perception of the land in which we inhabit.
-Gardens can act as spaces that bring people together.
-Food plants and their consumption can act as a bridge between cultures.
-Effective communication is the most important factor in a successful gardening program.
-Communication expectations and the value of contribution from the beginning.
-Goals set in the beginning.
-Generating funding for translating materials is important.
-Identifying multilingual resources to serve as conduits to pass on information.
-Recognition that travel, schedules, and weather are all factors that contribute to participation.
-Pairing beginning farmers with experienced farmers to create meaningful experiences.
-Ahupuaʻa system was an ingenious land division system that promoted community and environmental health.
-Themed sections around the ahupuaʻa system is a good organizing factor.
-Initial master planning can help future development to transition smoothly.
-Getting knowledgeable community member involved can enrich programs.
-Connection with local school and universities can help develop programs.
-Health and wellbeing is a strong binding agent in soliciting and prolonging community involvement.
-Focusing on cultural difference can increase participation in multiple ethnic groups.
-Having a strong and clear general set of goals can allow for future program malleability.
-Having a genuine need in the community for certain services is important to organizational sustainability.
-Food can create spaces in which sharing in possible.

ANALYSIS

TAKAHASHI PROPERTY HISTORY

My family, the Takahashi's, have owned the property for three generations. It was my great grandfather Yoshitaro Takahashi who managed a small soda works that provided beverages to the sugar cane workers. Later my grandfather and grandmother George and Chieko Takahashi purchased the property and would go on to run a saimin (ramen) restaurant in the commercial building located on the property. And over the years there have been many different businesses that have occupied the building, from a small grocery store to a pool hall. The building has changed little over the years and is one of the original structures built in the 1940's still standing in Hale'iwa. Agricultural endeavors were not the focus until my uncle Glenn and his family started growing bananas and other crops, which they still do to this day.

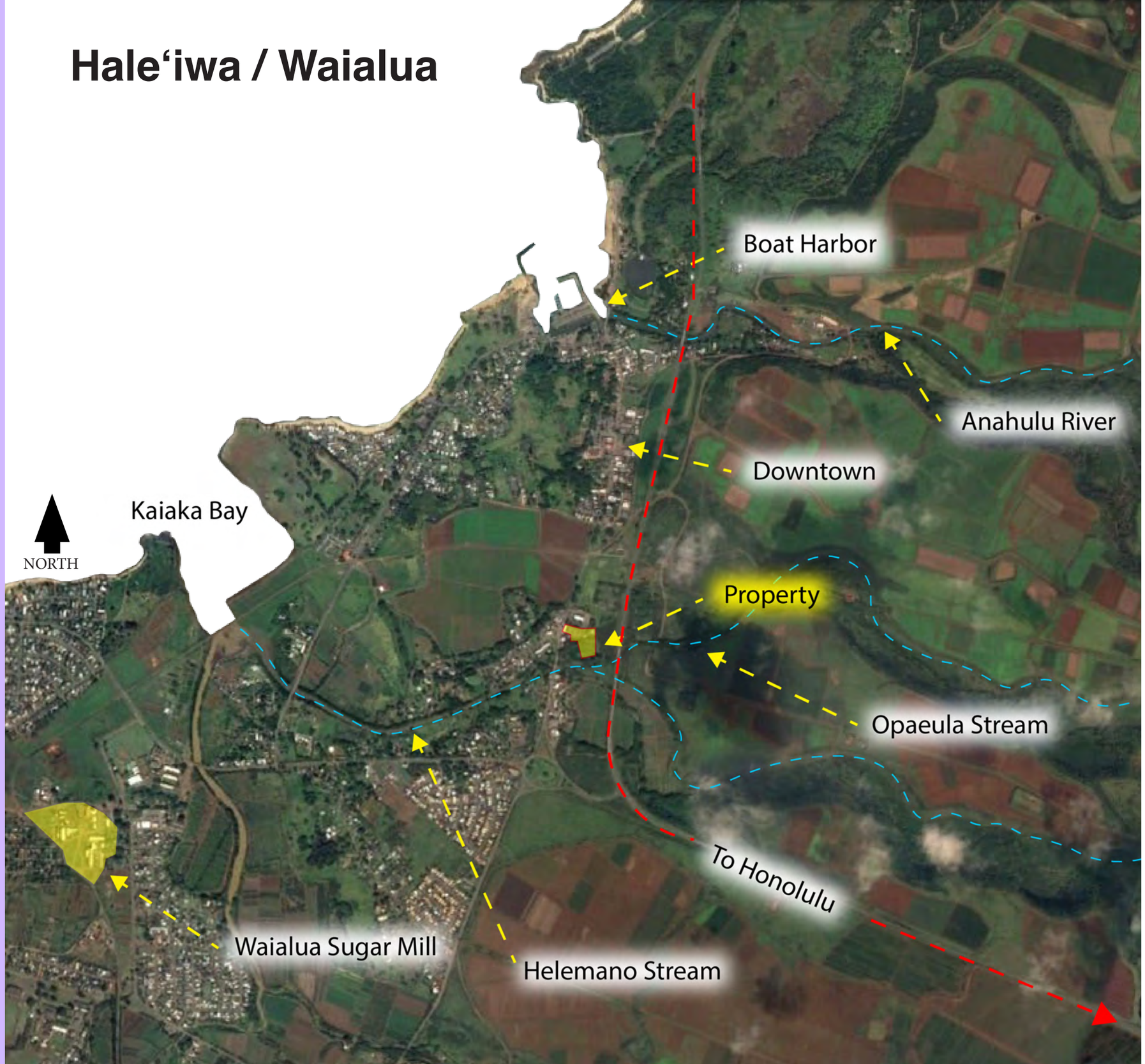


45: Soda Factory (ca.1900)

47: Takahashi Building (ca.1950)

46: Takahashi Family (ca.1900)

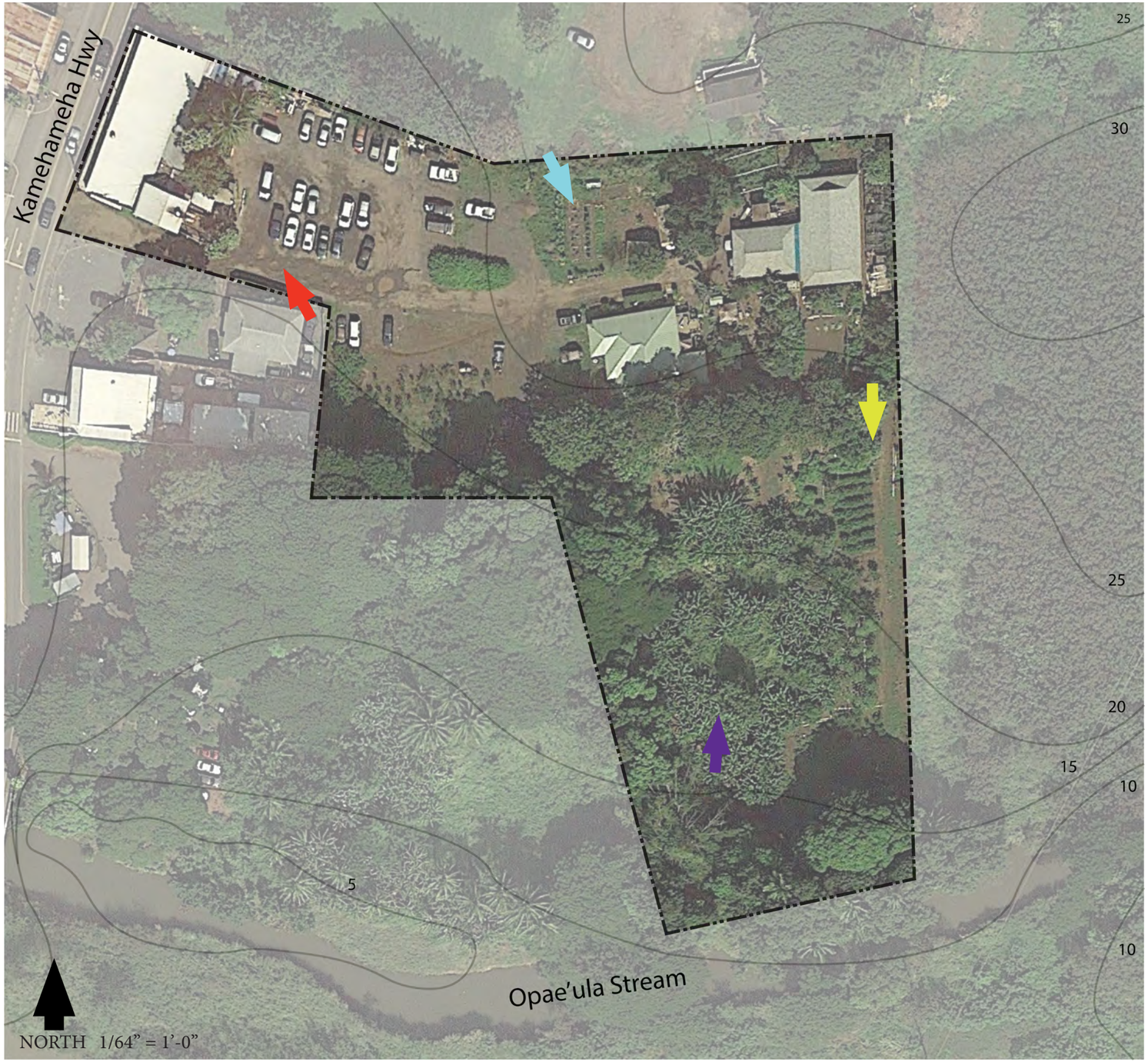
Hale‘iwa / Waialua



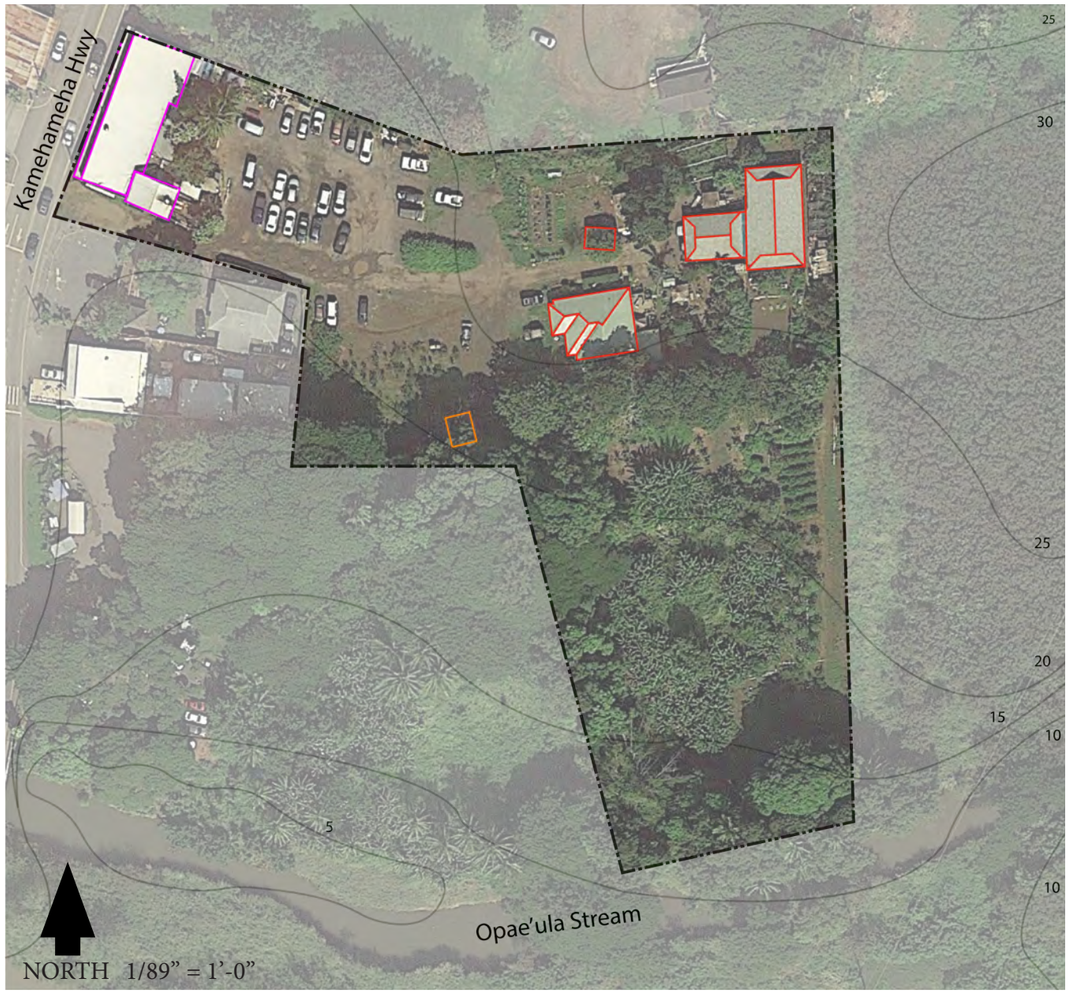
SITE CONTEXT

The Takahashi property is located in the heart of the Historic Hale‘iwa town a few miles from the once operating Waialua sugar mill, and the ocean. It lies in a prime location at the beginning of the downtown corridor and is adjacent to the main highway that connects to Honolulu and other towns on the island. The surrounding agricultural fields, owned primarily by large companies like Dole and Pioneer produce a variety of crops, most notably pineapple and seed corn. However, there are smaller locally owned farms producing crops like taro, asparagus, sweet potato, and fruits. Downtown Hale‘iwa is currently undergoing redevelopment in the business and residential sectors prompting the Takahashi family to make development visioning of their own. The ideas set forth in this project will aid in that visioning process for the family.

SITE


Kamehameha Hwy
25
30
25
20
15
10
5
10
Opae'ula Stream
NORTH 1/64" = 1'-0"

BUILDINGS & ZONING



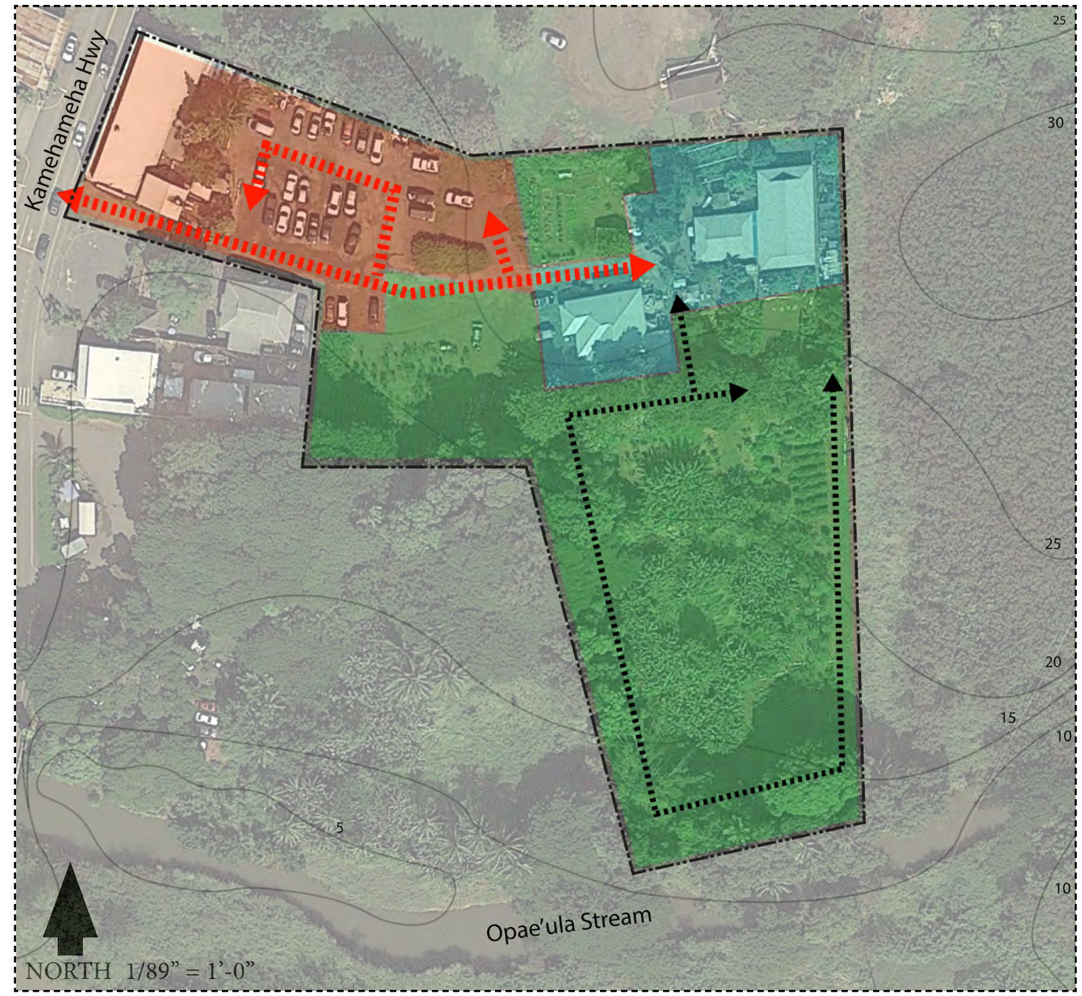
LEGEND

- Commercial
- Residental
- Historic

Zoned: R-5 (Residential)
Hale'iwa Special Districts
Size: 3.2 acres
Permitted Uses:

- Neighborhood Grocery Store
- Agriculture (conditional)
- Group Living Facilities (conditional)
- Meeting Facilities (conditional)
- Public Uses & Structures (conditional)
- Schools (conditional)

EXISTING USES / CIRCULATION

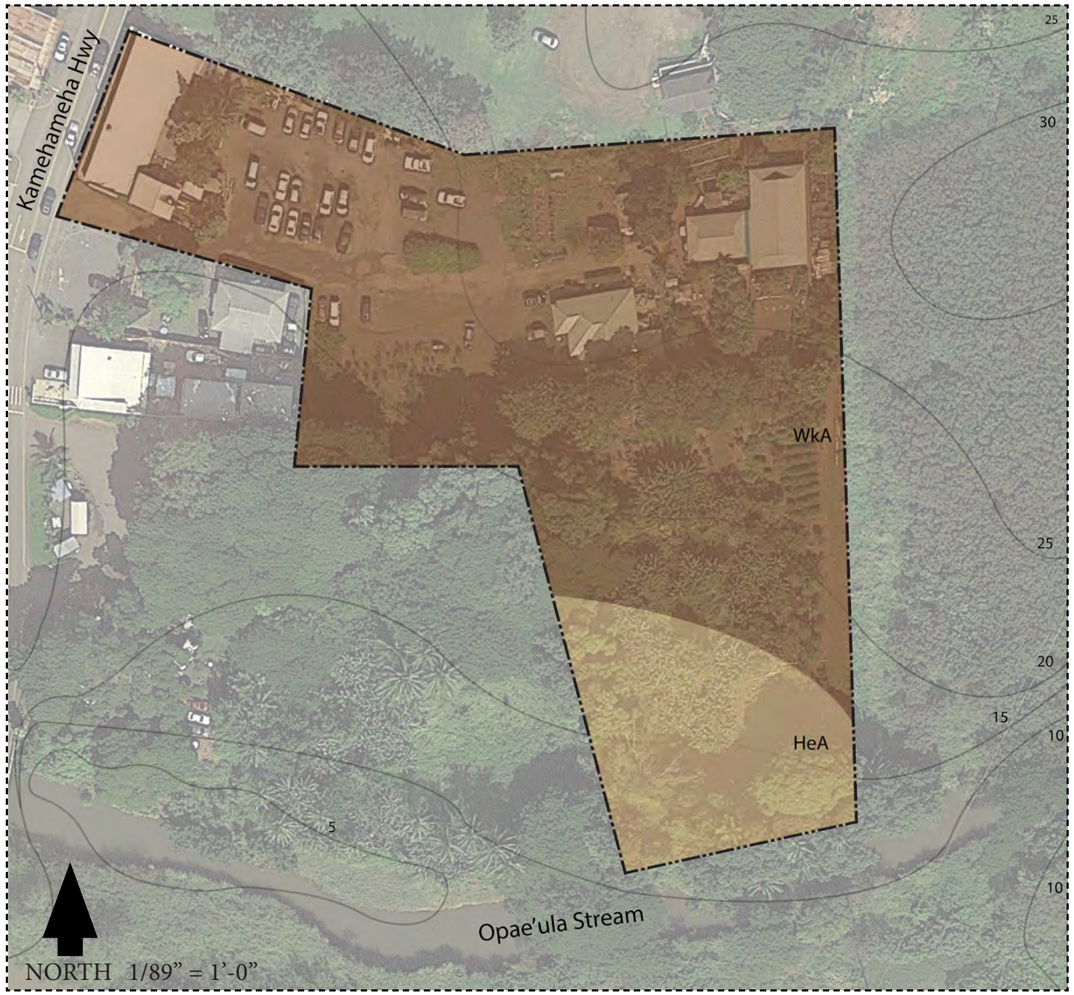


LEGEND

- Agriculture
- Residental
- Commercial
- Vehicular
- Pedestrian

Property has three major zones: Agricultural, Residential, and Commercial. With a simple pedestrian and vehicular circulation patterns. The main access comes off of Kamehameha Highway which is fronted by the commercial building. Which houses two businesses, a restaurant and clothing/ wine shop.

SOILS



LEGEND

- HeA
- WkA

HeA: Hale'iwa Silty Clay, 0 - 2% Slopes
26.1% of Property

WkA: Waialua Silty Clay, 0 - 3% Slopes
73.8% of Property

Farm Land Classification: Prime if Irrigated

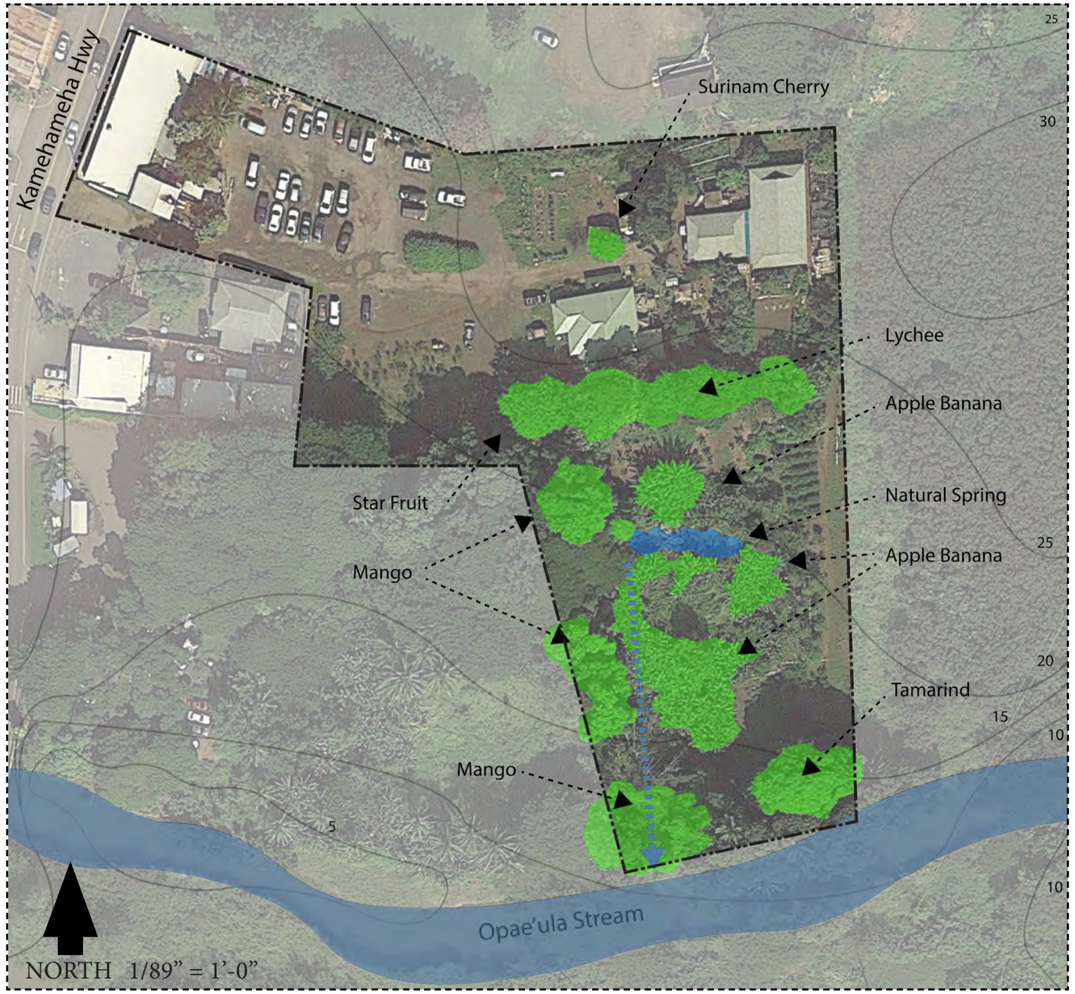
FLOOD ZONES

LEGEND

- 100yr
- 500yr

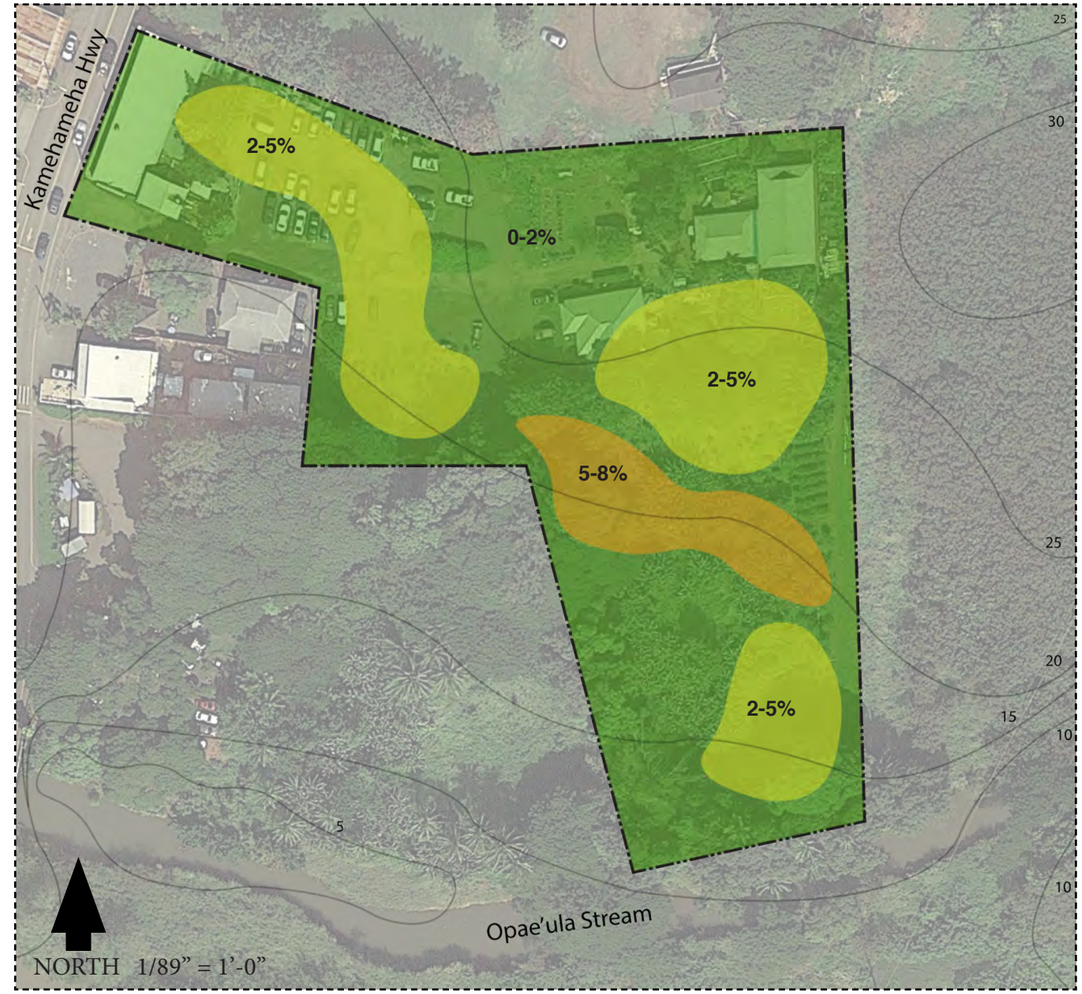
Majority of the property is within a flood zone. Any proposed building structure would be prohibited or would require extensive surveying and engineering work to be completed. And is within the extreme tsunami evacuation zone.

NATURAL FEATURES



Marked plants are important features to maintain as they represent well established and unique fruit trees on the property. The natural spring on the property is also a unique natural feature that needs to be restored and maintained.

SLOPE ANALYSIS

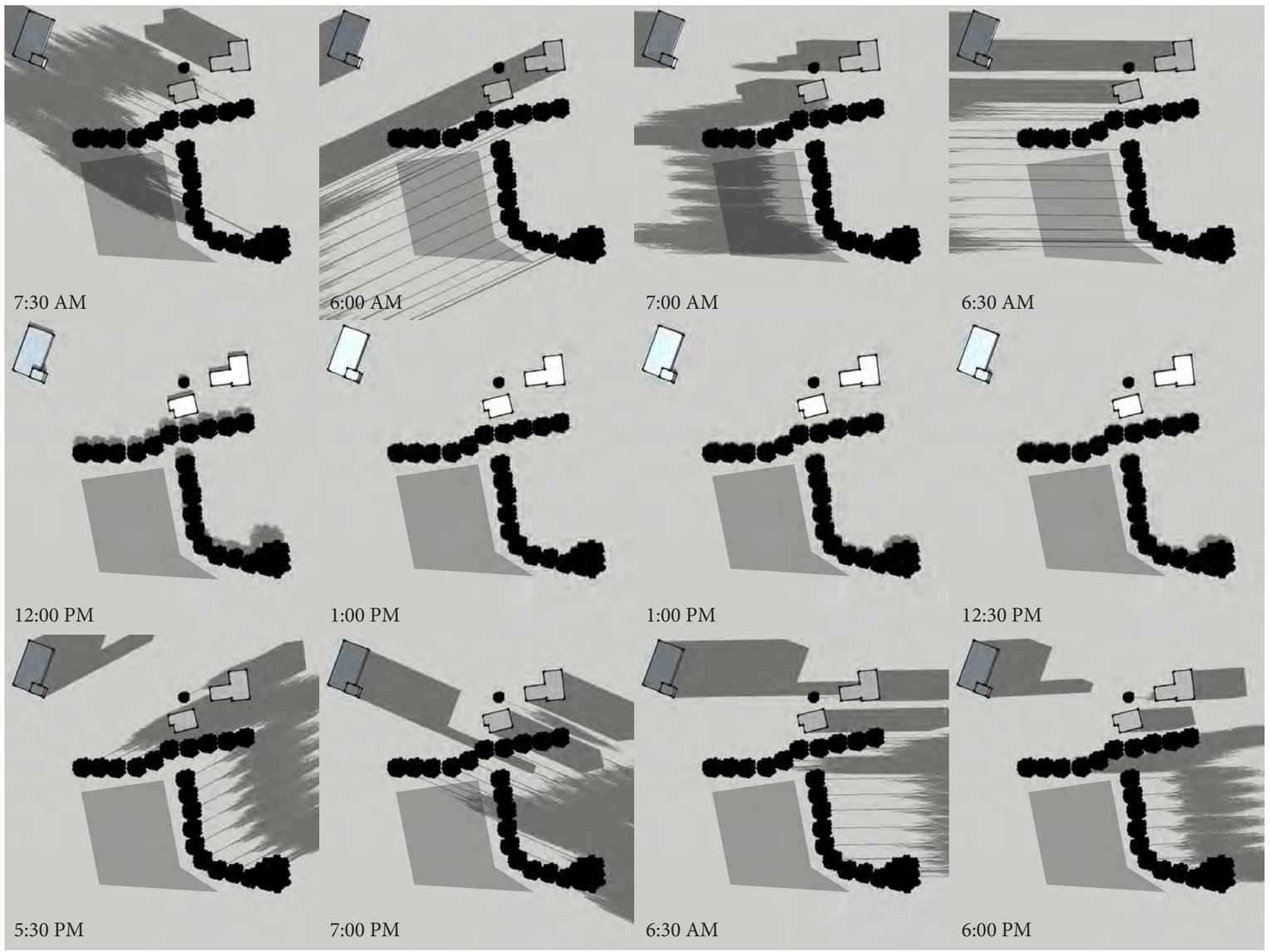


LEGEND

- 0-2%
- 2-5%
- 5-8%

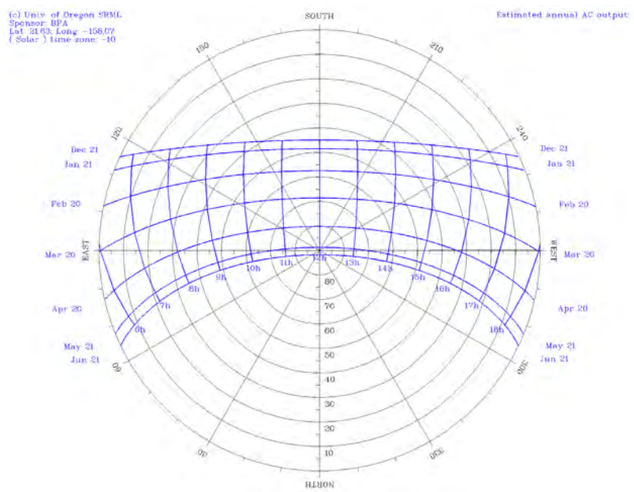
Majority of the site is within 0-2% slope with a few areas between 2-5%. The area leading down to and around the spring is between 5-8% and will need some mitigation work for easier access to the lower portion of the property.

SHADE / SUN DIAGRAM

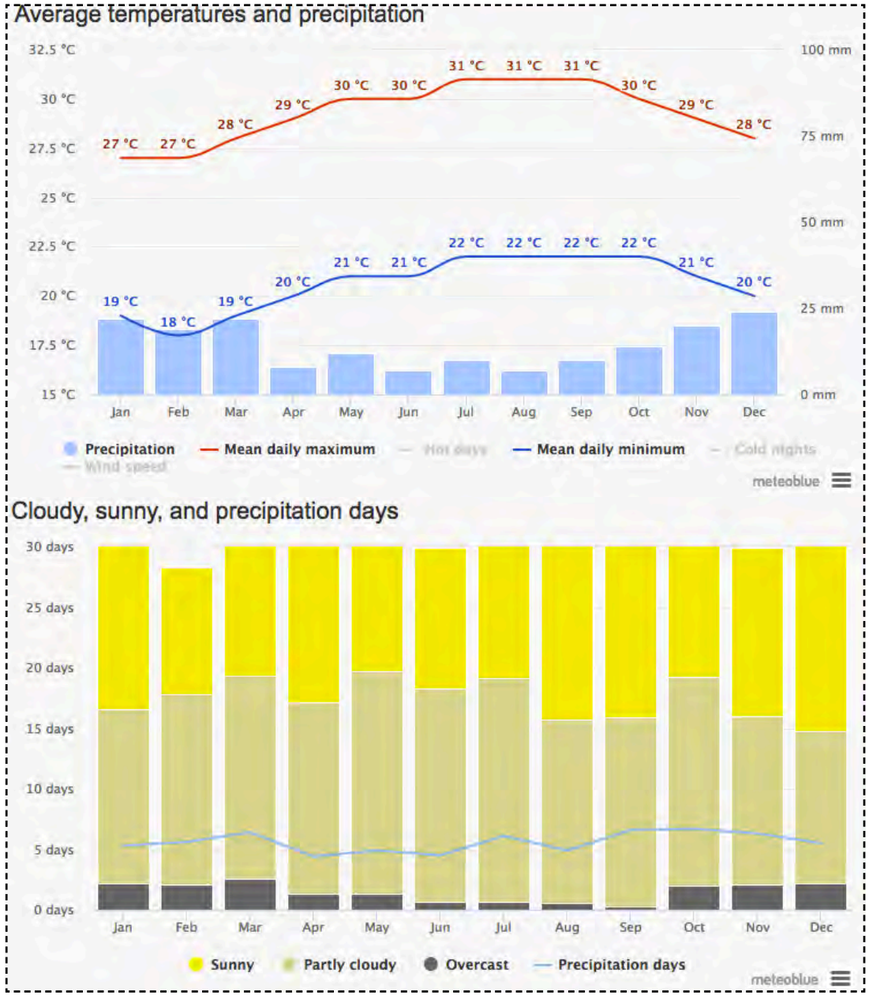


Dense Vegetation

Only the buildings and major tree lines on the property are shown in this model, indicating the separation between open and densely vegetated areas.
Shading patterns during the solstices and equinoxes indicate that there will be some opportunities to increase flexibility in planting choices as well as areas in need of further shading devices.



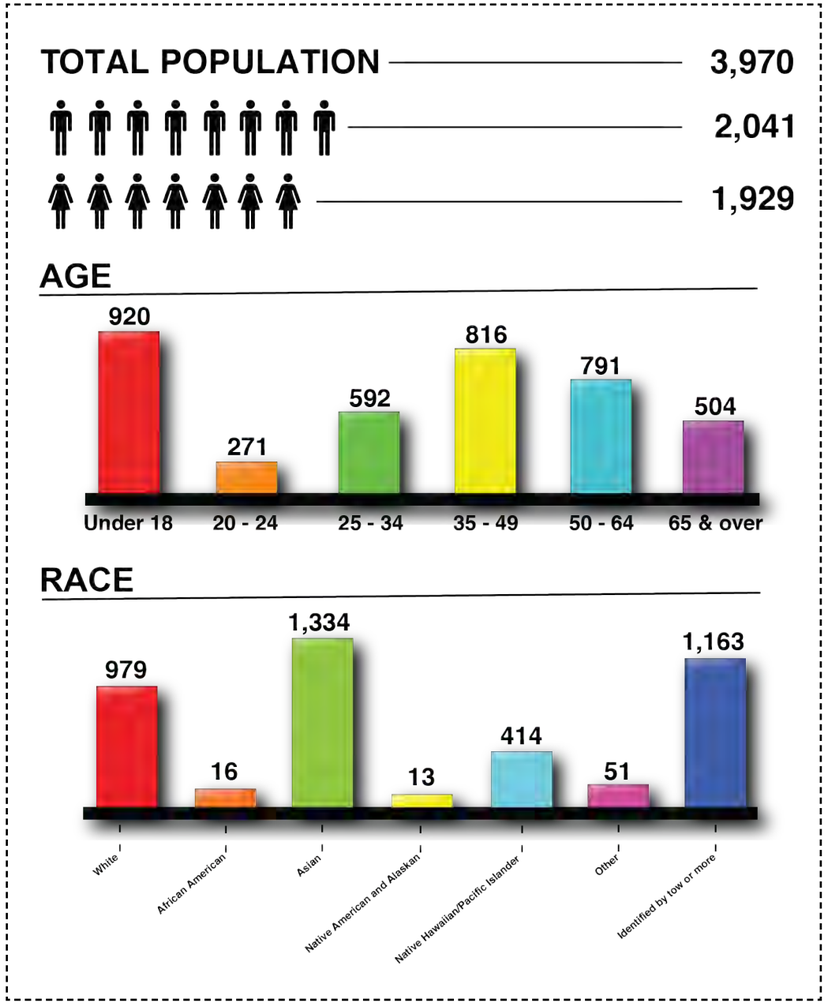
CLIMATE



Mean Annual Precipitation (converted): 25 -50”
Mean Annual Temperature (converted): 72 -75 *F

Precipitation is highest in the winter months.
Temperature is highest in summer months.
Sun availability is consistent throughout year.
Trade Winds generally from NE all year round.

DEMOGRAPHICS



According to the US Hale’iwa CDP Census data above, the Asian, Mixed, White, and Native Hawaiian racial groups are the most prevalent in Hale’iwa. And majority of the population ranges in age between 25-65. So focusing on those cultures would benefit this project the most.

ANALYSIS SUMMARY

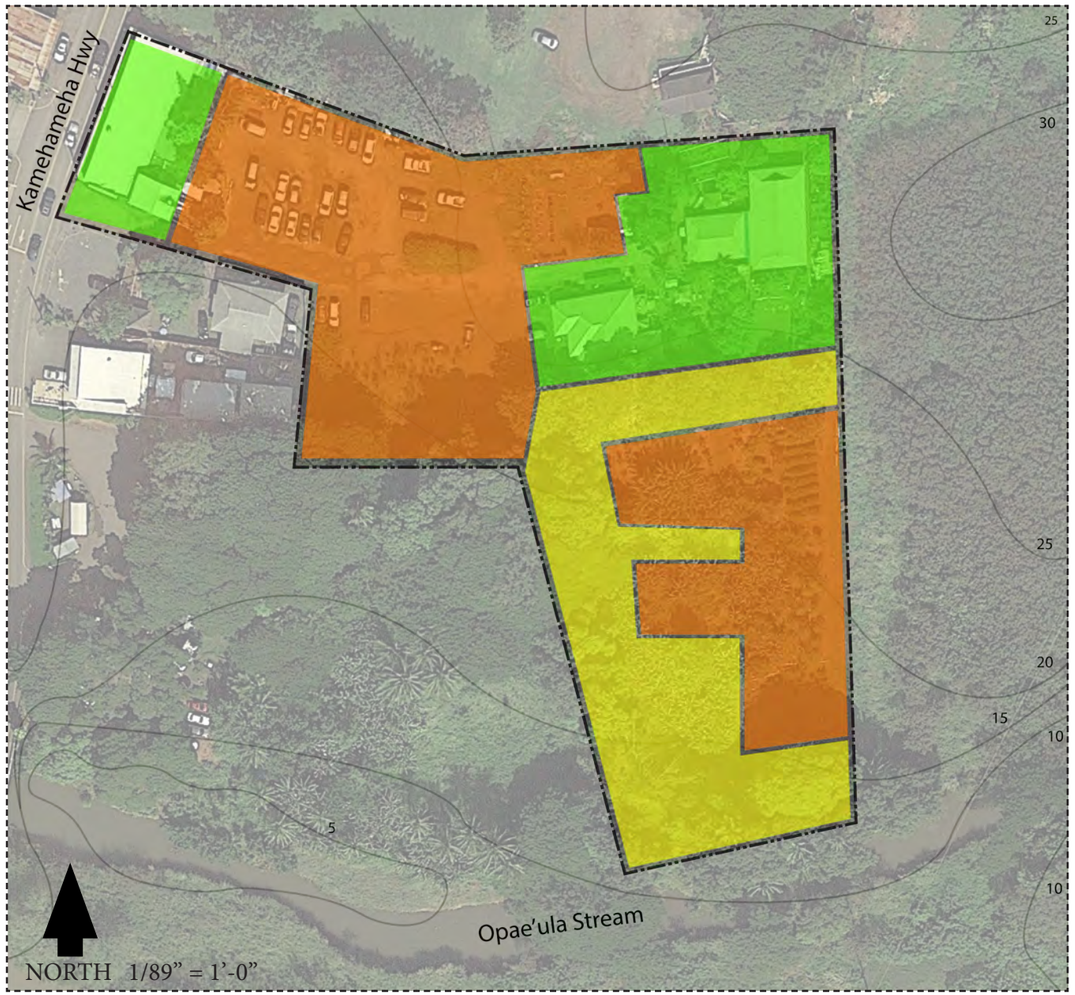
-The property is zoned R-5 and permitted uses are as follows:
- Neighborhood Grocery Store
- Agriculture (conditional)
- Group Living Facilities (conditional)
- Meeting Facilities (conditional)
- Public Uses & Structures (conditional)
- Schools (conditional)

-Property is within the Hale‘iwa Special Districts: Only commercial building would have restrictions regarding regulations
-Building Height Limit: 25 feet
-Property currently has three major use zones:
- Agricultural
- Business
- Residential

-Soils are prime for agricultural use if properly irrigated
-100 year and 500 year flood zones cover half of property restricting structure placement
-There are some specimen fruit trees that need to be kept
-Certain areas are densely vegetated providing opportunities and challenges
-Majority of the lower half of the property is gradually sloped, requiring some earth works
-Precipitation is highest in the winter months
-Temperature is highest in summer months
-Sun availability is consistent throughout year
-Focusing the project on Asian, Mixed, White, and Native Hawaiian individuals would be most beneficial according to the demographics

DESIGN DEVELOPMENT

REDEVELOPMENT ZONES

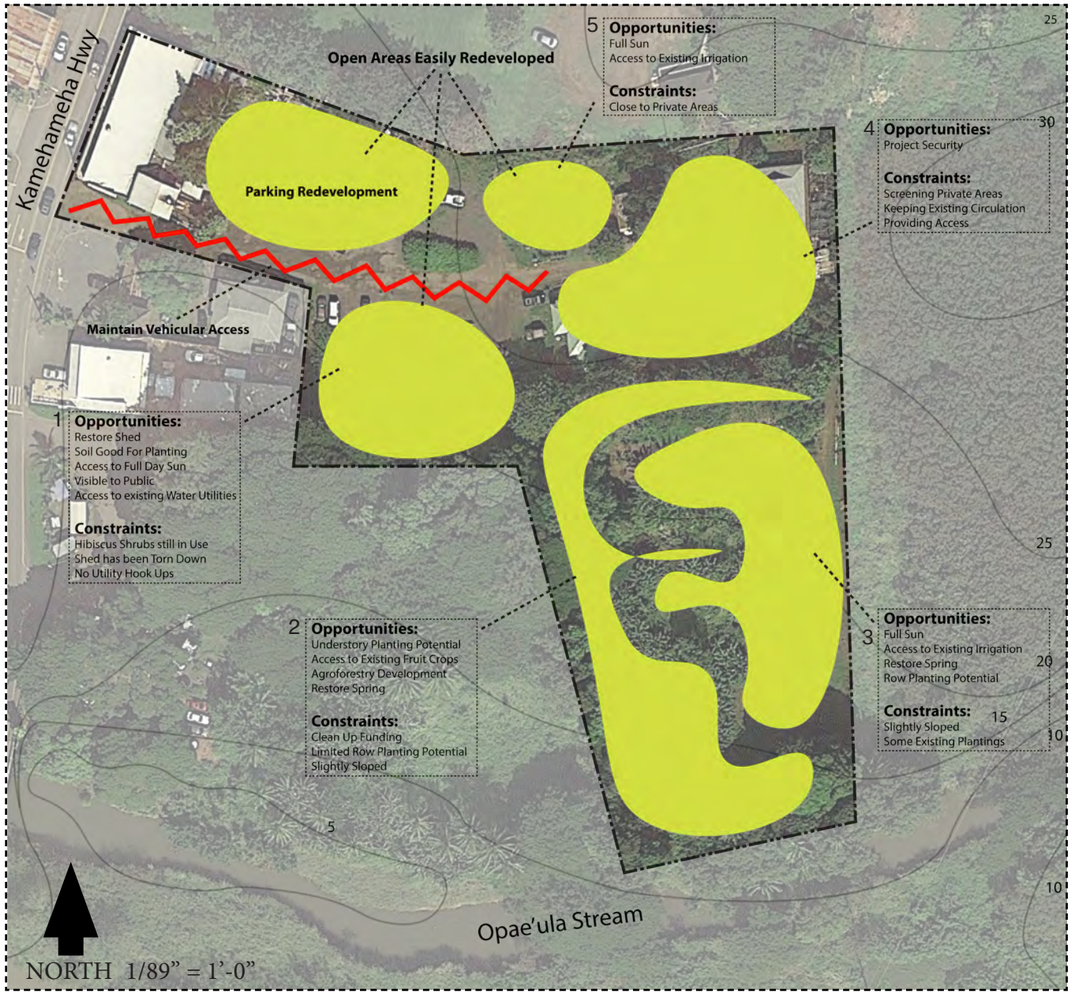


LEGEND

- Develop
- Restoration
- Private

The site, in preparation for design development has been broken down into three focus areas. The first, or "Development" zones depicted in orange, are where most of the design work will focus. These areas have been chosen because they are open, visible to the public, do not contain established specimen plantings, and are viable agricultural zones. The second, or "Restoration" area has been designated as such because of the dense tree and specimen plant concentrations as well as the occurrence of a natural spring. Appropriate action to take in this are would be to restore and develop appropriate under-story and wetland agricultural plantings. Finally, the "Private" areas consists of the commercial and residential buildings. These areas will not be subject to direct design interventions other than incorporation in regards to the commercial building, and screening in terms of the residential area.

OPPORTUNITIES & CONSTRAINTS



LEGEND

Development Areas

Zones 1, 2, 3, and 5 provide great opportunities to incorporate a wide range of agricultural crop plantings. Ranging in light requirements from full shade to full sun. Irrigation is established in zones 1, 3, and 5 with only minor adjustments needing to be made. However temperature and climate is consistent throughout the site which will some what limit plant choices. The slight sloping in zones 2 and 3 will provide opportunities to create varied and interesting path work but will require some grading to be implemented. Zones 4, 5, and the parking area provide flat and open areas to work with. Providing opportunities to create structures and other designed features. However, maintaining vehicular access and the privacy of zone 4 will be the major design challenges.

PROJECT SCOPE

OVERVIEW

This project will take a non-traditional approach to the concept of a learning garden and will adopt a agricultural tourism business model which will incorporate the commercial building on the property. It's main focus will be centered around a for profit bed and breakfast type establishment where people will come to stay on the property, participate in harvesting seasonal fruits and vegetables for meals prepared at 'Cafe Hale'iwa', a restaurant located in the family's commercial building. Portion of the income generated from that endeavor will then be used to establish connections with the general public and schools to provide educational programs relating to sustainable agriculture, food, culture, history of Hale'iwa, and business/marketing. The overall design will take inspiration from Native Hawaiian traditional agricultural practes in that the selected plants will all have meaning to the cultures in which it originates as well as planted and harvested in traditional ways to the extent that the site allows. Nothing will be forced to grow nor will and strict planting material be selected. The intent being that just as the culture in Hawai'i evolved as people intermixed so shall the plants.

BUSINESS PROGRAMS

- -Farm Property Stay Package
  - -Rustic Yurt accommodations
  - -Farm Food Harvest for Meals
- -Partnership With Cafe Hale'iwa
  - -Farm Food Harvest Meal Preparation
- -Produce Harvest Sale in Building

EDUCATIONAL PROGRAMS

- -Grades K-12 Sustainable Agriculture and Cultural Education
- -Grades 9-12 Business and Marketing Development Education
- -Community Sharing Harvest Days
- -Community Cultural Cooking Demonstration Days
  - -Hosted by Local Residents
- -Weekly Open Educational Tours of the Farm
- -Cooking Classes
- -Health & Wellbeing Classes

SITE PROGRAM

A. Main Gathering Area

1. Facility Types
    - a. Housing/Program Yurts
        - i. 1356 SF @ 3
    - b. Restroom/Shower Facility
        - i. 96 SF @ 1
    - c. Food Preparation
        - i. 200 SF @ 1
    - d. Gathering/Program Area
        - i. 300 SF @ 1
2. Total Area
3. Performance Criteria
    - a. Access to Parking
    - b. Semi-Private
    - c. Minimal Foundation
4. Activities
    - a. Educational Programs/Classes
    - b. Semi-Private
    - c. Minimal Foundation
5. Users
    - a. Students
    - b. Tourists
    - c. Community Members
    - d. Educators
    - e. Visitors
    - f. Employees
6. Season/Time of Day
    - a. All Year

B. Agroforestry Area

1. Facility Types
    - a. Outdoor Rest Area (Seating)
        - i. 24 SF @ 2
    - b. Restroom
        - i. 16 SF @ 1
2. Total Area
3. Performance Criteria
    - a. Part of Existing Densely Vegetated Area
    - b. Semi-Formal Planting Scheme
    - c. Semi-Formal Paths
4. Activities
    - a. Plant Forage (Fruit, Medicinal)
    - b. Contemplative Walking/ Meandering
    - c. Resting
5. Users
    - a. Students
    - b. Tourists
    - c. Community Members
    - d. Educators
    - e. Visitors
    - f. Employees
6. Season/Time of Day
    - a. All Year

C. Row Crop/ Terrace Planted Area

1. Facility Types
    - a. Planting Beds
        - i. 1536 SF @ 32
    - b. Shade House
        - i. 153 SF @ 1
    - c. Storage Shed
        - i. 36 SF @ 1
2. Total Area
3. Performance Criteria
    - a. Adjacent to Agroforestry Area for Compost Material
    - b. Easy Access to Water Utilities
    - c. Pedestrian Accessability

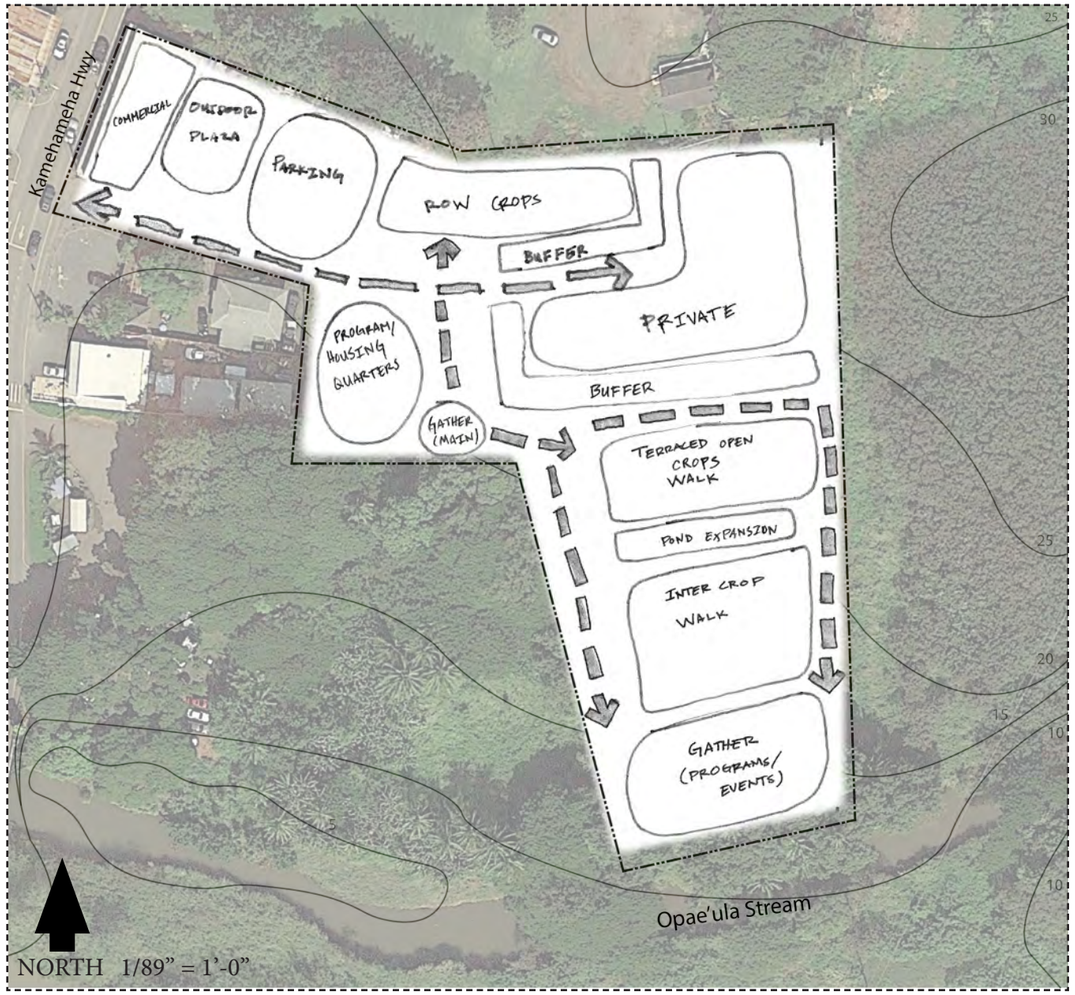
C. Row Crop/ Terrace Planted Area (Cont.)

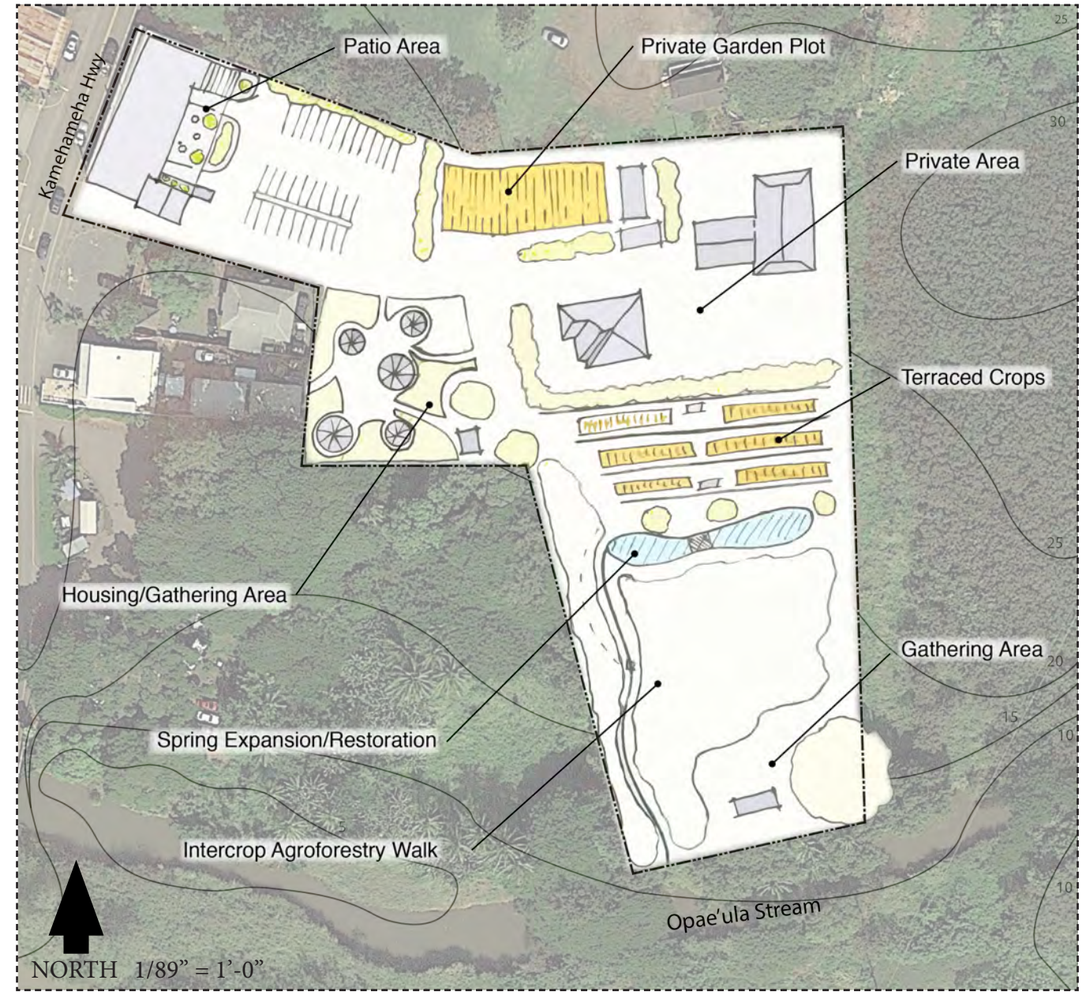
4. Activities
    - a. Row Cropping Vegetables
    - b. Educational Activities
    - c. Meandering
5. Users
    - a. Students
    - b. Community Members
    - c. Visitors
    - d. Employees
    - e. Tourists
6. Season/Time of Day
    - a. All Year

D. Secondary Gathering Area

1. Facility Types
    - a. Gathering/Program Area
        - i. 300 SF @ 1
2. Total Area
3. Performance Criteria
    - a. Located in a Semi-Private Area
    - b. Located in a Semi-Open Area
4. Activities
    - a. Educational Activities
    - b. Events
5. Users
    - a. Students
    - b. Community Members
    - c. Visitors
    - d. Tourists
    - e. Employees
6. Season/Time of Day
    - a. All Year

CONCEPT DIAGRAM/ SKETCH 1





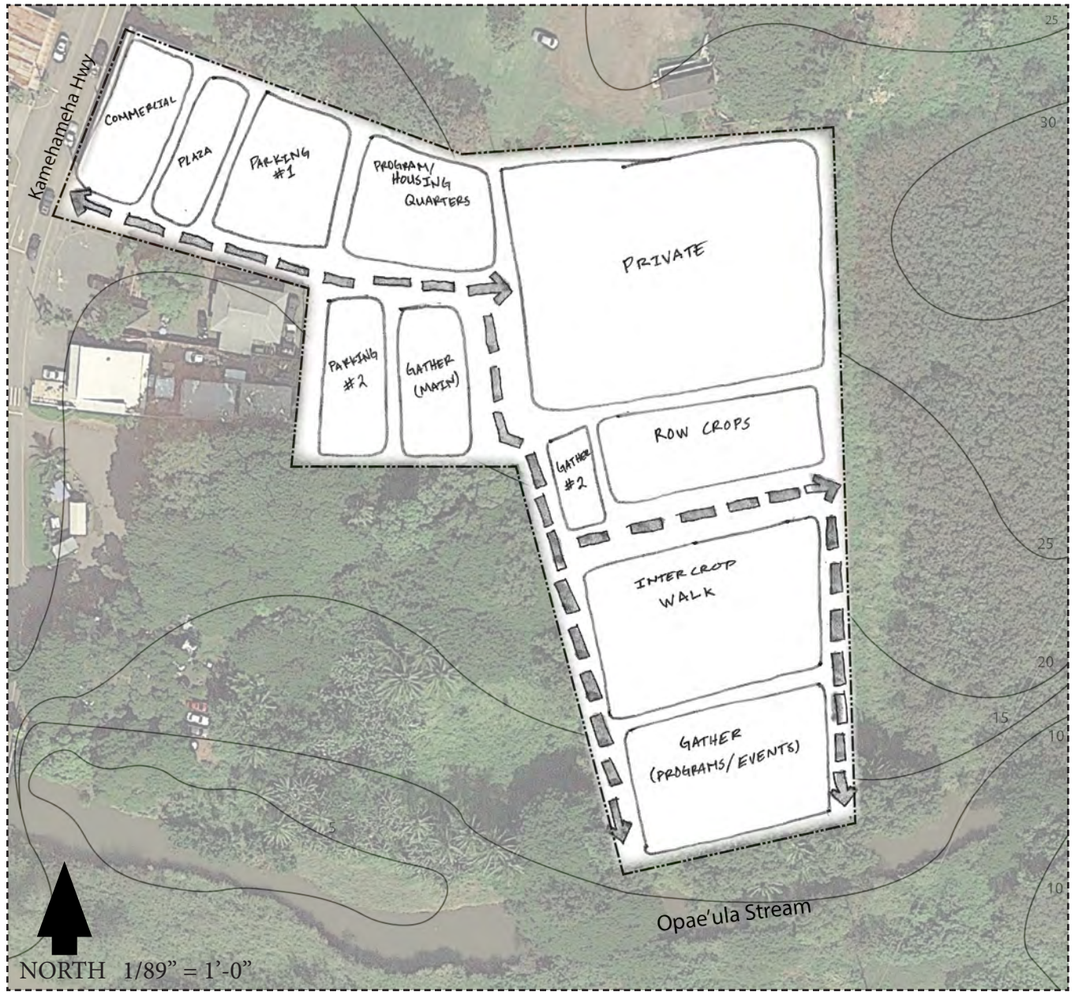
PROS:

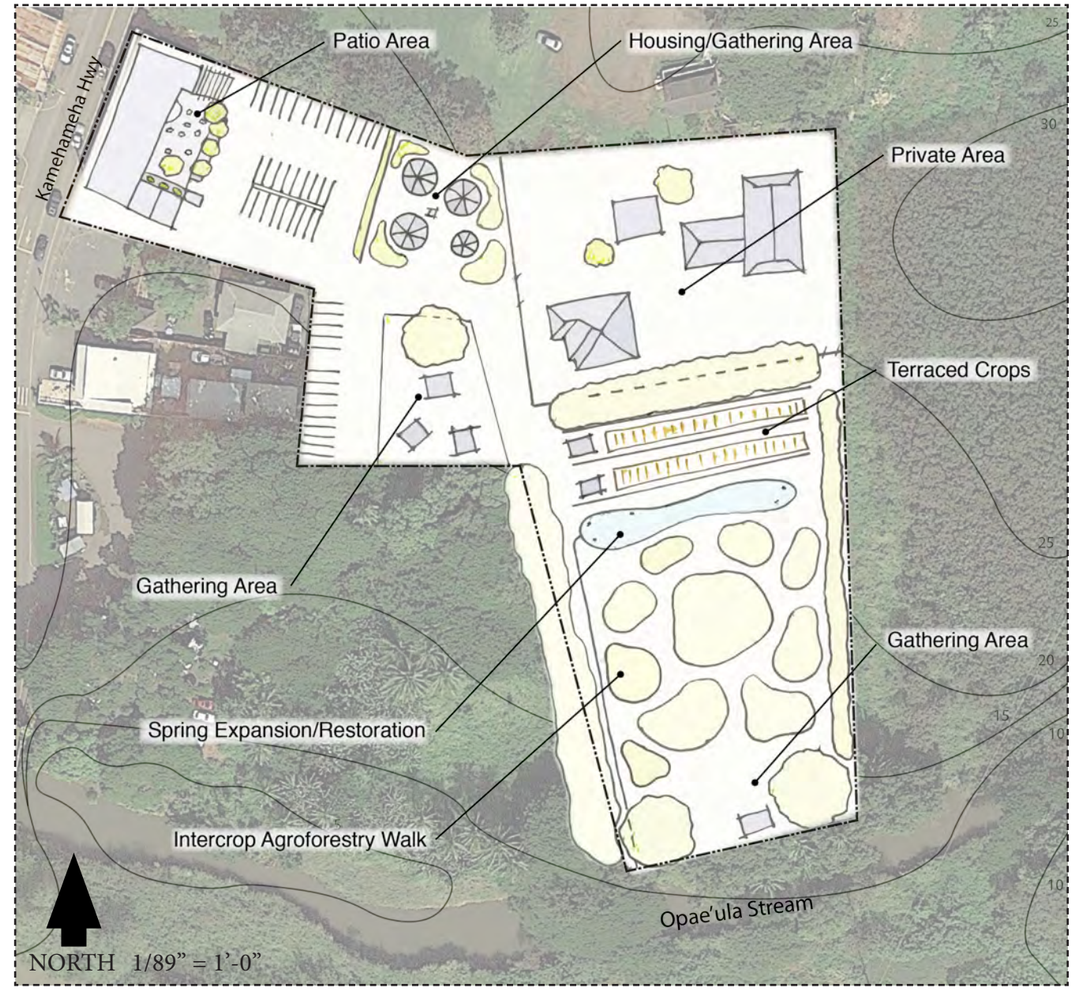
- -Expanded Private Area Row Crop Area
- -Housing Area is Easily Developed
- -Spaces Relate To Each Other
- -Circulation Path is Simple
- -Curving Path of Spring Out-Flow

CONS:

- -Row Crops on Terrace Potentially Inhibit Circulation
- -Private Row Crop Area May Take Up too Much Space
- -Planting Buffering Private Area May Be o Dense

CONCEPT DIAGRAM/ SKETCH 2





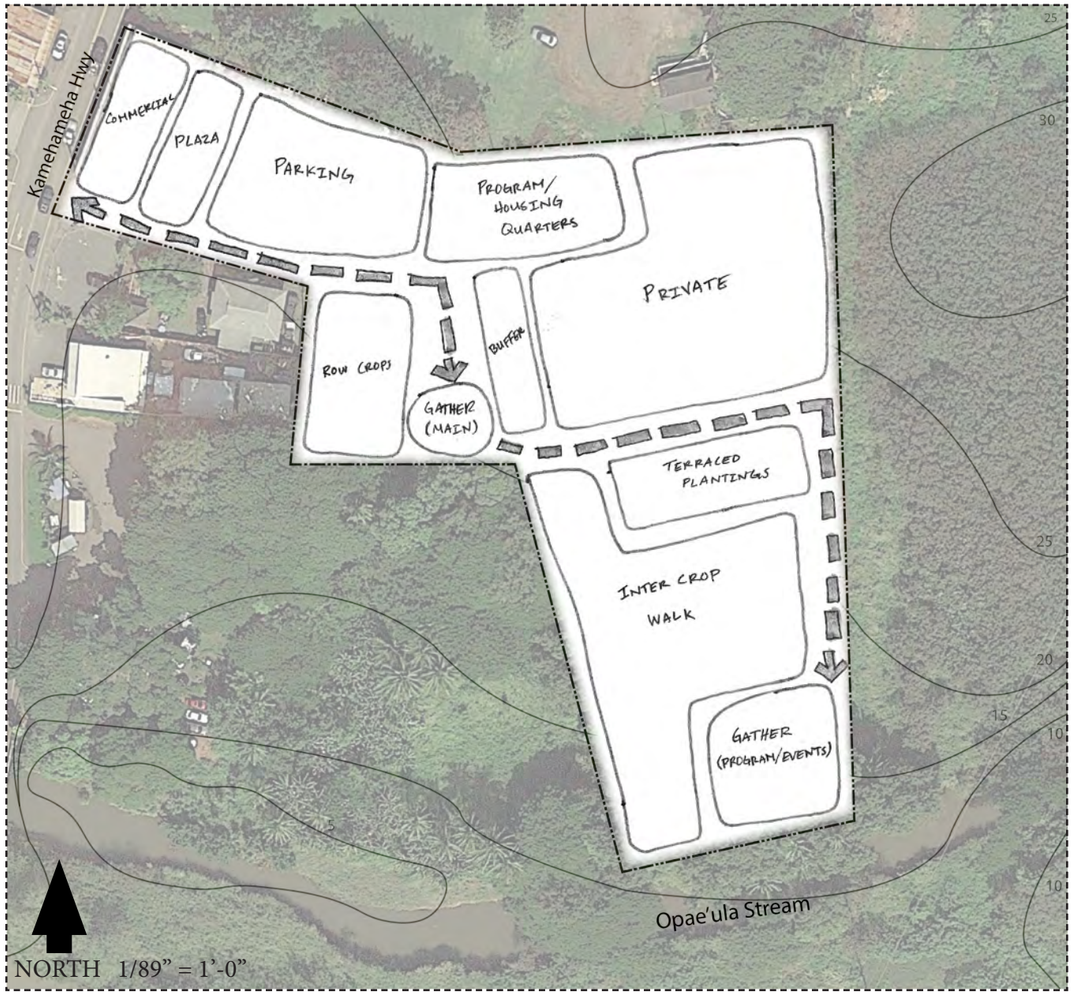
PROS:

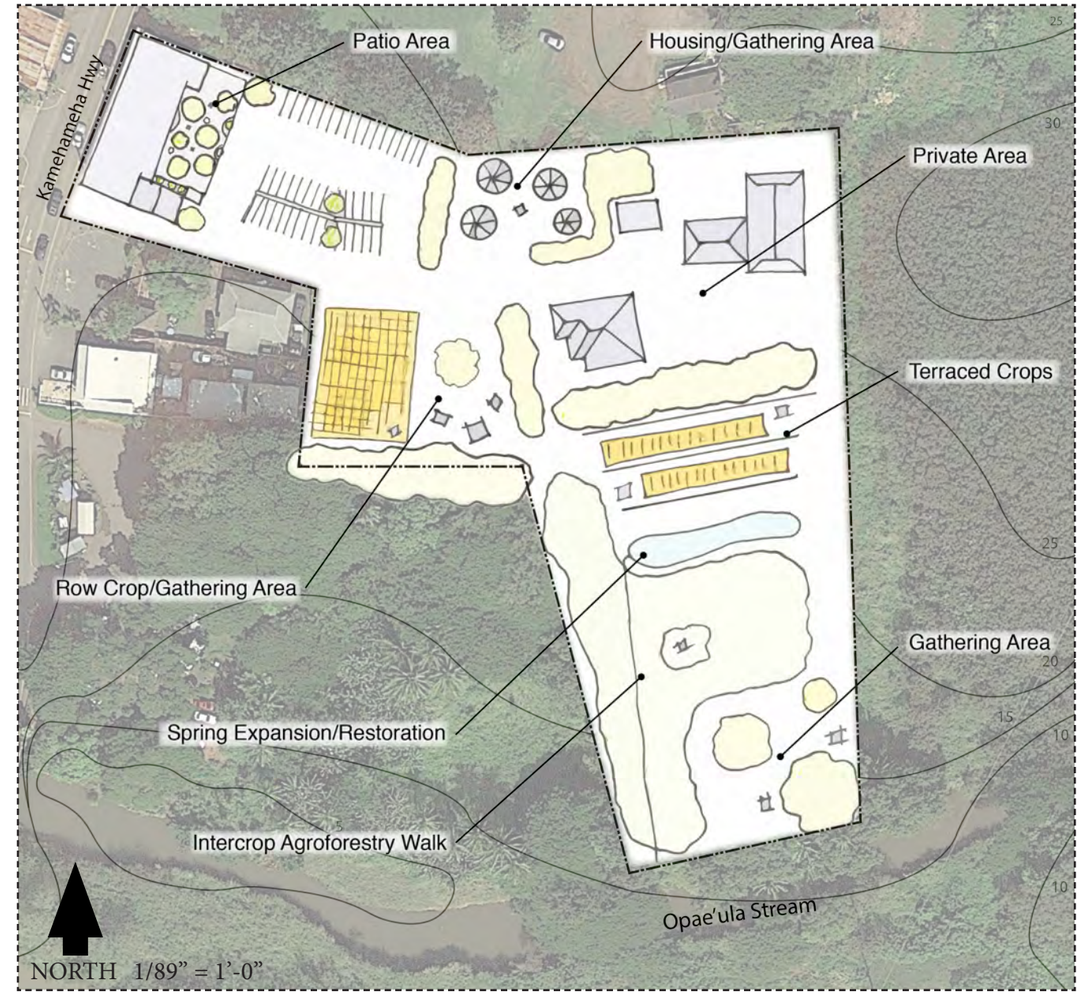
- -Circulation Path is Diverse
- -Main Gathering Are is Visible to Public
- -Housing Area is out of Flood Zone
- -Additional Parking Near Main Gathering Area
- - Larger Agroforestry Area Provides Variety in Circulation
- -Fence Clearly Defines Private Area

CONS:

- -Housing Area may be too Close to Public Area
- -Terraced Crop Area May Inhibit Circulation
- -Limited Row Cropping Areas may Limit Gardening Venture
- -Fence may be an Eye Sore
- -Agroforestry Area may be too Large

CONCEPT DIAGRAM/ SKETCH 3





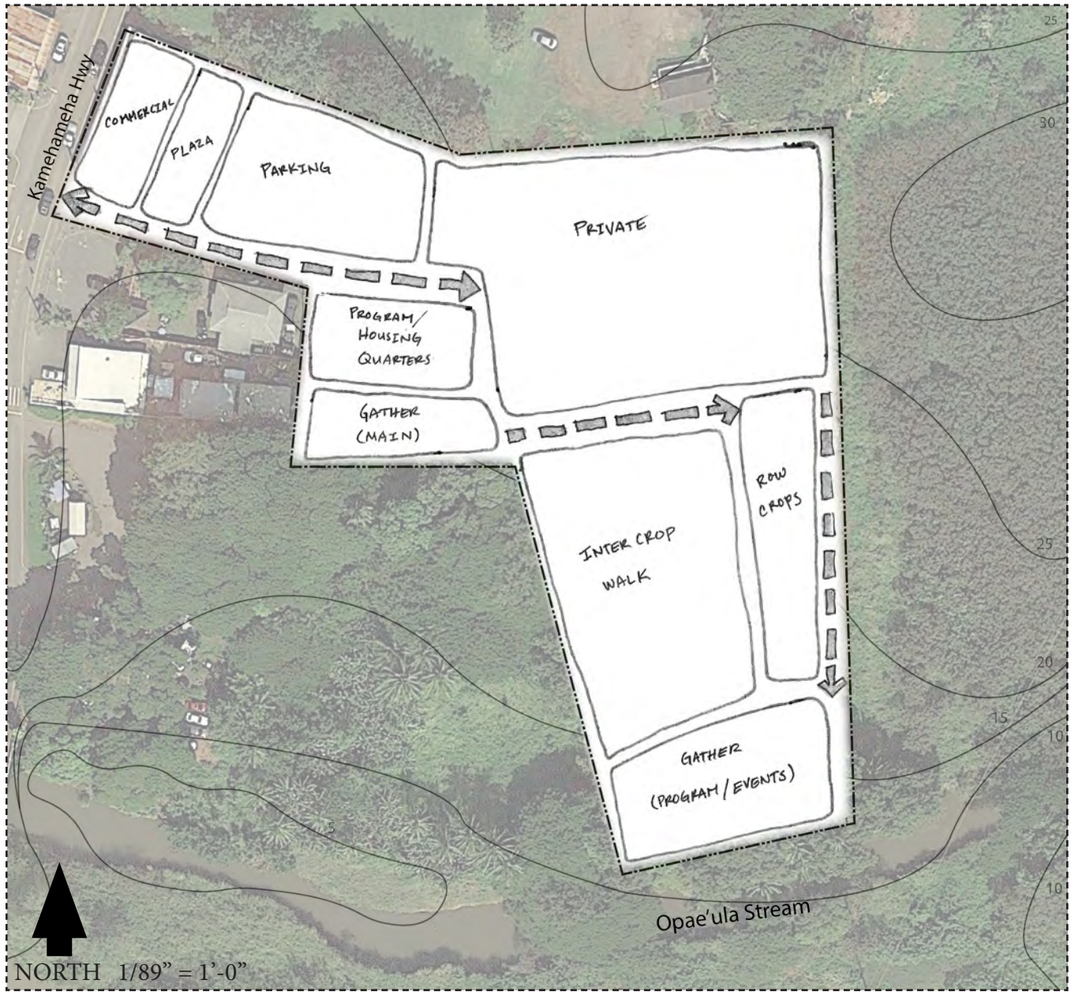
PROS:

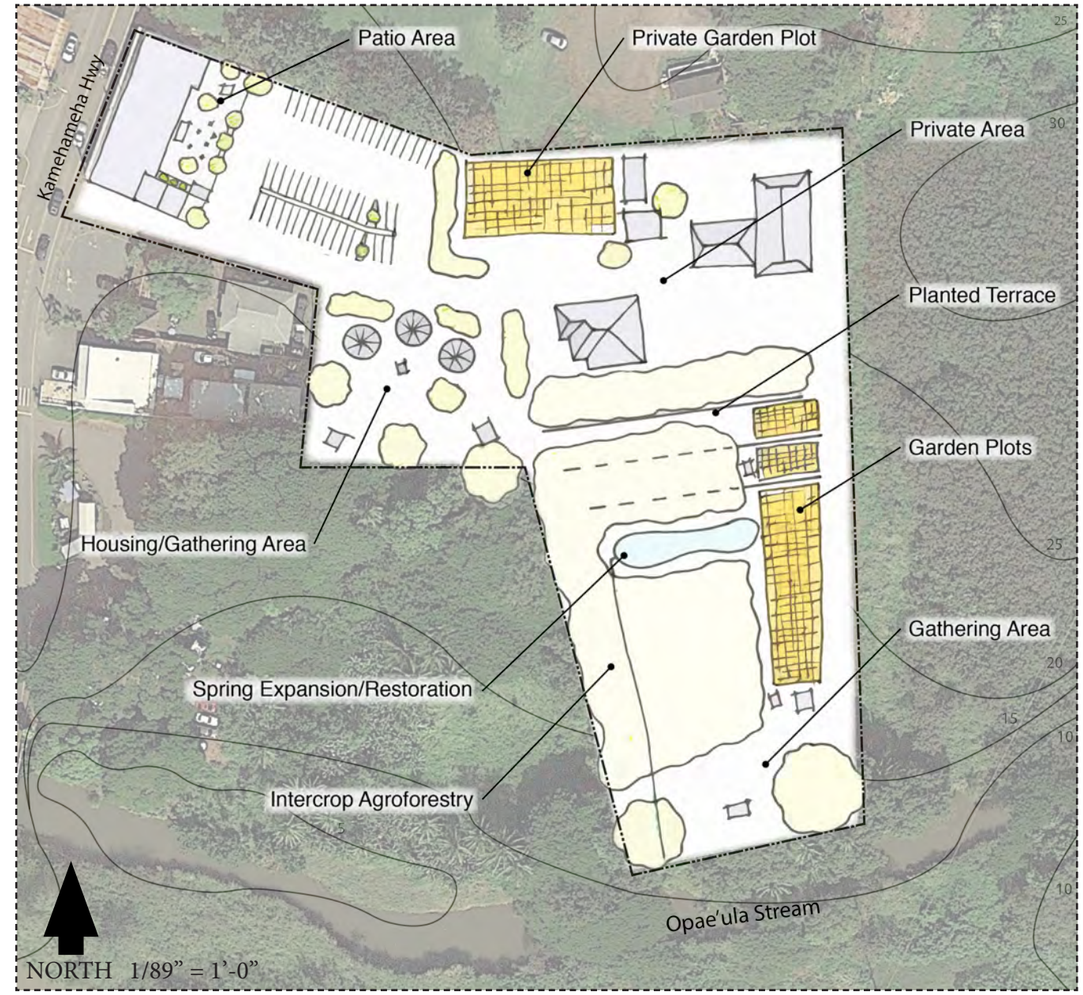
- -Housing Area is Out of Flood Zone
- -Circulation Path is Simple
- -Inter-Crop Area Can be Developed from Existing Plantings
- -Row Crop Area is Easily Visible to Public

CONS:

- -Terraced Crop Area May Inhibit Circulation
- -Planting Buffering Private Area May not be Dense Enough
- -Row Crop Area may be Subject to Theivery
- -Housing Area may be too Close to Private Area
- -Housing Area may take up too Much Potential Parking
- -Housing Area may be too Close to Public Spaces

CONCEPT DIAGRAM/ SKETCH 4





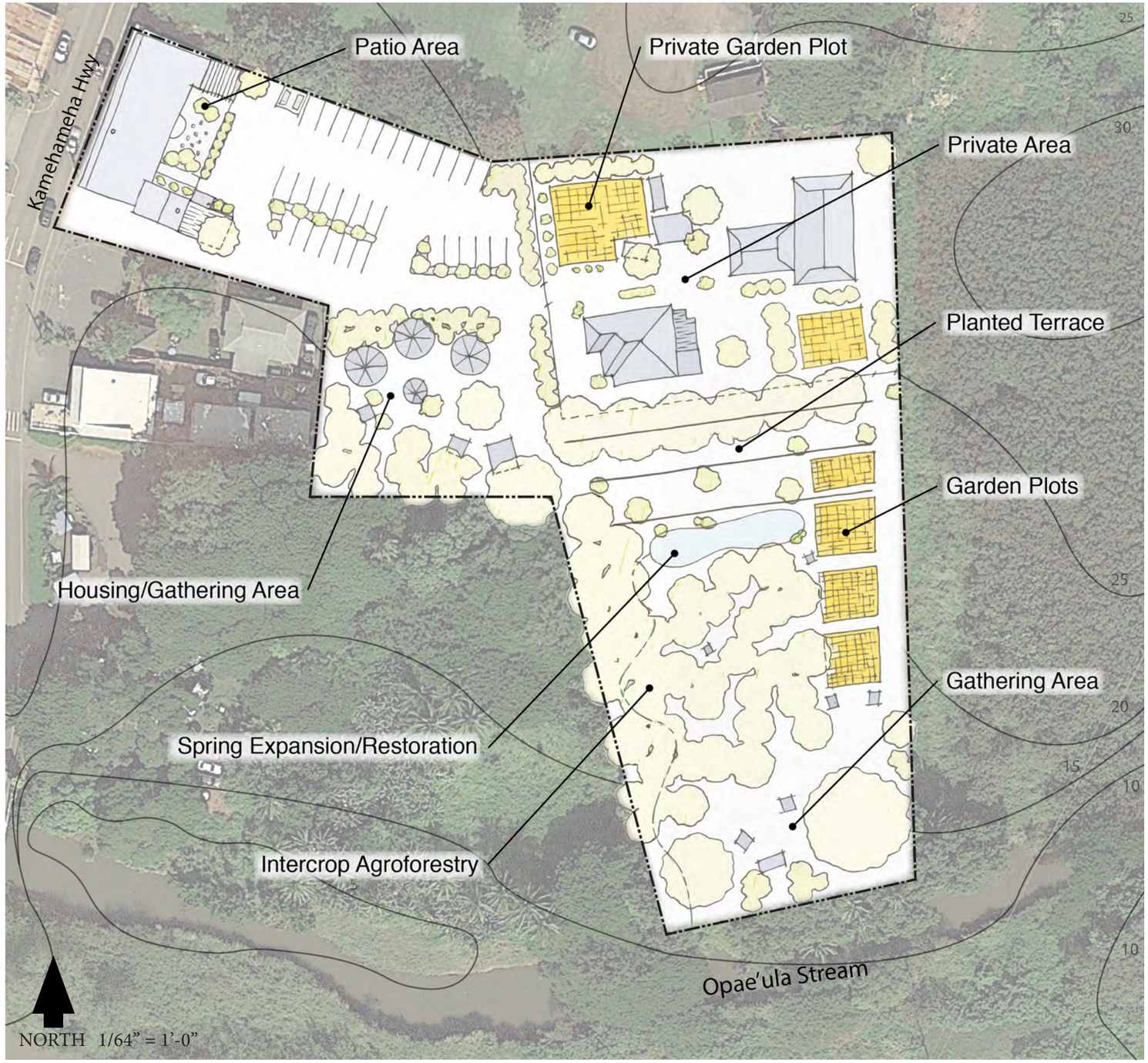
PROS:

- -Private Area Little More Bufferd by Buffere Housing Area
- -Garden Plots Have Access to a Utility Path
- -Housing Area is Easily Developed on Open Plot
- -Pairing Housing and Main Gathering Area
- -Spaces Relate More Cohesively (Public/Private)
- -Consolidation of Space Usage

CONS:

- -Private Area May be too Large with Expanded Garden Plot
- -Plantings Buffering Private Area May not be Sufficient
- - Housing Area may need to be More Private

FINAL CONCEPT DEVELOPMENT



ELEMENTS INCORPORATED:

- -Fenced Private Area
- -Housing/ Gathering Area Consolidation
- -Curving Stream Out-Flow
- -Garden Plots on Right Side of Property
- -Planted Terraces

OUTCOMES:

- -Greater Security for Private and Program Areas
- -Cohesive Space Usage with Crop and Forrage Areas
- -Increase Crop Security
- -Transition from Public to Private Spaces
- -Multiple Circulation Paths
  - -Handicap Accessable
- -Variety of Agricultural Activities Possible
  - -Increased Planting Variety Potential

PRELIMINARY ILLUSTRATIVE PLAN

PROGRAM REVIEW:

-Housing/Program Facilities	1557	SF
-Agriculture Row Crops	1536	SF
-Forrage Areas	27077	SF
-Parking	4770	SF
-Gathering/Education Areas	600	SF
-Support Facilities		
Agriculture	189	SF
Restrooms	160	SF

COMPONENTS:

1: Housing/ Main Gathering Area
2: Kuaiwi Inspired Terrace
3: Agroforestry Crops
4: Program Gathering Area
5: Natural Spring
6: Row Crops
7: Private Residences
8: Parking
9: Commercial Building

FINAL DESIGN

PLANT & BUILDING MATERIALS

48:

Uala (*Ipomoea batatas*)
Sweet potato grown by the Native Hawaiians.

49:

Ginger (*Zingiber sp.*)
Different varieties providing food, flowers, and medicinal properties.

50:

Awa/ Kava (*Piper methysticum*)
Root of the plant is dried and used to brew a tea that is used in ceremonies and recreational purposes.

51:

Ko/ Sugar Cane (*Saccharum officinarum*)
Juice from the stalk is used to produce granular cane sugar.

52:

Kalo/ Taro (*Colocasia esculenta*)
Starchy corm used to make the Native Hawaiian staple food called Poi.

53:

Mango (*Mangifera sp.*)
A sweet stone fruit with many varieties, each with a similar but different taste, and a favorite in Hawaii.

54:

Lychee (*Litchi chinensis*)
A fruit with a distinct sweet flavor and another favorite treat in Hawaii.

55:

Star Fruit (*Averrhoa carambola*)
A waxy fruit that grown on a very attractive tree and rare to see in Hawaii in current times.

56:

Surinam Cherry (*Eugenia uniflora*)
A tart fruit with a variety of colors depending on ripeness. Dark red being very ripe and green, not at all.

57:

Tamarind (*Tamarindus indica*)
A leguminous tree with a variety of uses. It has an edible been pod, used for medicinal purposes, and has beautiful wood used by wood workers.

58:

Banana (*Musa sp.*)
An herbaceous flowering plant that produces a fruit

59:

Ulu/ Bread Fruit (*Artocarpus altilis*)
A starchy fruit used as a staple in many South Pacific islands.

60:

Jabuticaba (*Plinia cauliflora*)
A fruit native to South America that uniquely grows on the small trees trunk. And is used in jams, jellies, alcoholic beverages, and for medicinal purposes.

61:

Cacao (*Theobroma cacao*)
A tree native to Central and South America with a deep history for many cultures. Its fruit is traditionally made into a beverage with medicinal properties but is most noted for the chocolate that is produced.

62:

Citrus Trees (*Citrus sp.*)
A tree producing sweet and sour fruit that is grown if favorable conditions all over the world.

PLANT & BUILDING MATERIALS (CONT.)

63:

Vanilla Orchid (*Vanilla planifolia*)
An orchid native to Mexico and Central America that produces beans with the 'vanilla' flavor known around the world. Flowers must be hand pollinated in most places for lack of appropriate pollinators.

64:

Lavender (*Lavandula angustifolia*)
And aromatic shrub cultivated for its aromatic and medicinal properties.

65:

Tea (*Camelia sinensis*)
A small shrub native to East Asia known for it medicinal properties. Chinese varieties produce Oolong and Black teas that are shipped around the world.

66:

Pepper (*Capsicum sp.*)
A shrub producing hot fruit that is used by many cultures in their cuisine.

67:

Lemon Grass (*Cymbopogon citratus*)
A grass commonly found in Asia, Africa, Australia, and many Pacific Islands with a distinct citrus smell and taste that is used as a culinary herb.

68:

Wonbok (*Brassica rapa subsp. pekinensis*)
A brassica used in many asian dishes like Kimchi.

69:

Mizuna (*Brassica juncea var. japonica*)
A green similar to arugula that is used in salads and a traditional Japanese new year dish called zoni.

70:

Bitter melon (*Momordica charantia*)
A gourd vegetable with an odd bumpy skin and distinctly bitter taste. It has medicinal as well as culinary uses.

71:

Vegetables
A variety of vegetables from tomatoes to squashes and salad greens.

72:

Chayote (*Sechium edule*)
A gourd native to Meso America that has culinary uses ranging from soups to pies. Its fruit and young shoots are edible.

73:

Kiawe Wood (*Prosopis pallida*)
A hardwood used in Hawai'i from cooking to decorative applications.

74:

Yurt
Fabric yurts that will be outfitted to Hawaii's tropical climate.

75:

Kuaiwi
Volcanic rock used by Hawaiians in construction of altars, planting beds, and retaining walls.

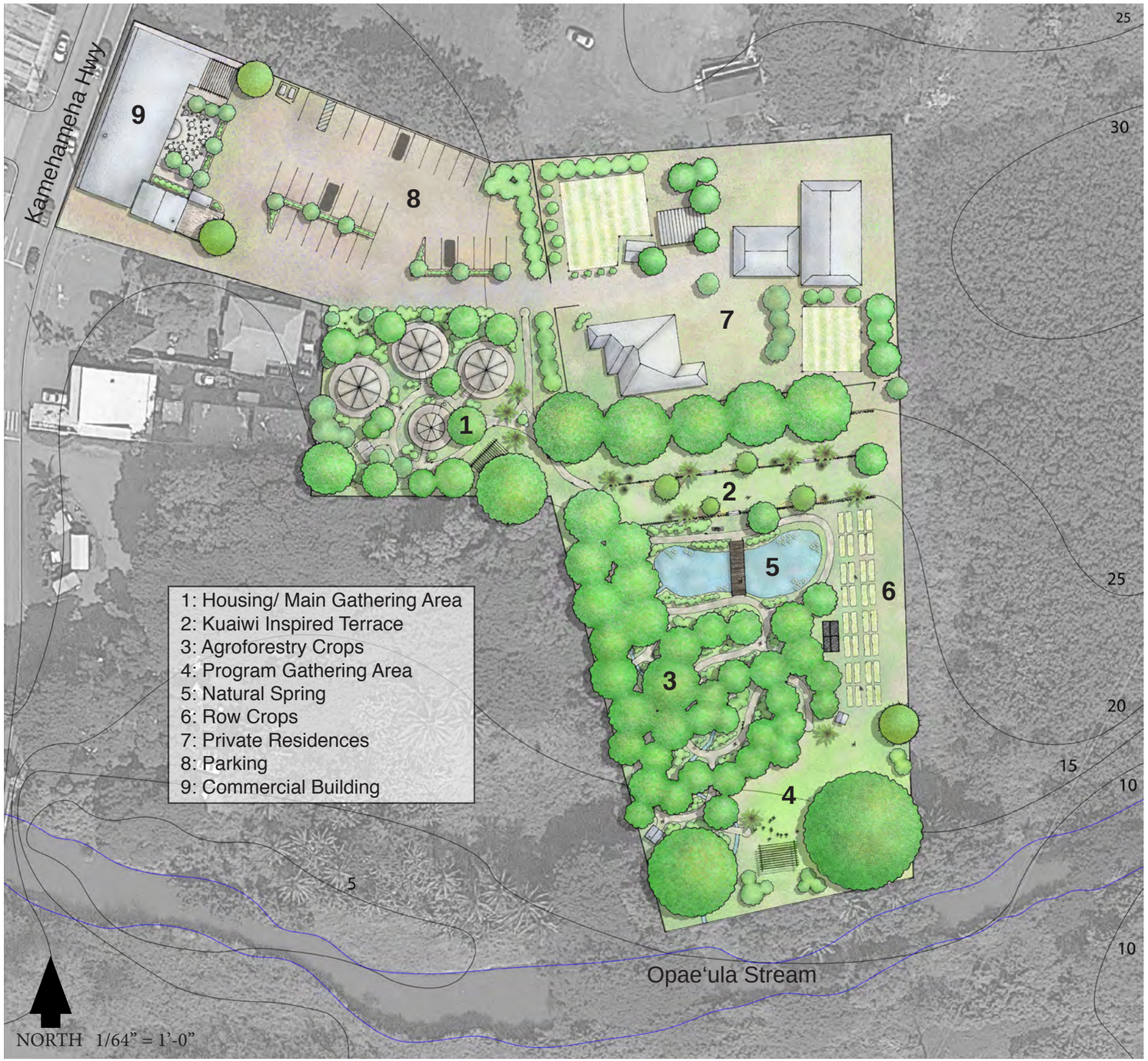
76:

Stone Gravel Paths
Recycling of highway demolition projects will be used to create paths.

77:

Mango Wood (*Mangifera indica*)
A wood with a high variability of colors.

SCHEMATIC MASTER PLAN



1: The housing/ main gathering area is the entry point to the rest of the garden and serves a variety of functions for guests as well as daily visitors. The Yurts provide basic living facilities for those who wish to stay in Hale'iwa to sight see or who want to participate in daily activities in the garden. And houses cooking amenities that hosts cooking demonstrations of culturally significant foods by local community members.

2: The Kua'iwi terrace is inspired by Native Hawaiian traditional raised planting beds and is meant to mimic the function of being mulched to retain moisture in drier areas. And is planted with traditional food plants like bananas, bread fruit, sweet potato, and cane. It also allows for an alternative path to the lower part of the garden.

3: The agroforestry area is meant to function as a forage garden inter cropped with a variety of food and medicinal plants. Guests can walk along the path and pick fruits or take guided tours to learn about the significance of each plant.

4: The program gathering area is envisioned as a place to host cultural food demonstrations like poi pounding, music performances, and rest after walking through the garden.

5: The spring that is on the property will be restored and function both as an aesthetic feature as well as a garden plot planted with water loving crops such as taro.

6: The row crop area will function as a community garden where community members can rent out plots to grow vegetables for themselves and others. It will also host educational plots to demonstrate organic and sustainable row cropping techniques. With excess vegetables being used for cooking demonstrations in the cooking yurt.

7: Some of the Takahashi family still lives on the property so proper fencing and vegetative screening will be used to ensure safety and privacy.

8: Parking was designed to maximize the number of vehicles and to ease traffic flow.

9: The exterior patio at the back of the family's commercial building was designed to provide outdoor seating for Cafe Hale'iwa as well host music.

PERSPECTIVE: HOUSING/MAIN GATHERING AREA (1)

An annual Japanese New Years mochi pounding is being hosted and guests are watching and sampling the mochi, which is a high starch sweet rice that is cooked and put into a stone bowl and pounded with a wooden mallet. The process is such that as one person pounds the rice with a mallet the other flips the rice between swings to help create a thick and smooth textured cake.

PERSPECTIVE: KUAIWI TERRACE (2)

Guests are strolling through the terraced area. Some admiring the sweet potato vines as they ramble over the rock walls, others in the spring planting and havesting taro and others waiting for fallen bread fruit as one tries to harvest the best looking one high up in the canopy.

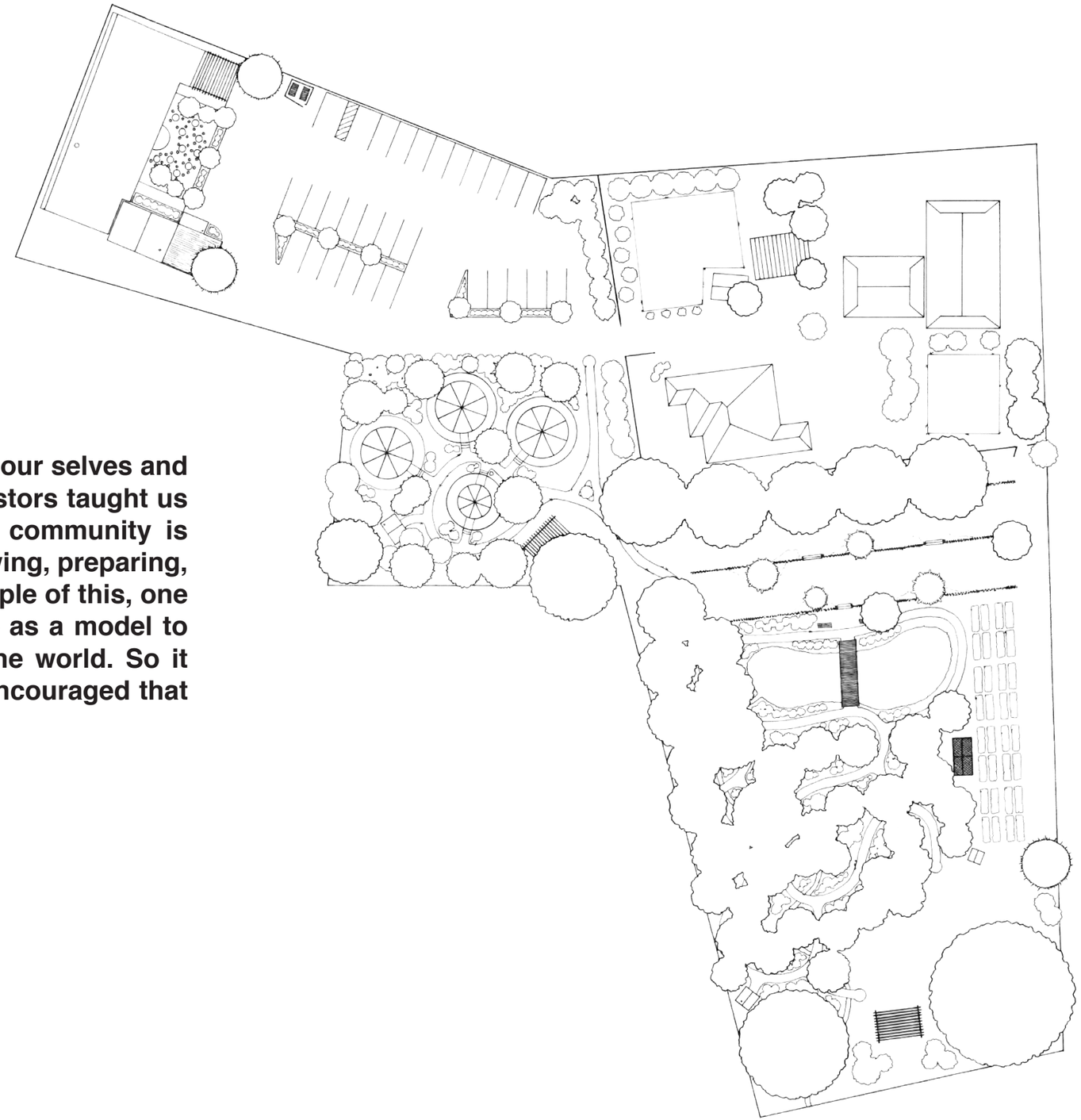
PERSPECTIVE: AGROFORESTRY WALK (3)

Many guests are taking advantage of the educational programs at the garden and are learning about the many different cultural fruits and medicinal plants that grow in Hawai‘i. While others prefer to venture the paths on their own looking for that oh so sweet fruit or something to help with stomach pains.

PERSPECTIVE: PROGRAM GATHERING AREA (4)

A group of students are gathered around to watch two women make poi by pounding and grinding the taro corm harvested in the spring and agroforestry area. The corm is cooked and peeled and a stone tool called a pohaku ku‘i ‘ai is used to mash the corm on a wooden board called a papa ku‘i ‘ai. In the distance a woman is trying to get the ripe mangoes and a family harvests vegetables in their garden plot.

CONCLUSION



As we learn to develop relationships with our selves and others we must remember what our ancestors taught us about connecting with each other. That community is founded on the shared experience of growing, preparing, and eating food. Hawai‘i is a perfect example of this, one in which I personally believe could serve as a model to the many segregated societies around the world. So it is my hope that this garden design has encouraged that ideal as much as possible.

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