



Hā'ena State Park Master Plan

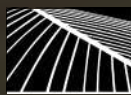
Final Report

Prepared for



Department of Land & Natural Resources
Division of State Parks

Prepared by



PBR HAWAII
& ASSOCIATES, INC.

MAY 2018

Hā'ena State Park Master Plan Final Report

Prepared for:
State of Hawai'i
Department of Land and Natural Resources
Division of State Parks



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May 2018

Nani Wale Ku‘u ‘Ike ‘Ana

Composer unknown, from mele repertoire of Joseph ‘Īlālā ‘ole.

Nani wale ku‘u ‘ike ‘ana lā
A i ka nani lā a‘o Hā‘ena lā
‘O ka wai a Kanaloa lā
A me ka wai lā a‘o Kapala‘e lā
A he wai ua kaulana lā
Ma ke alo iho ho‘i o Makana lā
A ka lae hala o Naue lā
A ka wai kaulana a‘o Makaweo lā
Nani wale a‘o Hanalei lā
Me ke one kaulana a‘o Pualoke lā
Hā‘ina mai ka puana lā
Lei nō Kaua‘i i ka mokihana lā

So beautiful to behold
The beauty of Hā‘ena
The waters of Kanaloa
And the waters Kapala‘e
Waters that are famous
In the presence of Makana
To the hala groves of Naue
Til the famous waters of Makaweo
So beautiful is Hanalei
So too are the famous rose colored sand
Tell the refrain
Kaua‘i is adorned with mokihana

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Hā'ena State Park Master Plan Executive Summary

Hā'ena, the storied place at the far northwestern corner of Kaua'i's beautiful North Shore, is also home to one of the State of Hawai'i's busiest state parks, Hā'ena State Park. This master plan encapsulates the work of many hands over many years. Kūpuna, cultural experts, leadership from Hui Maka'āinana o Makana (Hui), the non-profit group with a curatorship agreement with the State Department of Land and Natural Resources (DLNR), Division of State Parks (State Parks) for portions of Hā'ena State Park, community leaders, historians, engineers, archaeologists, and scientists all pulled together to help State Parks and their planners develop a long-range plan for the 66-acre park and its ongoing management. The plan has gone through many iterations over the years and at the heart of it is the desire of the community to protect the wahi pana and wahi kapu (culturally significant areas) of Hā'ena, along with its natural and scenic resources, for the generations yet to come. It is an ancestral home and dynamic community resource, rich with actively tended lo'i and an ancient hula complex, natural habitats, ocean recreation, and the trailhead to the increasingly popular and world-renowned Kalalau Trail. At one of the early Master Plan Advisory Committee (MPAC) meetings, Charles "Chipper" Wichman inspired the group with the following 'ōlelo no'eau (proverb) from Mary Kawena Pukui:

Hana a lau, a lau ke aho,
a laila loa'a ka i'a kāpapa o ka moana.

*Make four hundred times, four hundred fish lines
Before planning to go after the fighting fish of the sea.
(Be well-prepared for a big project. Envision success, inspire others to see the goal,
support the preparation of skills and resources.)*

Building upon the previous efforts to prepare a draft master plan in 2001, which included extensive input from the Hā'ena community, the proposed master plan integrates the wishes of the community today and incorporates updated technical studies. It recommends minimal physical improvements to the park in order to maintain the natural beauty and openness of the area. Only a few new structures are proposed including a Welcome Hale that is envisioned as an open traditional Hawaiian hale and located near the improved main parking lot. Interpretive and informational signage will be posted at the hale and two new restrooms for men and women near the main parking lot will provide a second set of facilities to reduce wastewater flows at the existing Kē'ē comfort station, which has sensitive cultural sites nearby. The latest proven green wastewater treatment technologies should be installed and the effluent treated so it can be reused wherever possible.

The current overflow parking area will serve as the main parking lot and be resurfaced with permeable paving. Portions of it will be shifted slightly makai to avoid a rockfall hazard zone. According to the rockfall hazard study completed for the park in 2013 by AECOM (Appendix H), several areas along the existing highway are predicted to be within a Class A (high estimated potential) and Class B (medium estimated potential) rockfall hazard zone. After considering costly and undesirable engineering solutions that would deface Ka Pali 'Ōahi o Makana, the

MPAC together with Hui leadership, recommended that all visitor facilities be located outside of the estimated rockfall hazard zones to the extent possible. This includes the main parking lot, new entry turnaround and shuttle stop, and a new pedestrian-only path that connects the main parking lot with Kēʻē Beach through the loʻi. The new pedestrian path follows along the first berm of the loʻi system closest to the highway and is proposed to be slightly elevated so as not to impact the berm or any of the historic resources. The new path will provide visitors with a unique view of Makana, a famous mountain peak, as well as views of the restored wetlands, loko, and loʻi as they continue to the iconic Kēʻē Beach.

The main parking lot is envisioned to be flexible with a maximum of 100 striped stalls. The overall size of the main parking lot could be adjusted to support visitor use of third-party shuttles to the park, or the County's proposed North Shore shuttle should it be established, with the goal of right-sizing the parking lot. The idea is to accommodate local demand, complement shuttle volume, and minimize parking impacts outside of the park. In addition, the main parking lot would be separated into a fee-paying lot and non-fee paying lot by moveable bollards and cordons so the parking can be adaptively managed on an as-needed basis to support the varying numbers in either group parking at the park on any given day and even throughout the day. A smaller special access parking lot will be located at Kēʻē in the existing paved areas. These stalls will be reserved for ADA accessibility, the lifeguards, park staff, the Hula Complex, and other cultural practices. It will also be accessible for emergencies as well as safety and rescue operations.

Other elements of the plan include reestablishing the area makai of the Kalalau trailhead and encompassing Ka Ulu a Paoa Heiau and the former Allerton property as a Hula Complex, recognizing the extreme significance of this ancient wahi kapu to hula practitioners worldwide. In addition, a Cultural Gathering Place will be created inland of Kaʻīlio Point with a traditional hale and Hālau Waʻa, where educational and community programs could be staged, including overnight stays.

The plan also supports the continued restoration of the Agricultural Complex and encourages restoration of the varied historic, cultural, and natural resources throughout the park. It prioritizes the restoration of the dune complex as a potential first effort, recognizing the multiple benefits of ecological restoration, beach protection, and caring for the ancestors whose bones lay interred in the sand dunes. The plan also encourages green building design, integrated water use, reuse, and rainwater catchment, and renewable energy throughout the park.

The existing historic state highway that runs through the park is also recommended to be transferred from the State Department of Transportation to State Parks so that it may be closed to general through traffic and State Parks can shift the bulk of visitor traffic and parking outside of a potential rockfall hazard zone.

There are five key management recommendations proposed in the master plan. They include the establishment of a Cultural Advisory Committee and a Community Advisory Committee, both of whom will be consulted on all aspects of park management and proposed improvements; and the implementation of adaptive management principles with regards to all management issues at the park. The third is the proposed reduction in the number of visitors entering the park during peak hours to an average of 900 per day. This number is an initial target and subject to change based on feedback from the community and impacts to the natural and cultural environments. However, it is an important starting point to help reduce the impacts that have been affecting the

park and quality of experience for park users. With the advent of social media, the popularity of Kalalau Trail draws hundreds of day hikers to the park. Therefore, the visitor limit includes those day hikers, but does not include overnight campers or hunters with valid permits, members of the Hui, cemetery caretakers, kūpuna who have cultural or ancestral ties to the area, or attendees at special educational or cultural events such as volunteer workdays or events at the Hula Complex. The other key management recommendations include required staff and volunteer education and the provision of visitor orientation materials prior to park entry.

Together, these policies will allow cultural and community advisory groups to advise State Parks on proposed management policies and improvements at the park and will encourage visitors to plan ahead and gain a better understanding of the park's varied resources prior to arrival. The Master Plan acknowledges that park access and operations will be ever-evolving and will likely change over time as new policies are implemented. However, the goal is to study the impacts of these proposed policies and to adjust them as appropriate to improve the long-term management of the park and visitor satisfaction via adaptive management. State Parks greatly appreciates the community's input and feedback in developing this master plan and is dedicated to working together to restore and preserve this wahi pana that is Hā'ena State Park.

Ka Poli Laua‘e Ka‘u Aloha

Ka poli laua‘e ka‘u aloha A Makana ho‘i e hi‘i mai nei	<i>I love the laua‘e covered bosom Held in the embrace of Makana</i>
Hi‘ipoi ‘ia e ka Waiama‘u Ka makani kaulana o ka ‘āina!	<i>Fondly tended to by the Waiama‘u, The famous wind of the land</i>
Ua like a like me Kanaloa Me ka wai aniani o Kapala‘e Ma‘ema‘e ia pua o ka hinahina Ia lei makahehi a ka malihini	<i>Exactly like Kanaloa’s Is the crystal-clear water of Kapala‘e Attractive is the blossom of the hinahina The lei admired by visitors</i>
‘I‘ini ka mana‘o e ‘ike aku I ka poli kapu o Lohi‘au ipo,	<i>There is a desire to see The sacred bosom of the beloved Lohi‘au</i>
Ku‘u ipo i ke kai o Kē‘ē Kai hāwanawana hone i ka poli	<i>My sweetheart of the sea of Kē‘ē The sea whose soft whispering thrills the heart</i>
Poli o Kilioe ka‘u ‘ano‘i ai, Ho‘opulu ‘ia nei e kēhu kai	<i>The bosom of Kilioe, I am very fond of, Is moistened by the spray of the sea</i>
‘Akahi ho‘i au a ‘ike maka, Nā kupa kaulana o ka ‘āina	<i>It is the first time I’ve seen for myself The famous natives of the land</i>
Ha‘ina ‘ia mai ana ka puana ‘O ka lihilihi o ka poli laua‘e	<i>Tell the refrain, the story is told Land of the laua‘e covered bosom [of Makana]</i>

Mana‘o: This mele was composed by Wahinekeouli Pa ca. 1907. It is a tribute to the famous mountain of Makana and the wahi pana or storied places of Hā‘ena, Kaua‘i. Wahinekeouli Pa was born and raised in Kalalau, Kaua‘i. Along with her husband, Hanohano Pa they made their home ma kai of Mount Makana just across of Wai a Kanaloa Cave. She was a master chanter and haku mele (composer) of chants – most of which were written for Hā‘ena, Nāpali and Kīlauea on Kaua‘i’s north shore. Ka Poli Laua‘e Ka‘u Aloha provides us with important perspectives of Hā‘ena’s natural resources and landscapes that remain cherished and sacred to Native Hawaiian families of that place today!

This chant comes from the repertoire of mele oli and mele hula – chants and dances that have been entrusted to the lineage of Kaipuwai. It is being taught specifically to perpetuate the native scholarship of formal hula training that is carefully imparted to the haumāna of this hālau hula. The choreography and interpretation of this chant remains the intellectual property of Hālau Palaihiwa O Kaipuwai. It may not be taught or performed for any reasons other than those stated here, without obtaining prior permission from its Kumu Hula.

1.0 Introduction

1.1 BACKGROUND INFORMATION

Located on Kaua'i's North Shore, Hā'ena State Park finds itself at the intersection of cultural and ecological significance and heavy visitor use as one of the state's most frequented visitor attractions. Hā'ena is a wahi pana and wahi kapu, well-known for the legend of Pele, Hi'iaka and Lohi'au and the ancient hula complex at Kē'ē. There is also an extensive agricultural complex, which spans much of the area of the park and is being restored by Hui Maka'āinana o Makana (Hui) under a curatorship agreement with State Parks. The area is an ancestral home with remnants of both prehistoric and modern homesites including Lohi'au's house platform, actively tended cemeteries and burial sites, a former poi mill, and dozens of archaeological sites. The area is also rich with dynamic geology, scenic beauty, varied natural resources, unique weather patterns and ocean conditions which inspire ancient stories and visitor guidebooks alike. At Hā'ena, continuous streams of visitors converge with a socially diverse community and a dedicated 'ohana, some of whom grew up and lived on this land before it became a state park. This mix of human, cultural, recreational and environmental resources gives rise to the need to develop a conscientious and comprehensive master plan in order to balance conservation, restoration, education, recreation, public safety and the preservation of Hā'ena's cultural integrity.

State Parks has attempted to develop a master plan for Hā'ena State Park since the 1970s when it acquired the lands for the park in fee with the assistance of a Federal Land and Water Conservation Fund Grant. The last attempt comprised several years of research, community meetings and interviews by The Keith Companies-Hawai'i, Inc. and Earthplan Planning and Design (The Keith Companies) and their consultants. The team prepared a draft report entitled, *Hā'ena State Park Master Plan and Draft Environmental Impact Statement*, with the last known version being a hand-edited copy completed in 2001. It included extensive background information as well as the development and evaluation of four master plan alternatives (three different development scenarios and one "no change" alternative. The effort culminated in a "community preferred master plan" that is referred to throughout this report as the "2001 Draft Park Plan." While neither the report nor the master plan were completed or adopted, they contain valuable information and are the starting point for this effort.

In this current effort, State Parks contracted with PBR HAWAII to complete the master plan and environmental impact statement (EIS) for Hā'ena State Park. PBR HAWAII was tasked to work with the community through an advisory committee to refine the 2001 Draft Park Plan and accompanying written master plan report with an emphasis on the cultural and historic significance of Hā'ena and to develop alternatives for transportation and parking. A full discussion of the background research prepared for this project is provided in a separate document entitled, "Hā'ena State Park Master Plan Background Research Report" (Background Research Report) and is attached in electronic form as Appendix I. Highlights of this information are included in Chapter 2.0 of this document.

1.1.1 A NOTE ON THE HAWAIIAN SPELLING OF PLACE NAMES WITHIN HĀ'ENA

Kumu Hula Kehaulani Kekua, a member of our master plan advisory committee (MPAC), has provided guidance on the spelling of certain place names within the park. Ka Ulu a Paoa and Ke Ahu a Laka are spelled with spaces and capitalization to honor Paoa and Laka, who are significant personages connected to these sites. She notes, “Paoa is short for Kauakahiapaoa who is a Hā'ena chief and the intimate friend of Lohi'au who too, is a master of hula. The heiau and hālau are named for him as the ‘inspiration of Paoa.’ Ke Ahu a Laka or ‘Altar of Laka’ marks the highest level of the heiau which consists of the formal dance platform and location of the kuahu or altar dedicated to Laka - deity of the hula guild. Ceremonies continue to be practiced today in homage to Laka and other deities that are held in high esteem by traditional hula practitioners and disciples of ‘aiha'a and hula.” (Kekua, personal communication) Similarly, Wai a Kanaloa, “the water used/ made by Kanaloa,” (Pukui 1974) is named for the god Kanaloa, one of the four major Hawaiian gods and known for digging sources of water (Wichman 1998).

Therefore, please note that for this master plan report and related EIS, these sites will use this specific spelling. Other resources, some of which are cited within this document, use other spelling variations. A footnote will be included acknowledging the spelling variants whenever original maps or resources differ from the convention in this document.

1.2 MASTER PLAN PURPOSE

The purpose of the current effort is to refine and finalize the 2001 Draft Park Plan for Hā'ena State Park based upon the previous effort and to process the EIS. As noted earlier, the 2001 Draft Park Plan was developed with the benefit of extensive public input. Four master plan alternatives (including one no change alternative) were carefully vetted by the community and the community selected a preferred version of the master plan. By establishing a current Master Plan Advisory Committee (MPAC), which consisted of community representatives selected by the community, the community-preferred version of the master plan was refined and is presented in this master plan report.

This report also includes an overview and analysis of the background research performed to date, as well as a description of the master plan and management and development strategies that bring the significant historic, cultural and ecological resources to the forefront and balance the protection of those resources with appropriate recreational and community uses.

Management actions and facility improvements will be developed from the information compiled for this report that are focused on the protection and preservation of the significant historic, cultural, and natural resources within Hā'ena State Park. Collaboration with the Hā'ena 'ohana, community, and cultural experts was critical throughout the planning process and will continue to be sought by State Parks moving forward through adaptive management processes to help ensure the success of and support for improvements and management actions undertaken at Hā'ena State Park.

1.3 GOALS AND VISION

The goals and vision for the Hā'ena State Park master plan were developed with State Parks staff and the MPAC. There are five main goals that have guided the development of the physical master plan and the proposed management strategies.

They are:

- Recognize that the entire park is culturally significant.
- Restore Hā‘ena State Park as a living place... cleanse, restore and revive cultural practices again.
- Involve the original families and reconnect the local community to the place.
- Uphold State Parks’ responsibility for the public’s safety, access, and welfare.
- Balance the provision of recreational opportunities with the preservation of the significant natural and cultural resources.

The first three statements speak to the overarching desire to bring to the forefront the cultural significance of Hā‘ena and to reconnect the people to this wahi pana in meaningful ways. The last two statements acknowledge the problems that are currently occurring at the park and provide guidance on what is required moving forward to manage them. It is a highly frequented park, which has become even more popular due to the appeal of the Kalalau Trail, but balance is needed between public and recreational use and the protection of the natural and cultural resources.

The principal vision for the park is to create a place that embraces, protects and restores its cultural, historic, natural and scenic resources while providing safe public access, educational opportunities and community enjoyment, thereby enriching the experience for all and improving the health of Hā‘ena’s many layered ecosystem.

1.4 OBJECTIVES AND POLICIES

The following section describes the more detailed objectives and policies that have been developed to help bring the above goals to fruition. They are organized by topic area and relate directly to the recommended capital improvement projects, management strategies, interpretive concepts, park organization, and operational needs described in subsequent sections of this report.

Overall Park Objectives and Policies:

- Implement community-based adaptive management policies and procedures in operating the park.
- Establish a Cultural Advisory Committee and continue the Community Advisory Committee, both of which will advise State Parks on proposed improvements and management strategies implemented at the park. Hold regular meetings with both committees and work together to help keep the larger community informed of any proposed changes at the park.
- Support relationships and partnerships with the community, Hā‘ena ‘ohana, cultural experts and other public agencies and organizations to help enrich and improve the overall experience for those visiting the park.

Master Plan Improvements Objectives and Policies:

- Develop park facilities and infrastructure with deference to Hā‘ena’s significant cultural and natural resources balanced with fiscal reality.
- Coordinate with appropriate public agencies on the proposed changes to the section of Kūhiō Highway within the park.

-
-
- Reduce use of the comfort station at Kē‘ē by providing additional facilities elsewhere in the park.

Access, Transportation, and Parking Objectives and Policies:

- Encourage the local community and residents to return to the park. Park access policies should not discourage them or diminish their experience. Adjust access policies if issues or complaints arise.
- Balance public access to the park with the protection of natural, cultural, historic, and scenic resources.
- Encourage shuttle access to the park to minimize the number of cars driven to the park.
- Minimize potential conflicts between pedestrians and vehicle traffic by providing safe places for people to walk, separated from vehicle traffic.
- Coordinate with the State Department of Transportation (DOT)-Highways on any proposed changes to the section of Kūhiō Highway within the park.
- Manage parking to minimize conflicts with pedestrians and improve overall park experience. Consider a variety of parking management strategies and adjust as needed.
- Work with the County and other State agencies to minimize parking and traffic impacts in the neighboring residential communities.

Cultural and Historic Resources Objectives and Policies:

- Establish a Cultural Advisory Committee to advise State Parks on all cultural matters at the park.
- Manage and restore the Hula Complex as a high priority. Work with cultural practitioners to restore it as a living resource.
- Continue to actively preserve, maintain, restore, and cultivate the Hā‘ena Archaeological Complex with the participation of the community-based curators. Continue to restore the complex based on the existing restoration plans.
- Restore and protect the sand dunes, cemeteries, housesites and other historic, cultural, and archaeological features throughout the park.

Natural Resources Objectives and Policies:

- Preserve and restore Hā‘ena State Park’s unique natural resources in order to improve the ecological health of the mauka to makai ecosystems.
- Replace invasive alien species with native and Polynesian-introduced species.
- Restore the park’s natural resources based on cultural values and practices.
- Recognize that many of the park’s natural resources are culturally significant and contribute to educational and recreational opportunities and experiences.
- Involve the community and volunteers in restoration efforts to reconnect the community to Hā‘ena and increase awareness and educational opportunities along with high-quality, multilayered recreational experiences.

Scenic Resources Objectives and Policies:

- Enhance scenic resources by clearing invasive plant species.
- At appropriate locations, provide safe viewing opportunities and information on the cultural and natural values of the park’s key features to enrich the visitor experience.

Recreational Resources Objectives and Policies:

- Provide opportunities for quality outdoor recreation, with sensitivity to significant cultural, natural, and scenic resources. Locate trails and recreational destinations in appropriate places that do not negatively impact those resources.
- Designate a safe swim area within view of the lifeguards, particularly for beginning swimmers. Inform and instruct visitors of the boundaries and the skill level required for various ocean recreation activities during orientation.
- Facilitate safe and high quality access to the Kalalau Trail and Nāpali Coast State Wilderness Park.

Public Education and Interpretive Objectives and Policies:

- Develop programs that increase visitor knowledge of the park’s natural, scenic, cultural, historic and archaeological resources to enhance and enrich the visitor experience.
- Implement interpretive programs and install interpretive devices that do not interfere with the scenic and cultural aspects of the park.
- Inform visitors of sensitive areas and teach them how they can help to better protect the resources. Include instruction on appropriate behaviors in culturally sensitive areas.
- Educate visitors about natural hazards and how to evacuate in emergency situations.
- Use the latest technologies to help minimize potential impacts to the park such as paper wastes and visual clutter.
- Work with the visitor industry to educate visitors on planning their trip to the park prior to arrival.

Public Safety Objectives and Policies:

- Inform visitors of potential hazards in the park and how to safely recreate and visit the park.
- Develop pedestrian paths and visitor facilities to avoid natural hazards.
- Install safety signage in appropriate locations throughout the park.
- Maintain public telephones and the emergency helipad.
- Develop emergency evacuation plans and routes. Hold regular training sessions and drills for park staff and volunteers.

1.5 LAND AND WATER CONSERVATION FUND

In 1977, grant monies from the U.S. Department of the Interior, National Park Service (NPS), Land and Water Conservation Fund (LWCF) Act of 1965 (Section 6, Land and Water Conservation Fund Act of 1965, as amended; Public Law 88-578; 16 U.S.C. 4601-4 et seq.) were used for the acquisition of the 65 acres that comprise Hā’ena State Park and requires that the property remain open to the public and for outdoor recreational purposes in perpetuity.

The proposed master plan and management strategies have been reviewed by the National Park Service (NPS) to ensure compliance with LWCF requirements as set forth by U.S. Code of Federal Regulations, Title 36, Part 59, Section 6(f) as well as with the original intent of park acquisition which included the state’s commitment to develop opportunities for “swimming, fishing, picnicking, camping, and other beach-oriented recreation opportunities” (LWCF Agreement 1972). In correspondence dated June 6, 2014, NPS commented that the draft master plan for the park shows, “*some changes to the park’s use reflect contemporary sensitivities to cultural resources and the sensitive shoreline ecosystem...the recreation opportunities include a*

variety of ocean recreation, walking, picnicking, nature viewing, sight-seeing, and interpretive exhibits with the potential for camping and bicycling. These provide assurance that the public beach park qualities that make this a valuable LWCF park are planned for the future” (Droge, 2014). The NPS letter also speaks to the agricultural terraces, “The master plan draft also shows that the park will encompass a significant community gardening area with the proposed restoration of the lo‘i kalo (wetlands). Although such an area is unusual within a state park and more common in local parks, such areas are not out of compliance with LWCF requirements...Maintaining such a practice with an interpretive/educational component is clearly consistent with several goals within the 2008 SCORP...it is advisable to include trails and interpretive opportunities to ensure all members of the public – including visitors from afar and anyone not engaged in the community garden activities—can still understand what is happening there, the cultural significance, and generally not feel excluded from this public place...any agricultural goods harvested within the community garden areas should be generally for park programs and personal use and not part of a formal commercial or for-profit farming organization.” Additional details are discussed in Section 2.4.1.2.

Photo 1 – Community Outreach Activities



1.6 PLANNING PROCESS

The planning process for this project involves the following major steps that have or will be carried out by the Division of State Parks, their consultants, and the community.

Pre-Consultation – Notification to agency and public stakeholders of the preparation of the master plan and environmental impact statement (EIS). Input on the project was solicited to address impacts on existing or proposed projects, plans, policies, or programs, and to identify specific issues that should be addressed.

Data Collection - The Master Plan involved collection and summary of previously conducted technical studies, reports and documented interviews. Technical consultants also conducted updated or new surveys of the existing site and facilities. Focus was on flora and fauna and wildland resources, cultural resources, marine resources, wastewater treatment and other civil engineering issues, traffic, and geologic hazards. Existing and new data were summarized and compiled into a Background Research Report. Management issues and physical facility needs

were identified. The Background Research Report and several technical studies are attached as appendices.

Community Outreach – To re-initiate the Master Plan with the community, a two-day open house was held in October 2008 at the Limahuli Garden and Preserve. The 2001 Draft Park Plan (graphic illustration and summary table) was provided for review and comments and those who attended were asked to update the plan.

In 2010, a Master Plan Advisory Committee (MPAC) was formed to assist in updating the plan and developing some of the management strategies presented in this report. Members of the MPAC represented the following: Kūpuna from Hā‘ena, cultural practitioners, community organizations, business interests, as well as other state and county agencies having an interest in Hā‘ena. Over the course of the project, several MPAC meetings have been held to develop recommendations for park improvements and address various management issues, such as the increasing numbers of hikers and recreational users and the parking and traffic congestion.

In the summer of 2015, a public meeting was held on August 19, 2015 at which roughly 300 community members attended a meeting to go over the draft master plan and draft environmental impact statement. In response to the concerns raised and to assist with community outreach, a new Hā‘ena State Park Community Advisory Committee (HSPCAC) was formed and the original MPAC was dissolved. The HSPCAC is self-described as “a self-directed, voluntary alliance of individuals representing ‘ohana, agencies, organizations, and businesses desiring to protect and perpetuate the natural and cultural resources of Hā‘ena State Park, and to serve as an advisory body to the DLNR as the State develops and then implements a Master Plan for this sacred area that is of utmost importance to the community of Kaua‘i” (HSPCAC Charter and Guiding Principles, 2015). The HSPCAC prepared a charter and guiding principles which were adopted by members in November 2015. New members joined the HSPCAC and some but not all of the original MPAC members joined the HSPCAC. Their mission also included engaging with the larger community and to be the lead group that would assist the DLNR with a community-based adaptive management process to support the long-term implementation of the master plan. The MPAC and HSPCAC member lists as well as the HSPCAC charter and guiding principles are provided in Appendix A.

Community meetings have also been held throughout the planning process to obtain wider community input on the master plan and management concepts as they have been developed and revised. In addition, project team members and advisory committee members have participated on community radio talk shows and State Parks has posted updates and different versions of the plan on the State Parks website to gather additional feedback.

Draft Master Plan – The Draft Master Plan report is the culmination of the many discussions, held in large groups as well as one-on-one conversations with the advisory committee members, kūpuna and family members, consultants, the larger community and park users, government agencies, and meeting participants. It includes an analysis of the background research information and studies that were prepared and compiled for this project. An evaluation of the conditions regarding the cultural, marine, freshwater, recreational and scenic resources was made to identify complimentary and conflicting opportunities. A traffic impact analysis was conducted and studied existing traffic patterns and parking issues. The process resulted in a refined master plan map, master plan report, management priorities and recommendations. An early version was presented to the Board of Land and Natural Resources (BLNR) on October 14, 2010. At that

meeting, the BLNR approved the Draft Master Plan and the preparation of the EIS. However, since then, State Parks initiated a rockfall study for CIP improvements which required a revision of the draft master plan. In addition, community feedback resulting from an August 2015 presentation of the Draft EIS required the project team and advisory committee to regroup and revise the plan once more. The consultant has worked with State Parks and the new HSPCAC to revise the draft plan based on these efforts and this report reflects these changes.

Environmental Impact Statement (EIS) - An EIS pursuant to Chapter 343, HRS, has been processed using the background information and revised master plan to analyze the potential impacts of those recommendations upon their implementation. The EIS process also provides additional opportunity for public and government agency review and input, leading to the finalization of the master plan.

Draft Final Master Plan – The Draft Final Master Plan map and report has been prepared based on the input received during the EIS process and presented to the BLNR for final approval. The report and map will guide the future development and management activities within the park.

1.7 ACRONYMS AND ABBREVIATIONS

A list of commonly used acronyms and abbreviations as used throughout this report is provided below.

ACHP	Advisory Council on Historic Preservation
ADA	Americans with Disabilities Act of 1990, as amended
ALISH	Agricultural Lands of Importance to the State of Hawai'i
amsl	Above Mean Sea Level
ATA	Austin, Tsutsumi & Associates, Inc.
BMP	Best Management Practices
CAC	Community Advisory Committee
CAG	Cultural Advisory Group
cal	calorie
CDP	Census Designated Place
CFR	Code of Federal Regulations
cfs	cubic feet per second
CIA	Cultural Impact Assessment
CIP	Capital Improvement Project
CWRM	State Department of Land and Natural Resources (DLNR) Commission on Water Resource Management
DAR	State DLNR, Division of Aquatic Resources
DLNR	State Department of Land and Natural Resources
DOBOR	State DLNR, Division of Boating and Ocean Recreation
DOCARE	State DLNR, Division of Conservation and Resources Enforcement
DOH	State Department of Health
DOT	State Department of Transportation
DOW	County of Kaua'i Department of Water
DP	County of Kaua'i North Shore Development Plan
EA	Environmental Assessment
EIS	Environmental Impact Statement
EISPN	Environmental Impact Statement Preparation Notice

ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map
FONSI	Finding of No Significant Impact
GP	County of Kaua‘i General Plan
gpd	Gallons per day
gpm	Gallons per minute
HAR	Hawai‘i Administrative Rules
HCBSFA	Hā‘ena Community-Based Subsistence Fishing Area
HDPE	High Density Polyethylene
HIHWNMS	Hawaiian Islands Humpback Whale National Marine Sanctuary
HRS	Hawai‘i Revised Statutes
HSPCAC	Hā‘ena State Park Community Advisory Committee
HTA	Hawai‘i Tourism Authority
ID	Identification
ITS	Intelligent Transportation Systems
IWS	Individual Wastewater System
KCC	Kaua‘i County Code
KIUC	Kaua‘i Island Utility Cooperative
KHPRC	Kaua‘i Historic Preservation Review Commission (County)
KOHA	Kaua‘i Online Hazard Assessment
LCA	Land Commission Award
LSB	Land Study Bureau
LWCF	Land and Water Conservation Fund
MGD	Millions of gallons per day
MPAC	Master Plan Advisory Committee
NCDC	National Climatic Data Center
NFIP	National Flood Insurance Program
NGO	Non-governmental Organization
NHPA	National Historic Preservation Act of 1966, as amended
NMFS	National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
NOAA	National Oceanic and Atmospheric Administration
NPS	National Park Service
NTBG	National Tropical Botanical Garden
NWI	National Wetland Inventory
OCCL	State DLNR, Office of Conservation and Coastal Lands
OHA	State of Hawai‘i, Office of Hawaiian Affairs
ORV	Off-road vehicles
PVC	Polyvinyl Chloride
SCORP	State Comprehensive Outdoor Recreation Plan
s.f.	Square feet
SHA	Safe Harbor Agreement
SHPD	State DLNR, Historic Preservation Division
SHPO	State Historic Preservation Office
SIA	Social Impact Assessment
SLO	State Liaison Officer
SMA	Special Management Area

SOEST	University of Hawai‘i School of Ocean and Earth Science and Technology
SWP	State Wilderness Park
TIAR	Traffic Impact Analysis Report
TMK	Tax Map Key
UH	University of Hawai‘i
USACOE	United States Army Corps of Engineers
U.S.C.	United States Code
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VTC	Volume-to-Capacity



Nani Wale Ku‘u ‘Ike o Hā‘ena

Composer unknown, from the mele repertoire of Frank Kawaikapuokalani Hewitt

Nani wale ku‘u ‘ike o Hā‘ena
 I ka pali kapu o Kē‘ē
 O ke ‘ala Laua‘e o Makana
 Halihali ‘ia mai i ku‘u moe
 O ka kani a ka pahu, kani “u, ke, ke”
 E ho‘onanea e ka hula a ka ipo e
 O ke ani a ka lima o ka heahea mai
 Ke kilohi a ka maka ke aloha a kaua
 Puana ku‘u ‘ike o Hā‘ena
 I ka pali kapu o Kē‘ē

*There is the beauty of Hā‘ena
 The sacred cliffs of Kē‘ē
 The scent of Laua‘e of Makana
 Is brought to me in my sleep
 Sound of the drum beats u te te
 Pleasing is the hula my sweet
 The hands welcome the guest
 To glance at each other in love
 The story is told of Hā‘ena
 The sacred cliffs of Kē‘ē*

2.0 Analysis of the Existing Site

2.1 THE MULTI-LAYERED RESOURCES OF HĀ'ENA

2.1.1 SIGNIFICANT SITES WITHIN HĀ'ENA STATE PARK

Hā'ena State Park is located within the ahupua'a of Hā'ena on the island of Kaua'i (Figure 1). The ancient moku or district name was Halele'a or "house of happiness" (Wichman 1998).



Halele'a is cited in chants as the most beautiful place in all the islands (Wichman 1998). Hā'ena is one of the major wahi pana (legendary places) in all of Hawai'i. It is the place where hula was perpetuated by Lohi'au and his sisters through rigorous instruction of their students and where the story of Pele's love affair with Lohi'au transpires.

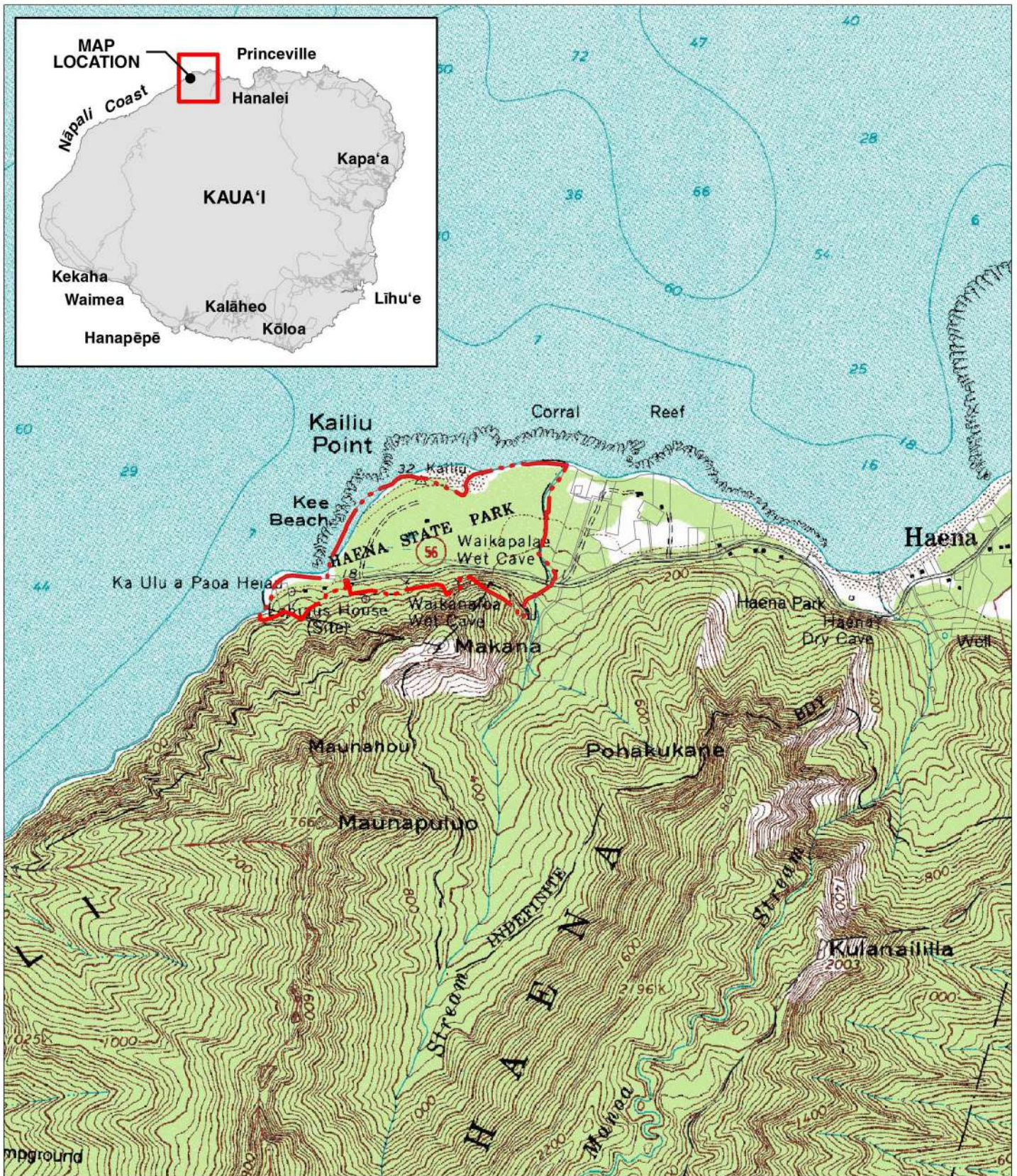
Photo 2 – View of Kē'ē Beach and Lagoon



Photo 3 – Lohi'au's House Platform

As the mo'olelo (traditional stories) associated with Hā'ena tell, Hā'ena's physical and cultural landscape are inextricably woven together. As such, park features defy categorization as simply "natural features," "cultural features," "scenic features" or "archaeological features" and typically exhibit multiple qualities. Figure 6 illustrates how many of the park's resources exhibit multiple values. Following is a list of significant sites within the park and a brief description of their natural, cultural and

archaeological values. Locations of the existing features within the park are identified on the map in Figure 2 and the opportunities and constraints in the following sections are summarized in the site analysis provided in Figure 3.



LEGEND


 Hā'ena State Park Project Boundary

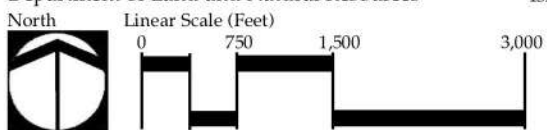
FIGURE 1

Regional Location Map

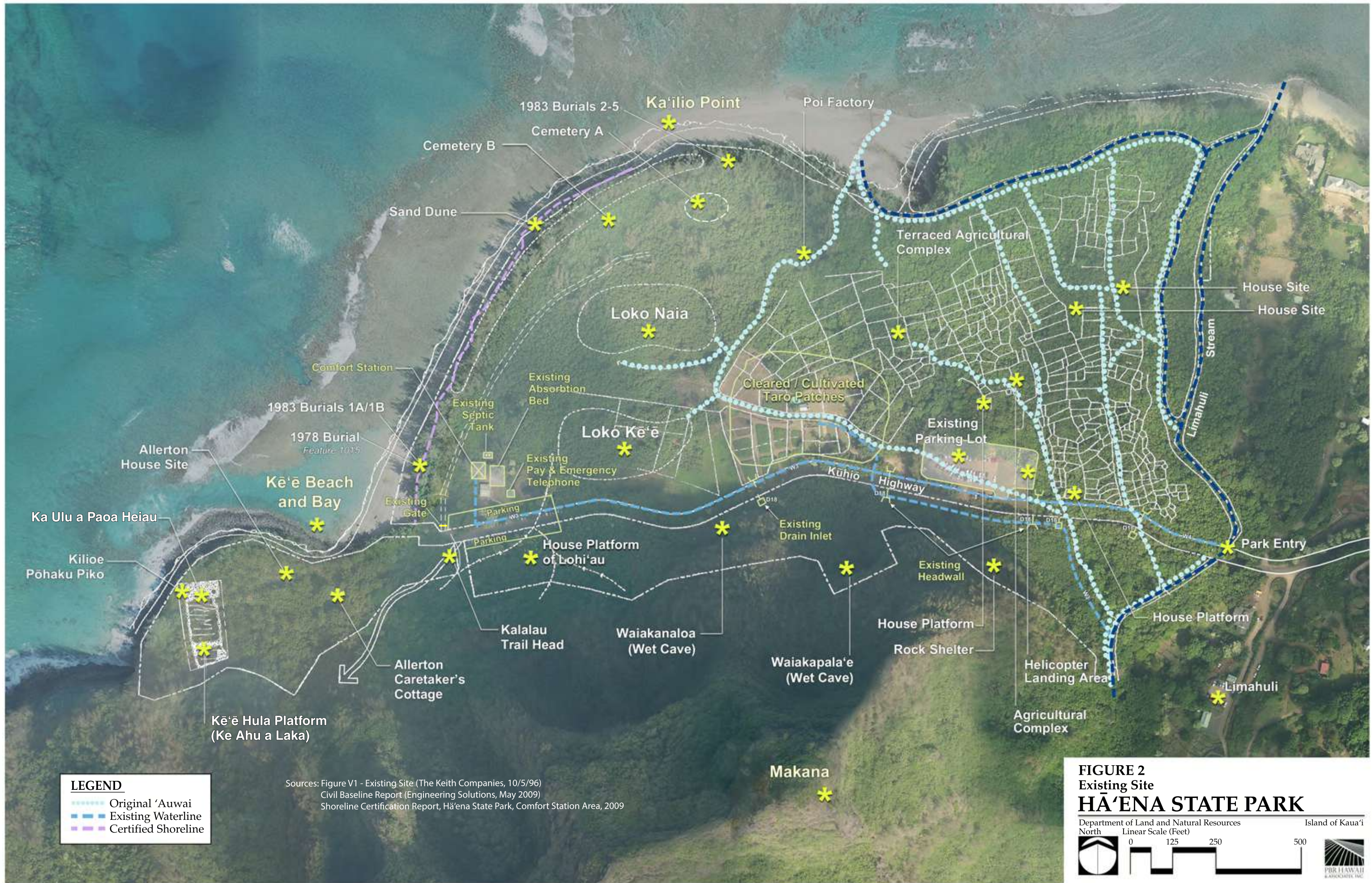
HĀ'ENA STATE PARK

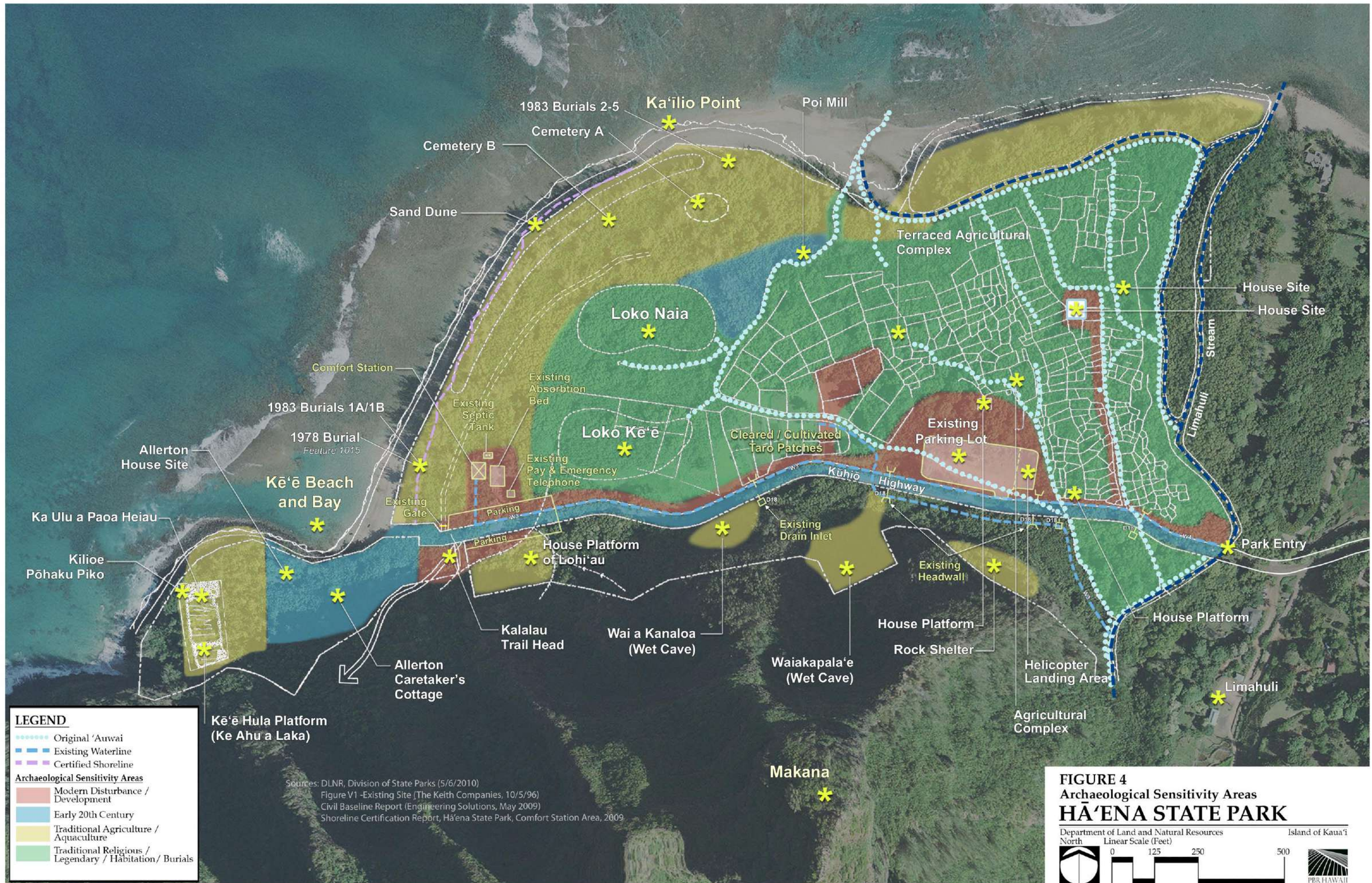
Department of Land and Natural Resources

Island of Kauai



Source: U.S. Geological Survey (2009)
 Disclaimer: This graphic has been prepared for general planning purposes only.
 Incorrect or outdated Hawaiian spellings on source maps have not been corrected.





1983 Burials 2-5

Ka'ilio Point

Poi Mill

Cemetery B

Cemetery A

Sand Dune

Terraced Agricultural Complex

Loko Naia

House Site

House Site

Comfort Station

1983 Burials 1A/1B

1978 Burial
Feature 1015

Existing Septic Tank

Existing Absorbion Bed

Loko Kē'e

Cleared / Cultivated Taro Patches

Existing Parking Lot

Allerton House Site

Kē'e Beach and Bay

Existing Gate

Existing Pay & Emergency Telephone

Kūhiō Highway

Limahuli Stream

Park Entry

Ka Ulu a Paoa Heiau

Kilioe Pōhaku Piko

House Platform of Lohi'au

Existing Drain Inlet

Existing Headwall

Wai a Kanaloa (Wet Cave)

Waiakapala'e (Wet Cave)

House Platform

Rock Shelter

Helicopter Landing Area

House Platform

Limahuli

Kē'e Hula Platform (Ke Ahu a Laka)

Makana

Sources: DLNR, Division of State Parks (5/6/2010)
 Figure V1 -Existing Site (The Keith Companies, 10/5/96)
 Civil Baseline Report (Engineering Solutions, May 2009)
 Shoreline Certification Report, Hā'ena State Park, Comfort Station Area, 2009

FIGURE 4
Archaeological Sensitivity Areas
HĀ'ENA STATE PARK
 Department of Land and Natural Resources
 Linear Scale (Feet)
 North
 0 125 250 500
 PBR HAWAII

Later in the report, the conflicts and opportunities created by these values are discussed, and lay the groundwork for the master plan and proposed management strategies. Figure 4 illustrates the park layout within the context of its archaeological sensitivity.

Kē‘ē

As the setting of one of the most famous mo‘olelo, Kē‘ē holds extreme and profound cultural importance and significance to Native Hawaiians and those who practice hula. Ka Ulu a Paoa Heiau overlooks Kē‘ē from atop the cliffs and is Hā‘ena’s most sacred and significant site. It is where the love affair between Pele and Lohi‘au began.

Photo 4 – View of Kē‘ē Lagoon and Beyond



Photo courtesy of Megan Juran

Pele came to Kē‘ē when she was first looking for a home and safety from her sister Nāmakaokiaha‘i. Once she found her home on Hawai‘i Island she was lured back by Lohi‘au’s drumming. She returned, found him and fell in love with him, but each time she dug a cave to make a home for them, she met with water. She left Kaua‘i as she was in her spiritual body, promising Lohi‘au she would return for him. After a long wait, Lohi‘au hung himself in despair. His body was placed in a cave above Kē‘ē that was guarded by two mo‘o (lizard) sisters Kilioe and Aka. When Hi‘iaka and Wahine-‘ōma‘o arrived as envoys from Pele they found Lohi‘au dead. Hi‘iaka killed the two guardians and with herbs and prayers restored Lohi‘au’s life then took him to Pele, who in the meantime had destroyed Hi‘iaka’s lehua forest. The angry Hi‘iaka embraced Lohi‘au so Pele covered him with lava. Hi‘iaka dug a tunnel from the sea to her sister’s fire pit and almost succeeded in killing Pele, but their brothers persuaded her not to. Hi‘iaka returned to Kaua‘i; her brothers restored Lohi‘au’s life once more and sent him after Hi‘iaka. They married and spent the rest of their life together at Kē‘ē (Wichman 1998:130).

Kē‘ē Beach and Lagoon are also important visual and recreational resources and are the primary attraction for visitors to the park. It is also an important scenic resource when viewed from the air or from points on the trails above.

Ka Ulu a Paoa Heiau and Ke Ahu a Laka

According to Kekua, “hula in its most primordial and sacred form is to inspire growth (physical, spiritual, intellectual growth) and the continuum of life cycles for the land and resources, mankind, ancestors and gods. The entire site is a heiau that was dedicated to the worship and practices of ‘aiha‘a and hula, and includes the highest level of the site named Ke Ahu A Laka.” Ka Ulu a Paoa translates to “the inspiration and growth of Paoa.” Paoa comes from the formal name, “Kauakahiapaoa,” who was an ali‘i of Hā‘ena. He was a very close friend of Lohi‘au, as well as a master of hula himself (K. Kekua, personal communication, November-December 2010).

According to Henry Kekahuna’s 1959 drawing (Figure 5), the site measures roughly 270 feet by 100 feet and there are three divisions within the site. The First Division is labeled the “heiau proper” and is located on the makai side of the site. It lies 25 feet lower than the Third Division, which is labeled as “encompassing the whole dancing institution.”

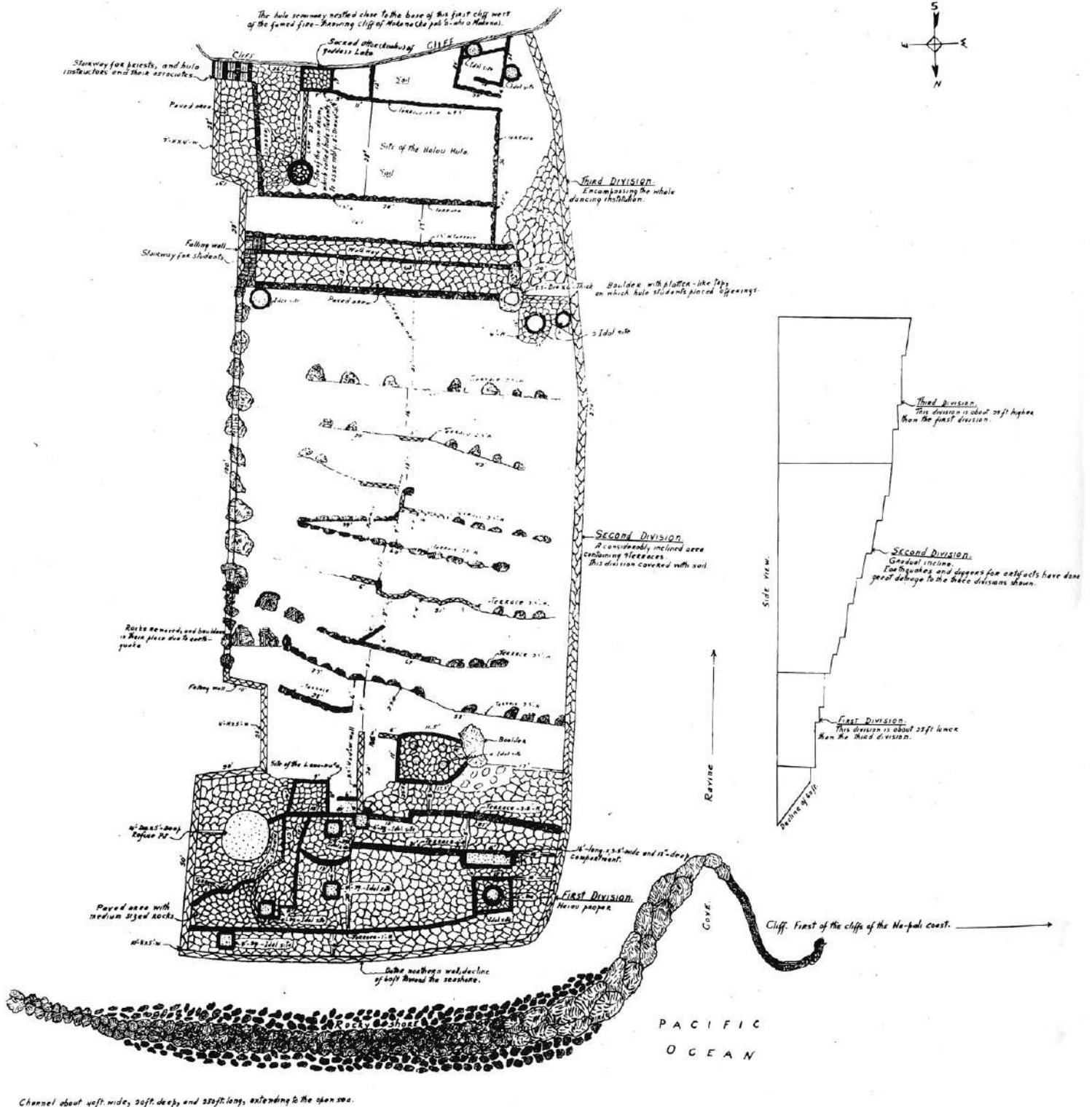
The Third Division is the “site of the Hālau Hula” and Ke Ahu a Laka. The Second Division spans roughly 130 feet between the First and Third Divisions and consists of soil-covered terraces sloping towards the sea. The text in quotations in this description of the site is taken directly from Kekahuna’s drawing. The next paragraphs are from Kekahuna’s written description of the activities that occurred at the site as reprinted in Bailey 2008.

“The ancient, most renowned hula seminary of the island of Kaua‘i, Ka Ulu o Paoa, institution for the growth (ulu) of knowledge of the art of hula dancing, founded by Paoa, nestles at the base of the cliff on the west side of the famed fire-throwing cliff of Makana (Ka Pali o Ahi o Makana). It is adjoined by the northern side of its celebrated heiau of the same name that slopes downward toward the sea. Thus it is commemorated Paoa, a dearest chiefly friend of chief Lohi‘au (Lohiau o Ha‘ena), who centuries ago was king of the island of Kaua‘i, and who together with Paoa, is associated in relation with the great volcano goddess Madame Pele.

“The noted hula seminary, with its strict tabus (sic) imposed during training, was the most famous in all the Hawaiian islands. Many graduates of notable hula seminaries elsewhere came to Hā‘ena to seek higher learning through post-graduate courses. Before aspirants were permitted to enter as students, they were selected through severe tests of the heiau division. If these tests were successfully passed, the elite then entered the seminary.” (Bailey 2008)

The First Division, or the heiau proper, is an unenclosed stone terrace measuring 60 feet by 100 feet and built up twenty feet at the highest corner. It is built into the bluff slope with the retaining wall on the makai side being almost vertical and dropping 60 feet to the rocky shoreline below. The surface of the heiau is marked by different levels and pavements, and short walls along with several indications of pits. Kekahuna labeled certain features within the heiau proper including the Lono-nu‘u, several square idol sites, a 16-foot long compartment facing the only circular idol site which is located within a walled square enclosure, and a fourteen-foot diameter by five-foot deep refuse pit. A large boulder sits between the First and Second Division on the western side of the site, forming one side of an 11.5’ by 11’ paved enclosure housing four round idol sites.

Figure 5 – Kekahuna's 1959 Drawing of Ka Ulu a Paoa Heiau



Reproduced from Barrère et al 1980.

The Second Division is a 100-foot long span of soil-covered terraces separated by boulders and sections of rock walls. Fronting the Third Division are three large round idol sites – one on the eastern corner and two on the western corner – along with a large boulder on the west with a “platter-like top” 8.5 feet in diameter “on which hula students place offerings.”



Photo 5 – Ke Ahu a Laka

Between the Second and Third Divisions is the “stairway for students” entering from the eastern side to a five-foot wide paved walkway. Makai of this walkway is an 18-foot wide paved terrace and mauka of the walkway is a 17-foot wide soil-covered terrace. Above this is the pā hula, a 28’ x 60’ soil-covered terrace labeled by Kekahuna as the “Site of the Hālau Hula.” A stairway reserved “for priests, and hula instructors and their associates” approaches this terrace from the east and runs along the cliff. These stairs lead directly to the “Sacred altar (kuahu) of goddess Laka” (Ke Ahu a Laka, see Photo 5) and a ~15’ x 28’ paved terrace, which is separated from the pā hula by a low rock wall. At the makai end of this wall is the “site of the main drum, which called hula

students to assembly.” At the southwestern-most corner of the Third Division, up against the cliff and rising above the pā hula, is a walled enclosure measuring roughly 20’ by 30’ with two large round idol sites.

Lohi‘au’s House Platform

Mauka of Kūhiō Highway and near Kē‘ē Beach is Lohi‘au’s House Platform (see Photo 3). It consists of a dry stack rock platform that is earth and stone-filled with an unpaved terrace. It is 80 feet long, 54 feet wide and 8.5 feet high at its highest part. It is an impressive site located at the base of the bluff near the Kalalau trailhead but it has suffered in recent history. In 1959, Henry E. Kekahuna referred to it as, “the sad remnant of King Lohi‘au’s residence,” observing that the County of Kaua‘i’s road work undermined the structure. Invasive exotic forest plants have overgrown portions of this site. Although easily accessible, no interpretive signage is present to educate visitors of the importance or significance of the site. However, several MPAC members have noted that its relative obscurity has probably protected it from vandalism.

Kilioe

There is a large boulder called Kilioe located near the edge of the ocean cliff. According to Wichman (1998), Kilioe was a chiefess of the hālau hula at Hā‘ena whose body became this furrowed rock. This pōhaku piko is still used today to safeguard the umbilical cords of newborns and in doing so, place those children under the protection of Kilioe. According to mo‘olelo, the boulder Kilioe is the physical remains of one of two mo‘o (lizard) women who challenged Pele when she arrived at Kē‘ē and later stole Lohi‘au’s spirit from his body (Andrade 2008).

Beach between Kēʻē and Limahuli Stream

Between Kēʻē Beach and Limahuli Stream, the beach is the widest and extends up to 150 feet mauka. The beach is wide enough that it allows an easy stroll from Kēʻē to Kaʻilio Point and beyond to the mouth of Limahuli Stream. Honu, or green sea turtles (*Chelonia mydas*), and ʻĪlio-holo-i-ka-uaua, or Hawaiian monk seals (*Monachus schauinslandi*), are known to bask on the beach.



Photo 6 – Monk Seal Sunbathing at Kēʻē

Dune Complex

The area between Hāʻena Point and Kēʻē Beach is backed by low sand dunes roughly four to eight feet high. Growth of these sand dunes is limited due to the presence of introduced tree stands. Extensive burials are known to be interred in the sand dunes along the Hāʻena coastline and Silva (1995) linked these burials to the commoners who settled in the area. Over time, many of the burials within the dunes have become exposed due to wind and wave action as well as vehicles driving on the beach and continue to be impacted today by both natural and human means.



Photograph courtesy of Kennedy/Jenks

Photo 7 – Limahuli Stream Crossing at Park Entrance

Behind the dune system is an unimproved road that parallels the beach and is believed to have connected once to a coastal roadway but currently terminates near Loko Naia. This road was open to the public, at least informally, until 2007, when a gate was installed at Kūhiō Highway by State Parks to control illegal dumping and prevent vehicle access over the dune.

Limahuli Stream

Limahuli is one of Hawaiʻi's few remaining natural (unchannelized, lined or dredged) perennial streams. It is the threshold which most visitors cross to enter the park when approaching via Kūhiō Highway. The stream is important for the biological diversity it supports, the water resource it provides to agricultural and natural uses surrounding it and the visual beauty it displays. It is also used as a recreational resource by visitors and locals who plunge in its refreshing waters at the mid-stream pool that is located near the entrance of the park.

The Hawaiʻi Stream Assessment (1990) lists Limahuli Stream as a perennial stream that flows to the sea year-round and identifies it as an “outstanding aquatic resource” due to the presence of native ʻoʻopu. It is the source of fresh water within Hāʻena State Park and begins at the top of the valley at 3,300 feet above mean sea level (amsl) and reaches the valley floor after plummeting

down an 800-foot waterfall. The lower 1,500 feet of the stream forms the eastern boundary of Hā‘ena State Park.

Limahuli Stream water is diverted for irrigation and residential purposes by multiple landowners. There are a total of five separate pipes that divert water from Limahuli Stream between 40 feet and 320 feet elevation amsl. A total of 257 gallons per minute (gpm) is diverted from the stream. Surface water from Limahuli Stream is diverted upstream of Hā‘ena State Park for irrigation at Limahuli Garden and Preserve. A portion of these diverted waters flow via high-density polyethylene (HDPE) pipe to irrigate kalo (taro) within the park (Fujita 2002).

Photo 8 – Makana from Hā‘ena State Park

Makana

The mountain peak Makana looks over the park. Translated as “gift,” Makana is a triangular peak, prominent and unmistakable. Firebrands made up of hau (*Hibiscus tiliaceus*) or pāpala (*Charpentiera*) wood whose soft core burns before the outer layers, were once thrown from the top of this peak. With the right conditions, the brands would fall and rise, moving slowly a mile or more over the ocean, leaving a trail of glowing embers. These exhibitions were normally reserved for very special celebrations or sacred ceremonies such as chiefly graduations or visits. It was done for Queen Emma’s visit in 1860 and until an isolated performance on New Year’s Eve 2012, the last known occasion when firebrands were thrown may have been in 1925 (Carpenter & Major 2001). The cliffs are often referred to as Ka Pali ‘Ōahi o Makana.



Photograph courtesy of Megan Juran

Agricultural Field Complex

Previous archaeological studies show that nearly the entire coastal flat behind the dunes was developed as irrigated lo‘i terraces which originated in prehistory (Major and Carpenter 2000). There is also evidence that the lo‘i extended to the base of the pali, but was disrupted by the construction of the highway (Hammatt 1978). The vast Hā‘ena agricultural complex extended east of Limahuli Stream (outside of the park) and also included loko kalo, or swampy planting areas that used innovative methods of planting on rafts within ponds (Handy 1972). Other crops such as ‘uala, or sweet potato, in sandy areas and mai‘a (bananas), kō (sugar cane) and ‘awa in the Mānoa and Limahuli Valleys were also known to be cultivated (Handy 1972). Portions of the Hā‘ena lo‘i were cultivated into the 1960s although the loko were abandoned by then (Carpenter 1996). Over the years, the lo‘i became overgrown with non-native vegetation.



Photo 9 – Cultivated Lo‘i Kalo, Phase I of the Restoration Plan

The lo‘i remained overgrown by alien forests until renewed community interests began clearing the invasive plants and cultivating kalo. Building on these efforts initiated by the community, Maurice Major and Alan Carpenter prepared a draft archaeological restoration plan in December 2000 for State Parks that focused on mapping and restoring the lo‘i system within Hā‘ena State Park with the help of a local nonprofit group interested in the care and restoration of native ecosystems and cultural sites, Hui Maka‘āinana o Makana (the Hui). The restoration plan identified “Phase I,” a 13.6-acre area just east of the two loko as the easiest portion of the lo‘i to restore. Additional taro lo‘i restoration studies, which included water resource studies, were prepared by Fujita and Associates in 2002 which primarily focused on a 4.4-acre portion of Phase I. These reports were prepared in support of State Park’s efforts to restore the lo‘i as a cultural landscape and educational resource for the local community and visitors alike. Since 2000, the Hui was approved under a curatorship agreement to manage the cleared portion of the lo‘i kalo system as well as a three-foot buffer along the rock walls of the lo‘i. The agreement allows the Hui to prepare and plant wetland kalo as a community gardening activity for educational purposes and to restore the cultural landscape.



Photo 10 – Montgomery House with Henrietta Phillips in the Foreground; Makana in the Background

In the midst of the agricultural complex is a cottage that is no longer occupied but its structure remains relatively sound. This structure is known as the “Montgomery House.” Henrietta “Etta” Phillips, a Hā‘ena kupuna and member of the two advisory committees, was born and raised in the Montgomery House and is shown standing in front of the structure in Photo 10. The Montgomery House and surrounding grounds are being maintained by the Hui under their curatorship agreement.

Photo 11 – Wai a Kanaloa

Waiakapala‘e and Wai a Kanaloa

These caves were carved as a result of a rise in sea level during the Pleistocene, when existing lava tubes were enlarged by wave action. Currently, the valley flats are a result of alluvial fill from stream erosion and a decrease in sea level of five feet from its highest stand. Wai a Kanaloa, “water made by Kanaloa” is a wet cave located in the pali face on the south side of Kūhiō Highway. The waters of the cave were called, “Halaaniani,” or “clear pandanus.” The waters were thought to have restorative properties and were reserved for the ali‘i. The feature may have been an important water source, but no archaeological work has been conducted in the area. Waiakapala‘e, “water of the lace fern” is a



wet cave to the east of Wai a Kanaloa, also in the pali face south of the highway but further up the slope. This feature is another probable water source with legendary associations. It is said that the water in the cave had a brown hue, and was the hair of a beautiful mo‘o. The story goes that as she grew older, her hair and thus the water turned grey (Orr 2010).

Loko Kē‘ē and Loko Naia

The two former loko within the park are seasonally flooded and designated as wetlands on the U.S. Fish and Wildlife Service’s National Wetland Inventory. Loko Naia is thought to have been a loko kalo, or a low-lying area for the planting of taro. The depression measures roughly 100 by 200 meters and is located mauka of the sand dune. Archaeological testing in 1977 indicated an agricultural use of the feature, including evidence of ‘auwai and agricultural soils. Loko Kē‘ē has been described as both a buried fishpond and a loko kalo (Griffin et al 1977). It is located to the south of Loko Naia and adjacent to the highway. Testing indicated low walls and an ‘auwai suggestive of a kalo lo‘i. It measures approximately 150 by 50 meters.

Allerton Estate

The former Allerton Estate is located at the far western side of the park and is accessed by a narrow path off Kē‘ē. The primary residence burned to the ground and what remains are the building’s foundation and the remnants of a formal garden. Both the foundation and garden area are obscured by overgrown vegetation. Perched above the home site, the Allerton caretaker cottage remains, although in a state of disrepair. State Parks repaired the roof and portions of the foundation in 2013 and ongoing maintenance of the structure and grounds surrounding the cottage are being performed by the Hui under the curatorship agreement.



Photo 12 – Kalalau Trailhead

Kalalau Trailhead/Nāpali Coast

The trailhead for the popular eleven-mile (22 miles roundtrip) Kalalau Trail and access to the Nāpali Coast State Wilderness Park is located within the park. In 2007, the Nāpali Coast State Wilderness Park had an estimated 423,100 recreational visits according to a visitor survey conducted by the Hawai‘i Tourism Authority (HTA). The peak camping period is generally between Memorial Day and Labor Day.

The Kalalau Trail traverses five major valleys before terminating at Kalalau Beach, blocked by sheer, fluted cliffs. The first two miles of the trail from the park to Hanakāpī‘ai Beach and a spur trail to Hanakāpī‘ai Falls is a popular day hike for visitors. Day hiking is allowed without permit up to Hanakoa Valley. However, proceeding beyond Hanakoa Valley requires a valid overnight camping permit from State Parks, which are available online. Currently, there are no check-in or check-out procedures for hikers.

In 2006, State Parks issued 1,154 camping permits with the vast majority (904) of them for Hanakāpī‘ai. The following year, the number jumped to 3,926 with the majority (2,617) of them for Kalalau. Camping at Hanakāpī‘ai is no longer allowed. In 2016, 6,118 camping permits were

issued for Nāpali Coast State Wilderness Park, roughly half of which were issued to Hawai‘i residents. The 6,118 camping permits comprised a total of 25,821 person-nights in the park.

Hunters also access the Nāpali Coast State Wilderness Park Unit G hunting area year-round at Hā‘ena State Park and must possess valid hunting licenses and permits to do so. Most access the trail early before sunrise around 4:00 a.m. and return after dark. Hunting permits are limited to 30 per day, but the most ever issued on a single day has been 15 or 16 permits (Kai‘akapu, personal communication 2015).

Known Burials and Cemeteries

Burials within the sand dunes along the Hā‘ena coastline have been documented in historic reports and surveys dating back to at least 1865 with an account by William Brigham describing a burial place “in the sands on the beach” near the dry cave at what is the location of the present day Hā‘ena County Beach Park (Carpenter 1996).

As noted earlier, Silva linked these burials to the settlements that established themselves in this rich environment. She reasoned that while the cliffs above Hā‘ena would be the appropriate places for chiefly internment, the dunes were more likely where the commoners were buried if they did not have a family house lot (Silva 1995). Burials are believed to extend beyond the back of the dunes as well, along the old coastal road where the soils are sandy (see Figure 4).

In his 1996 Burial Treatment Plan for Hā‘ena State Park, Carpenter summarizes several archaeological surveys performed in the late 1970’s through the 1990’s that documented other known burials within the park. They include the two known formal cemetery areas that are referred to as Cemetery A and Cemetery B. There was also a burial found near the existing comfort station which has been reinterred at the cemetery. Lineal descendants continue to care for these burials.



Photo 13 – Remnants of the Poi Mill

Historic Poi Mill

Remnant features and foundation slabs of the historic poi mill remain just mauka of Ka‘ilio Point. The feature has been overgrown by non-native vegetation. The 2001 Draft Park Plan identified it as a potential interpretive site. Some community members voiced a

desire to see a poi mill reestablished someplace at the park to support the processing of the kalo grown in the Agricultural Complex.

Photo 14 – Historic Kūhiō Highway through Hanalei Town

Kūhiō Highway

Kūhiō Highway, or Kaua‘i Belt Road, serves as the only vehicular access in and out of the



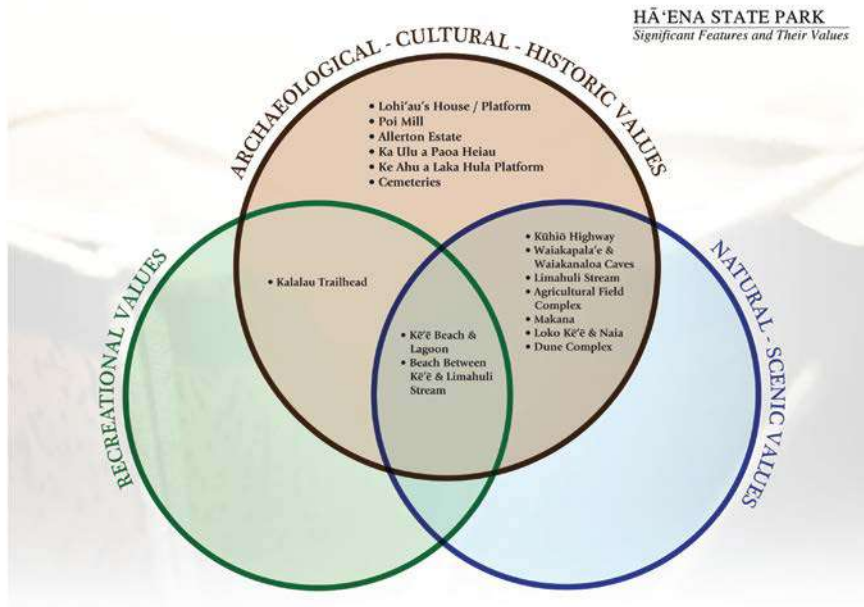
park and is a registered historic site. The ten-mile stretch of Kūhiō Highway (State Highway 560) between Princeville and Kēʻē Beach was listed on the National Register of Historic Places on February 11, 2004. The nomination was made by the Hanalei Roads Committee, an ad hoc community group created in 1976 to preserve the rural nature of the narrow, scenic highway along the North Shore. This portion is considered the only remnant of the Belt Highway system on Kauaʻi to retain a high degree of integrity (Duensing 2003), and is characterized by its narrow lanes, winding road alignments, historic bridges and culverts, road cuts, and scenic settings (Photo 14). The stretch from Hāʻena Beach County Park to Kēʻē was the last to be completed, probably in 1928. The concrete culvert crossing Limahuli Stream at the entrance to the Hāʻena State Park (see Photo 7) is one of 13 bridges and culverts designated as contributing to the significance of the Belt Road.

2.1.2 SIGNIFICANT RESOURCES AND THEIR VALUES

The resources found at Hāʻena State Park exhibit multiple complimentary and conflicting values. As an example, Kēʻē Beach and Lagoon is a natural resource complete with coral reef and rich marine resources and the beach is the primary destination within the park for recreational activities such as sunbathing and snorkeling. Kēʻē Beach and Lagoon have high scenic value and are often the main reason visitors venture to the park. At the same time, Kēʻē has significant historic and cultural value as it relates to hula and fishing, making the nearshore area a significant cultural site. Other features within the park exhibit more specific values. For example, Ke Ahu a Laka Hula Platform and Ka Ulu a Paoa Heiau are wahi kapu that have extreme cultural importance for hula practitioners and are not appropriate for general visitation or recreational use. Figure 6 illustrates how many of the park’s resources exhibit a mix of multiple values.



Photo 15 – Beach Activities at Kēʻē



The management policies and objectives for Hāʻena State Park must be tailored to acknowledge the interrelated values of many of the park’s features (such as Kēʻē Beach) while simultaneously acknowledging the more specific values of others (such as the Hula Complex).

Figure 6 – Significant Features and their Values

2.2 HISTORY OF THE SITE

Dr. Hallett Hammatt and his colleagues at the Archaeological Research Center Hawai‘i, Inc. (ARCH) performed a series of five excavations along the Hā‘ena State Park dunes in 1978 to characterize the prehistoric use of the area. Based on their findings, they provide a preliminary sequence of human settlement and subsistence beginning with a marine oriented occupation at Kē‘ē Beach sometime before 1000 AD. After 1000 AD, occupation expanded at Kē‘ē as well as inland utilizing a broader resource base and further intensification occurred after 1400 AD with the construction of the agricultural fields and lo‘i. By 1700–1800, occupation continued but with less emphasis on exploitation of marine resources and the density of cultural material in the deposits indicates a possible depopulation of the area or a shifting settlement pattern (Hammatt et al. 1978).

The history of the area within and surrounding Hā‘ena State Park from just after the 1824 rebellion saw control over the lands undergoing a transition from Kaua‘i to O‘ahu and Maui ali‘i. Abner Kuho‘oheipahu Pākī was awarded the entire Hā‘ena ahupua‘a as a direct result of the partition following the 1824 rebellion. Pākī, father of Bernice Pauahi Bishop, was married to Konia, one of Kamehameha I’s granddaughters, who was an ali‘i wahine or high chiefess in her own right (Silva 1995).

Pākī, as chief of Hā‘ena, held control over Hā‘ena’s fresh water sources, the produce harvested from the ocean, fisheries, mountain and special fields reserved for the chief, called kō‘ele. These kō‘ele were harvested once a week to support the chief and his household. Hā‘ena residents cultivated at least twelve kō‘ele, each having a specific name, to serve Pākī (Silva 1995). As chief, Pākī also had the privilege of putting a kapu on certain fish harvested from the waters off the coast. Pākī placed this kapu on he‘e (octopus) (Carpenter 1996, Silva, 1995).

Interestingly, Silva notes that Kekela‘akalaniwahikapa‘a (Kekela) was appointed the konohiki (land manager) of Hā‘ena circa 1837.

It was unusual for Kekela to hold this position of authority; although she was a ranking chiefess, she nevertheless was a woman and remains in history as one of the few known female konohiki. Women were rarely given the right to claim lands during this period; widows of bonafide native tenants or female heirs (in absence of a male heir) of long-time residents of an area would apply for lands, however this was uncommon and infrequent. Native testimony recorded that Kekela herself had claimed five parcels in Haena and had resided there in 1839.

Kekela also listed among the usual konohiki responsibilities, the management of 12 ko‘ele whose names she gave as: Paki, Kahookumaka, Oahu, Kapalaa, Akole, Kaluahine, Kailiili, Peekauai, Kalaole, Koi, Kanaele and Keokea.

Soon after settling in Haena, testimony reported that she made three loko or ponds within the ahupua‘a. Native testimony does not reveal the names, locations, sizes or nature of these ponds or whether these ponds are the loko kalo which she claimed in her own application (see LCA 7949...). (Silva 1995)

Silva explains that during the time Kamehameha and Kaumuali‘i were negotiating their truce, Kamehameha impressed the Kaua‘i chiefs by presenting his recently widowed sister-in-law, Kekela, to Kamaholelani, sometimes referred to as Kaumuali‘i’s cousin and son. Kekela returned with Kamaholelani to Kaua‘i and the two settled in Lumahai, which Kaumuali‘i had given to both of them. In 1820, Kamaholelani dies and Kekela remains in Lumahai until 1824, the time of Kaumuali‘i’s death and the uprising, when she returns to O‘ahu and either forfeits her claim to

Lumahai or is dispossessed of it. However, Silva also states that Kekela is well-spoken-for in the courts of Kamehameha and Kaumuali'i, and she is also the sister of Abner Pākī's own mother. Hence, her close association to her Hā'ena claim, Pākī's claim to the ahupua'a and her management of Pākī's Hā'ena holdings (Silva 1995).

Kekela is also credited for advising many of the maka'āinana to apply for kuleana awards during the Mahele (Wichman 1998). There is a slight difference between Silva and Carpenter's counts as to how many Land Commission Awards (LCA) were within Hā'ena. However, it is either 22 or 23 claims made within the Hā'ena ahupua'a, ten of which overlap the current park boundaries. They range in size from 0.75 acres to 4.4 acres and are shown in Figure 7.

Although Pākī retained interest to the entire ahupua'a, those parcels awarded to native tenants were respected and excluded from his award (Silva 1995). Ten of these kuleana awards (or portions of awards) are located within the Hā'ena State Park boundaries, and they consisted of thirteen parcels (Carpenter 1996). Of the ten claimants, only three trace their claims to the lands before 1824, and there are no clear records of the dispossessed chiefs of this area prior to this date, again a reflection of the political changes that occurred in that year (Carpenter 1996).

Silva further explains that Mahele land records for Hā'ena indicate a "layer[ing] of residence and cultivation," a transition from an older regime to Pākī's, where Kekela's testimony on a few of the claims supported those of the newer residents. At the same time, Silva notes that under Kekela, this did not happen often when looking at all of the recorded claims within the ahupua'a.

The older residents... claimed interest originating pre-1824. The arrival of Kekela in 1839, brought a set of new residents... who asserted their rights to these claims under Kekela and received these parcels during the *Mahele*. Such was the prerogative of the appointed *konohiki*, to assign, dispossess and re-assign at will. As it stands, Haena was relatively fortunate in this regard; the corps of older tenants was respected and their holdings honored and protected. (Silva 1995)

...

Haena thus sustained the majority of its original tenants from Kaumuali'i's time and the residential and agricultural patterns were largely preserved during Kekela's management. It might be suggested... that Kekela's long association with the neighboring *ahupua'a* of Lumahai would cause her to be familiar with the older Haena residents. She could not easily dispossess original tenants, especially if they were productive and responsible to their duties as well as respectful of her office.

Land registry and testimony numbered well over 150 taro pond fields of varying sizes and shapes in Haena. Of these 40 or so were situated within the park site. That Haena was well-developed and productive is unquestioned. Its water resources and available cultivable lands appear to be utilized maximally. (Silva 1995)

Pākī died in 1855, followed soon after by his wife, Konia, in 1857. Pākī's daughter, Bernice Pauahi Bishop, inherited their lands but soon after sold Hā'ena to W. H. Pease, a surveyor, in 1858. Because the lands were "in name only," this meant that the lands were never described or surveyed at the time of deeding (Silva 1995). Kekela died in Honolulu in 1865 but did make five claims of her own in Hā'ena (Silva 1995), at least one of which was within the park site (Carpenter 1996). Pease died in 1871 and the administrators of his estate conveyed Hā'ena to William Kinney in 1872 who then sold Hā'ena to Kenoī Kaukaha and 37 other individuals, referred to as the Hā'ena Hui (Hui Ku'ai'aina O Hā'ena), as tenants in common in 1875. In this transaction, roughly 2,500 acres were transferred. Five years later, "Mahuiki and Company of 30 natives" are listed as "taro planters" in Hā'ena. The company was said to be owners of 900 acres, 40 acres of which was in active cultivation (Silva 1995).

From historical accounts, it was known that a small landing was located at Kēʻē in 1895, and it probably served the residents of Hāʻena and the Nāpali coast (Silva 1995).

Missionary censuses showed a relatively small population residing in Hāʻena over this time period. In 1835, there were 116 people (16 of whom were minors) who resided in Hāʻena. By 1847, the population rose to 162 (54 of whom were under the age of 20). According to Silva (1995), this rise was probably due to the arrival of Chiefess Kekela and her entourage in 1839. However, by 1900, there were only 45 residents (seven households) in Hāʻena, all of whom were native Hawaiian, a drastic decrease over 50 years. Ten years later in 1910, there was a slight population increase to 67 individuals in fifteen households. However, demographically the population was beginning to change with two Asian immigrant households leasing land to grow rice in Hāʻena (Carpenter 1996).

Carpenter also notes that photographs from the early 1900s show that extensive areas of the park were still under taro cultivation. This included Loko Kēʻē which photos show planted with taro and Loko Naia, which appears in photos to have two dividing walls within it. The entire park area also appeared to be a treeless plain with only low-lying beach vegetation just behind the dunes (Carpenter 1996). According to Handy, by the 1930s, taro production dropped significantly, with the Limahuli and Mānoa Valley terraces being abandoned first. Limited production continued in the flatlands but also large areas along the lower reaches of Limahuli Stream were turned over to pasture or overgrown with brush and grass (Carpenter 1996).

Then, in 1946 and again in 1957, tsunami devastated the area. According to Silva, there was a stable Hawaiian population of about 60 individuals in Hāʻena at the time of the 1946 tidal wave. In the 1946 tsunami, at least nine people died and one went missing (Silva 1995). During the 1957 tsunami, all but four of the 29 homes that stood in Hāʻena were destroyed or deemed unlivable, but amazingly, there were no injuries or deaths. Wave heights of 32 feet above normal were reported at Hāʻena (Silva 1995).

Prior to the second tsunami, Hāʻena Hui members John Gregg Allerton and Paul G. Rice filed a petition for partition and dissolution of the Hāʻena Hui in June 1955. The three commissioners assigned to the case submitted their report ten years after the 1957 tsunami in April 1967.

As a result of the partition approved by the Commissioners, the County of Kauaʻi received parcels within the current park site, which included Wai a Kanaloa and Waiakapalaʻe wet caves and Lohiʻauʻs house site. The County also received Maniniholo, which is in Hāʻena County Park. The County was tasked with the maintenance and preservation of these sites for the general public. Disregard for this meant automatic transfer of the sites to the Pacific Tropical Botanical Garden. Title to another parcel was given to Allerton with the condition that he maintains and preserves a five-foot wide path for public access to the heiau. Upon his death or conveyance of property, title would automatically transfer to the County.

The State also requested a 40-acre section of prime beach front property for a public park. Four unawarded lots were also auctioned in 1967 to cover the legal costs of the partition. The auction was limited to existing shareholders and \$35,801 was netted (Silva 1995).

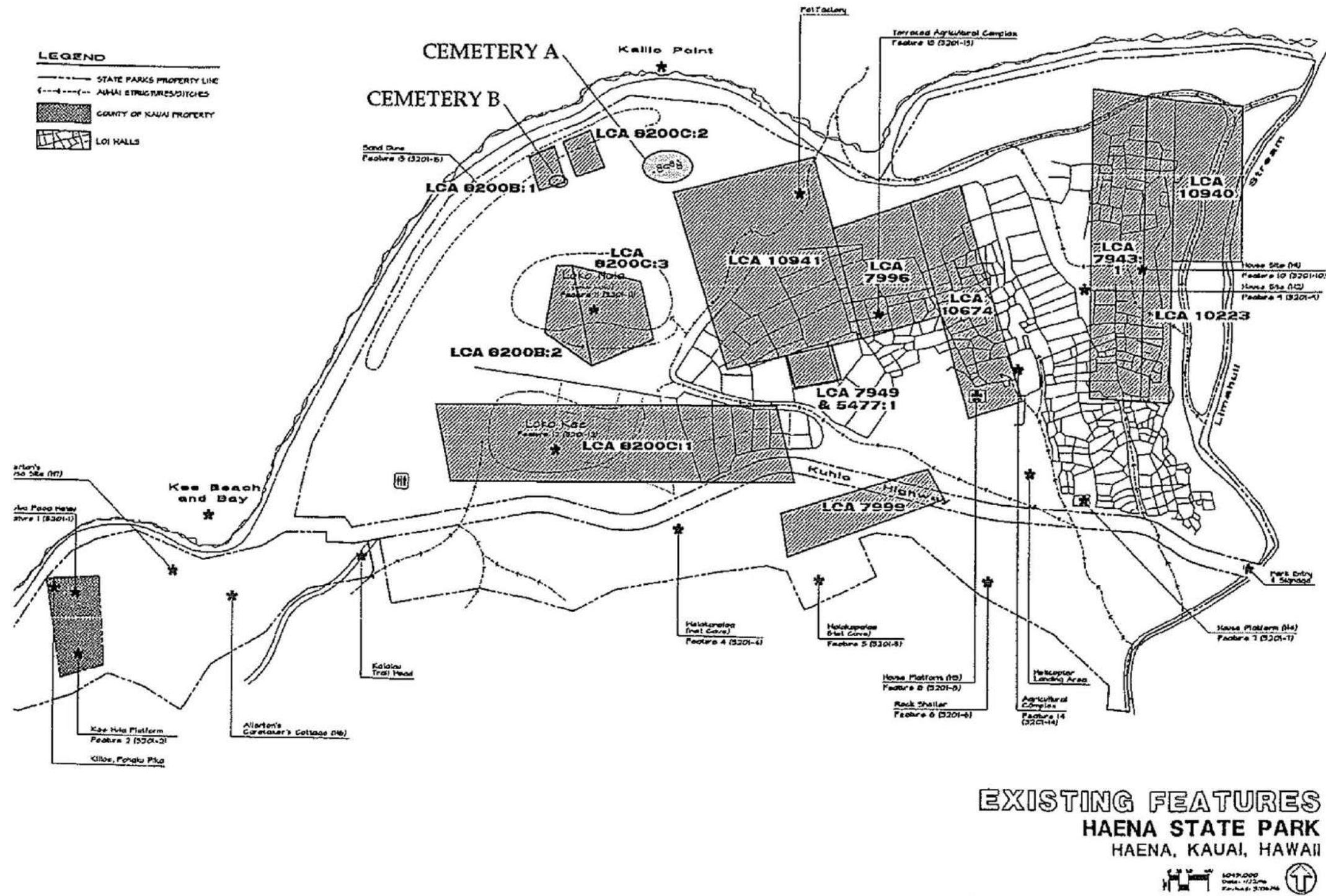
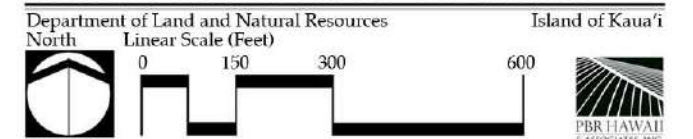


FIGURE 7
Land Commission Awards
HĀ'ENA STATE PARK



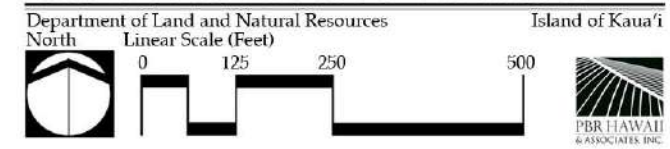
Source: Carpenter (1996): Figure 3. Approximate Locations of Land Commission Awards in Hā'ena State Park (LCA boundaries taken from Hawaii Tax Map Key).
Disclaimer: This graphic has been prepared for general planning purposes only. Incorrect or outdated Hawaiian spellings on source maps have not been corrected.



LEGEND

Hā'ena State Park Project Boundary

FIGURE 8
Tax Maps:
(4)5-9-001: por. 022 and 025; 5-9-008: 001
HĀ'ENA STATE PARK



Also during the late 1960s through the early 1970s, Howard Taylor, actress Elizabeth Taylor's brother, purchased a large parcel along the Hā'ena coast. A transient community arose at the area called "Taylor Camp." The Taylor Camp is remembered through various lenses; fondly by some who came across the place during the "flower power" years; and far less so by those who observed drug use, disrespect for the place, an abundance of rubbish, lack of sewer or waste disposal facilities and resulting hepatitis outbreaks.

Eventually, the State condemned this property in 1975 due to the unsanitary conditions and it was added to the park's inventory. According to Carpenter, the last of the Taylor Camp residents were evicted in 1977, which allowed the State to finally create the park. State Parks, under the guidance of Joseph Souza, a Kaua'i native, undertook extensive efforts to study and document the rich Hā'ena heritage and archaeology starting in the late 1970s. Initial park development was limited to a small comfort station and a small dirt parking lot in 1979.

Carpenter also notes that by 1964, based on a historical photograph of the area, both loko within the park site seem to be abandoned although several lo'i on the eastern side of the park were still actively cultivated. He also notes that the vast majority of the park site, particularly along the coast, was covered by a dense canopy of trees, similar to conditions today (Carpenter 1996).

2.3 CURRENT PARK OWNERSHIP, JURISDICTION, AND OPERATIONS

Hā'ena State Park is comprised of 65.7 acres of land and bordered to the east by Limahuli Stream, to the south by Ka Pali 'Ōahi o Makana, and by the Pacific Ocean to the north and west. It consists of two State-owned parcels set aside to the Division of State Parks— a 15.23-acre portion of a total of 180.23 acres, identified by Tax Map Key (TMK) 5-9-01:22 and 5-9-08:01 with 50.38 acres. The remaining 165 acres of parcel 22 is part of the Nāpali Coast State Wilderness Park. The trailhead for the Kalalau Trail, a popular eleven-mile (22 miles round trip) hike, is located within the park and provides access to the Nāpali Coast State Wilderness Park. A small 0.68-acre inholding is also located within the park that is owned by the County of Kaua'i and contains Ka Ulu a Paoa Heiau and Ke Ahu a Laka. It is identified as TMK 5-9-01:25. There are no known ceded lands within the park boundaries. A 2.3-acre portion of Kūhiō Highway also runs through the park and is owned by the State Department of Transportation.

The majority of the parklands consist of a wide coastal plain with a fringing reef and extensive sand dunes which up until the 1946 and 1957 tsunamis were wide open with little tree cover. Since then, much of the park has become overgrown with false kamani, java plum, and ironwood trees. Sole vehicular access to Hā'ena State Park is via Kūhiō Highway which terminates at Kē'ē Beach. The highway is owned and maintained by the State of Hawai'i Department of Transportation (DOT).

Intermittent funding has made it possible for the State to sporadically employ a full-time Park Interpretive Technician, or Park Ranger. Between December 31, 2010, and 2012, funding was not available. The State has recently refilled the position. The Park Ranger's duties include interacting with the public to provide information on the natural and cultural resources that are found in the area and safety precautions as well as maintenance and monitoring of park usage. One full-time Park Caretaker is also assigned to this park and services the comfort station and trash collection needs. DLNR's Division of Conservation and Resources Enforcement (DOCARE) is responsible for the enforcement of state parks and conservation district rules.

2.4 SUMMARY OF EXISTING LAND USE REGULATIONS

The following is a brief summary of the existing regulatory land use designations underlying Hā'ena State Park.

2.4.1 FEDERAL REGULATIONS

2.4.1.1 Endangered Species Act

ʻĪlio-holo-i-ka-uaua, the Hawaiian monk seal (*Monachus schauinslandi*), ʻōpeʻapeʻa or Hawaiian hoary bat (*Lasiurus cinereus semotus*), honu or native green sea turtle (*Chelonia mydas*), and honu ʻea or hawksbill turtle (*Eretmochelys imbricata*), along with a number of native Hawaiian waterbirds are listed by the Endangered Species Act as “Threatened” or “Endangered.” In August 2015, the National Marine Fisheries Service (NMFS) issued a final rule revising the critical habitat for the Hawaiian monk seals to include the marine habitat fronting Hā'ena State Park from the 200-meter depth contour line, including the seafloor, through the water's edge and 5 meters into the terrestrial environment from the shoreline (50 Code of Federal Regulations Part 226). Therefore, any changes in these areas will require consultation with the NMFS. Also, if habitats are created within the park specifically for endangered or threatened wildlife, additional permits and approvals may be required such as a Habitat Conservation Plan. Additional discussion specific to these areas follows in Sections 2.7.9 and 3.1.13.

2.4.1.2 Land and Water Conservation Fund

Federal grant monies from the LWCF were used toward the acquisition of the 65 acres of Hā'ena State Park. The LWCF provides matching grants to states with the objective of preserving and developing outdoor recreational resources. As such, any development or use in the park must follow the post-completion and stewardship requirements of this program. These requirements are specified in Section 8 of the LWCF State Assistance Program Manual (LWCF Manual 2008). Some highlights include but are not limited to:

- **Operation and Maintenance:**
 - Maintain the park for public outdoor recreational use in perpetuity.
 - Maintain sanitation, accessibility, safety and overall appearance.
 - Maintain facilities and roads.
 - Keep open for public use at reasonable hours and times of the year. Post LWCF acknowledgement sign.

- **Availability to Users:**
 - No discrimination on basis of race, color, national origin, religion or sex.
 - No discrimination on the basis of residence, including preferential reservation or membership systems, except to the extent that reasonable differences in admission and other fees may be maintained on such basis.
 - Fees charged to nonresidents cannot exceed twice that charged to residents. Where there is no charge for residents but a fee is charged to nonresidents, nonresident fees cannot exceed fees charged for residents at comparable State or local public facilities. Reservation, membership, or annual permit systems available to residents must also be available to nonresidents and the period of availability must be the same for both residents and nonresidents. Recipients are prohibited from providing residents the option of purchasing annual or daily

permits while at the same time restricting nonresidents to the purchase of annual permits only. Nonresident fishing and hunting license fees are excluded from these requirements.

- Reasonable limits on the extent and use of areas and facilities are permitted when such limitations are necessary for maintenance or preservation. Limitations may be imposed on the number of persons using an area or facility or the type of users, such as “hunters only” or “hikers only.” All limitations shall be in accord with the applicable grant agreement and amendments.
- **Lease and Concession Agreements:** Such agreements with third parties are allowed within LWCF sites. However, the State must retain control and tenure of the property and remains responsible for maintaining compliance with all federal regulations and there are specific rules for the agreements and operations including compliance with civil rights and accessibility laws, periodic compliance reviews, competitive fees, and clear indication that the area is a public facility.
- **Conversions of Use:** There are also specific rules regarding conversions of use, or the loss of outdoor recreational space. However, they will not be elaborated here since a conversion is not anticipated for the park. The full rules can be found in Section 8.E of the LWCF Manual, as amended.
- **Underground Utility Easements and Rights-of-Way:** The State may allow underground utility easements within the Section 6(f)(3) area so long as the easement site does not affect recreational use and is restored to its pre-existing condition within 12 months of disturbance.
- **Proposals to Construct Public Facilities:** Public facility requests will only be approved if the public facility clearly results in a net gain in outdoor recreation benefits or enhances the outdoor recreation use of the entire park and the facility is compatible with and significantly supportive of the outdoor recreation resources and opportunities. Proposals must be submitted as a project amendment and request approval from NPS.
- **Significant Change of Use:** The LWCF Act requires that the Section 6(f)(3) area be maintained in outdoor recreation use as defined in the project agreement. NPS approval must be obtained prior to any significant change in use from the original intent or plans. The 6(f) property is inspected every five years on behalf of the NPS to ensure compliance with the 6(f) requirements.

The State Liaison Officer (SLO) is responsible for administration of the LWCF Program in his/her State. This includes assuring compliance of LWCF projects with the requirements of this Manual and published regulations. It also requires the development and five-year updates to the State Comprehensive Outdoor Recreation Plan (SCORP). Hawai‘i’s SCORP was last updated in 2015.

For the State of Hawai‘i, the SLO is the Chairperson of the Department of Land and Natural Resources. In correspondence dated June 6, 2014, NPS commented that the draft master plan for the park shows, *“some changes to the park’s use reflect contemporary sensitivities to cultural resources and the sensitive shoreline ecosystem...the recreation opportunities include a variety of ocean recreation, walking, picnicking, nature viewing, sight-seeing, and interpretive exhibits*



with the potential for camping and bicycling. These provide assurance that the public beach park qualities that make this a valuable LWCF park are planned for the future” (Droge, 2014). The NPS letter also speaks to the agricultural terraces, “The master plan draft also shows that the park will encompass a significant community gardening area with the proposed restoration of the lo‘i kalo (wetlands). Although such an area is unusual within a state park and more common in local parks, such areas are not out of compliance with LWCF requirements...Maintaining such a practice with an interpretive/educational component is clearly consistent with several goals within the 2008 SCORP...it is advisable to include trails and interpretive opportunities to ensure all members of the public – including visitors from afar and anyone not engaged in the community garden activities—can still understand what is happening there, the cultural significance, and generally not feel excluded from this public place...any agricultural goods harvested within the community garden areas should be generally for park programs and personal use and not part of a formal commercial or for-profit farming organization.”

2.4.1.3 Clean Water Act

Section 404 of The Clean Water Act regulates removal or fill of material from navigable waters of the United States. The US Army Corps of Engineers is tasked with implementing these regulations. Types of activities that are typically subject to this regulation are dredging and filling. Depending on the location, beach nourishment activities may be subject to Section 404.

Filling or altering wetlands are also subject to these regulations, if they are determined to be jurisdictional. As described previously, much of the park is mapped as wetlands on the US Fish and Wildlife Service produced National Wetland Inventory (NWI) maps. These maps are non-regulatory and serve to provide an indication that wetlands may be present in the area. Depending on the proposed location of development within the park, the Army Corps of Engineers may need to determine whether wetlands are present. Also depending on location, Army Corps involvement could be limited to confirming a biologist’s assessment that no wetlands are present. However, if it appears that development is within or near wetland features, a biologist will likely need to delineate the feature and request concurrence with the delineation from the Army Corps Regulatory Branch. For example, the wetland boundary was mapped and confirmed by the Army Corps for the constructed wetland at Kē‘ē and that boundary is shown on the wetlands map that follows (Figure 16). If development within a wetland is proposed, it is likely that the Regulatory Branch will require compensatory mitigation.

Section 402 of the Clean Water Act relates to the National Pollutant Discharge Elimination System (NPDES). NPDES permits are administered by the State Department of Health and are the basic structure for regulating discharge of pollutants to waters of the United States. In general, for new construction, compliance with NPDES requirements involve employing appropriate best management practices (BMP) to control sediment or polluting runoff from flowing into waterways during the construction activity. Certain construction activities within the park may trigger the need for an NPDES permit.

2.4.1.4 National Historic Preservation Act (NHPA) of 1966

Any federal action such as granting a permit or providing funding triggers Section 106 review under the National Historic Preservation Act of 1966 (NHPA) when those actions have the potential to affect properties listed on the National Register of Historic Places or qualified to be listed on the register. Federal agencies must take into account the effects of their undertakings on

historic properties, and afford the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment. The federal historic preservation review process is outlined in regulations issued by ACHP. These regulations entitled, “Protection of Historic Properties” (36 CFR Part 800), became effective on January 11, 2001 (ACHP 2011). Because the majority of the park is listed on the National Register of Historic Places (Hā‘ena Archeological Complex, State Site Number 30-02-1600), any federal action affecting the park will trigger Section 106 review.

2.4.1.5 Hawaiian Islands Humpback Whale National Marine Sanctuary

The Hawaiian Islands Humpback Whale National Marine Sanctuary (HIHWNMS) was established in 1992 by Congress and is jointly managed by the National Oceanic and Atmospheric Administration (NOAA) and the State of Hawai‘i. There are sanctuary areas throughout the Hawaiian Islands and the only designated area for Kaua‘i is along the North Shore. It starts at Ka‘ilio Point and stretches east past Kilauea to Mōkōlea Point. It extends out from the shoreline to the 600-foot bathymetric contour since humpback whales tend to congregate in ocean waters less than 600 feet deep (HIHWNMS 2009). See Figure 9.

According to NOAA, the Hawaiian Islands constitute one of the world's most important humpback whale habitats. About 12,000 humpback whales migrate to Hawai‘i to breed, calf, and nurse their young during the months of November through May, with a peak usually occurring from January through March. State and Federal regulations require that ocean users not approach within 100 yards of humpback whales. These regulations apply throughout the Hawaiian Islands; however penalties may be higher if convicted of a violation within the sanctuary boundary. Seasonally rough ocean conditions that curtail North Shore tour boat operations occur during most of the months that humpback whales are in Hawai‘i. Humpback whales are visible from shore, especially from elevated vantage points (Souza, personal communication 2011).

The HIHWNMS’s primary activities currently include entanglement response, resource protection, science and education/outreach. Interpretive signage has been installed on selected properties abutting the sanctuary. On Kaua‘i, signs have already been installed at Kīlauea Point National Wildlife Refuge. The sanctuary program is interested in partnering with other properties for installation of interpretive signage, including at Hā‘ena State Park, where a portion of the shoreline is within the sanctuary boundary. The project team discussed with Jean Souza from HIHWNMS about locating interpretive displays within or near the Education and Cultural Center.

The HIHWNMS is also developing a sanctuary management plan and is working with communities near the sanctuary and a wide variety of other stakeholders, ocean users, commercial tour operators, and community members, some of whom are on the Hā‘ena MPAC. The sanctuary program is exploring how it can help these communities achieve their vision and objectives. The management plan review process includes an EIS and they estimate the plan will go out for public comment in 2013 and will be finalized in 2014.

They are also assisting in the development of a solar and lunar calendar inspired by some of their discussions with Hanalei fishermen to help support local fish populations. Since both fishermen and the sanctuary believe that increasing the fish population would support both local communities and marine life, the calendar would help individuals to match their fishing practices with spawning cycles in the area, so that fish populations can thrive. The sanctuary is willing to

partner with State Parks and other organizations in similar collaborative and educational programs.

2.4.2 STATE OF HAWAI‘I

2.4.2.1 State Environmental Review Law

The State Environmental Review Law, Chapter 343, Hawai‘i Revised Statutes (HRS) requires an environmental assessment for any action that proposes the use of State or County lands and funds. Compliance with Chapter 343, HRS, will be necessary for any new development in Hā‘ena State Park and an environmental impact statement (EIS) will be prepared for this project.

2.4.2.2 State Land Use Law

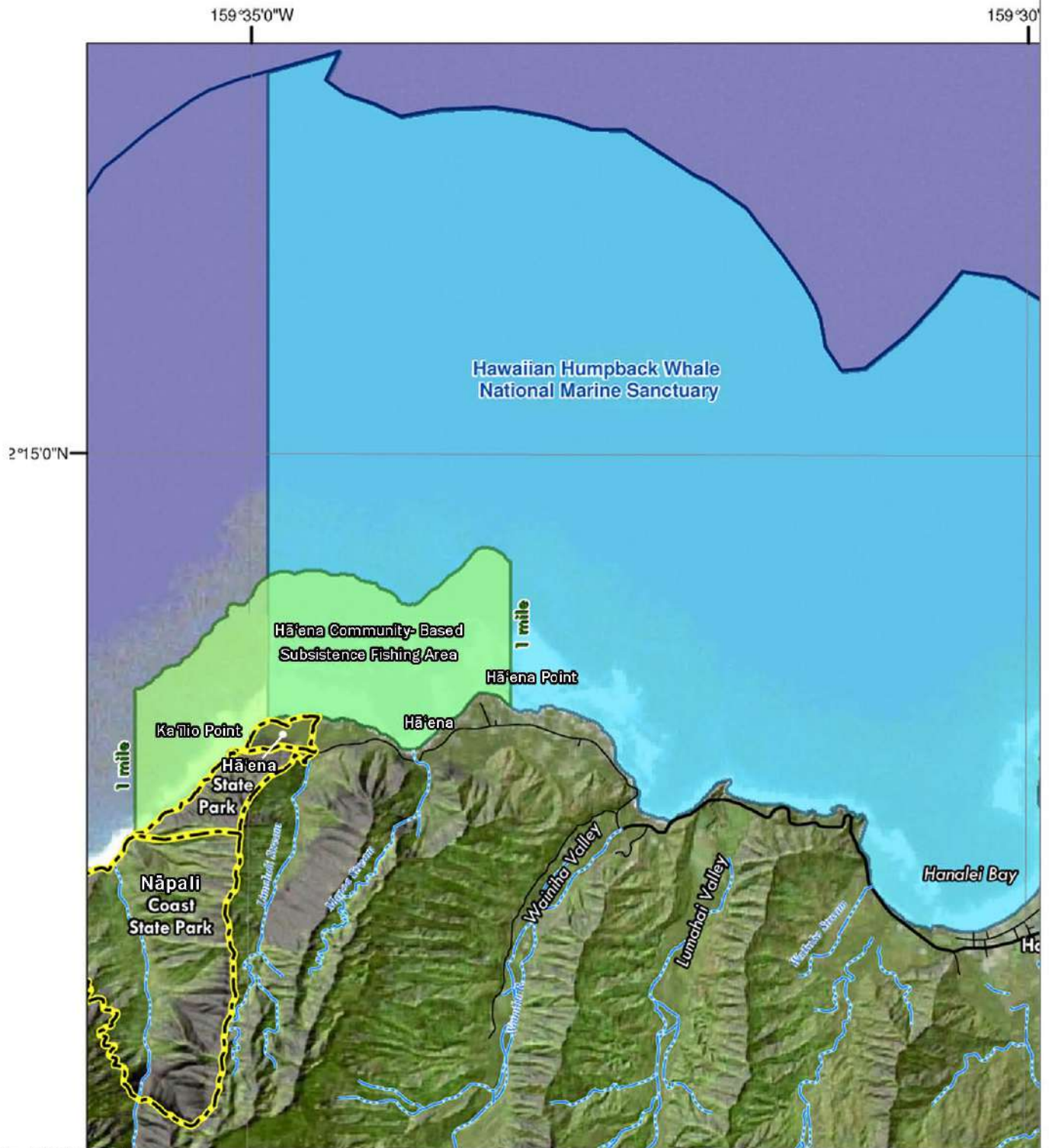
The State Land Use Law (Chapter 205, HRS), establishes the State Land Use Commission and authorizes this body to designate all lands in the State into one of four districts: Urban, Rural, Agricultural, or Conservation. Hā‘ena State Park is within the Conservation District (see Figure 10). This district is intended to protect watersheds and water sources; scenic and historical areas; parks; wilderness; open spaces; recreational areas; habitats of endemic plants; fish and wildlife; and all submerged lands seaward of the shoreline. Conservation lands are administered by the State Board of Land and Natural Resources.

Within the Conservation District, there are five subzones: Protective, Limited, Resource, General and Special. Excluding the Special Subzone, the four subzones are arranged hierarchically with regards to environmental sensitivity. The most sensitive areas are within the Protective Subzone and the least sensitive are within the General. The Special subzone is applied only to certain areas to allow a unique land use on a specific site. The majority of the terrestrial portions of Hā‘ena State Park are located within the Resource Subzone which includes parklands. A small portion of the mauka area south of the highway near the entrance is classified as Limited (see Figure 11). The offshore areas of the park are within the Protective Subzone. Proposed uses within the Conservation District may or may not require various DLNR or BLNR approvals depending upon the proposed use and the subzone in which it is located. Section 13-5 of the Hawai‘i Administrative Rules identifies the objectives and permitted uses for each subzone and permits required for each use.

2.4.2.3 North Shore Kaua‘i Ocean Recreation Management Area

Currently, all recreational boating and related vessel activity is under the jurisdiction of the State DLNR Division of Boating and Ocean Recreation (DOBOR) and regulated by HAR Title 13, Chapter 256, Subchapter 2, “North Shore Kaua‘i Ocean Recreation Management Area.” This management area includes all ocean waters and navigable streams between Moloa‘a Bay and the southernmost boundary of the Nāpali Coast State Wilderness Park, and extends 3,000 feet seaward.

Section 13-256-41, HAR outlines restrictions specifically for the Nāpali Coast ocean waters which encompass all offshore waters of Hā‘ena State Park.



Source: State of Hawaii GIS; NOAA; PDC
 Whale Sanctuary: 15 CFR 992.41
 Subsistence Fishing Area: S.B. 2501 Act 241 June 26, 2006 revising HRS 188 Part II

LEGEND

- Hā'ena Community-Based Subsistence Fishing Area
- Hawaiian Humpback Whale National Marine Sanctuary Boundary
- State Parks
- 600' Bathymetric Contour

FIGURE 9
 Marine Management Areas
HĀ'ENA STATE PARK

Department of Land and Natural Resources Island of Kaua'i

NORTH LINEAR SCALE (Miles)

PBR HAWAII
 & ASSOCIATES, INC.

Source: SWCA Environmental Consultants (2009)
 Disclaimer: This graphic has been prepared for general planning purpose only. Diacriticals have also been added for Hawaiian spelling.

PACIFIC OCEAN

Ka'ilio Point


Kē'e Beach

C

KUHIŌ HWY



LEGEND

-  Hā'ena State Park Project Boundary
-  Road
-  A - Agricultural
-  C - Conservation
-  R - Rural
-  U - Urban

Source: State Land Use Commission (GIS, 2008)
Disclaimer: This graphic has been prepared for general planning purposes only.

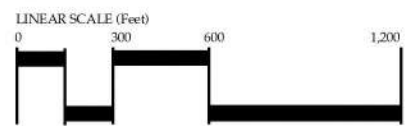
FIGURE 10

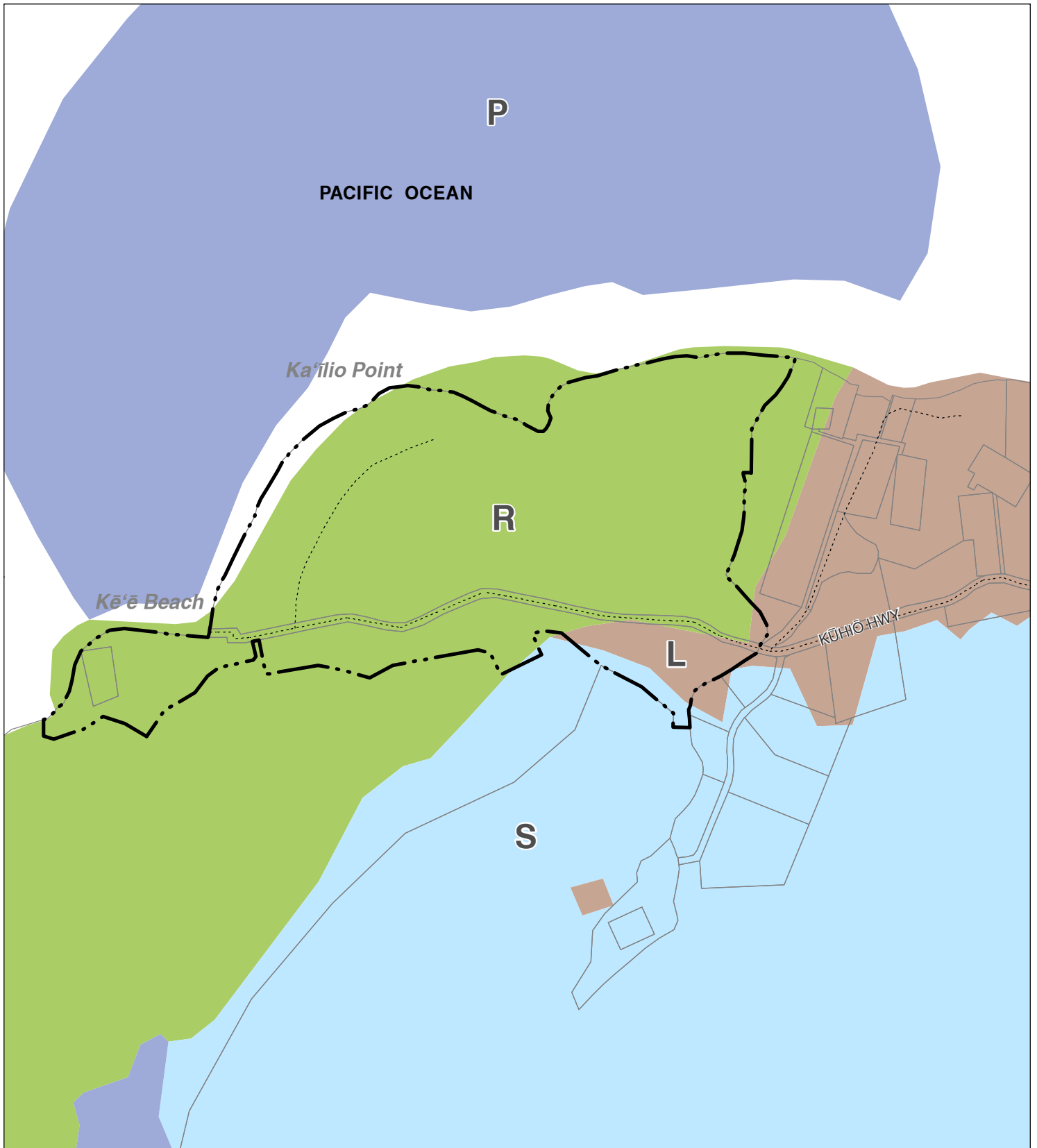
State Land Use District

HĀ'ENA STATE PARK







Department of Land and Natural Resources

Island of Kaua'i





LEGEND

-  Hā'ena State Park Project Boundary
-  Road
-  R - Resource Subzone
-  L - Limited Subzone
-  S - Special Subzone
-  P - Protective Subzone

Source: State Department of Land and Natural Resources (1995)
 Disclaimer: This graphic has been prepared for general planning purposes only.

FIGURE 11
 Conservation District Subzones

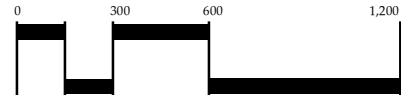
HĀ'ENA STATE PARK

Department of Land and Natural Resources

Island of Kaua'i

NORTH

LINEAR SCALE (Feet)



The restrictions include:

- No person shall navigate a commercial motorboat or conduct a commercial kayak tour except for those who have been issued a permit by DLNR.
- Commercial vessels are limited to a passenger carrying capacity of less than 50.
- No commercial operator shall embark or disembark passengers along the shoreline unless they have a valid permit from the BLNR.

There are also regulations for operations within sea caves and within the Nu‘alolo Kai subzone, which is further down the coast to the west.

2.4.2.4 Hā‘ena Community-Based Subsistence Fishery

At present, fishing in the nearshore waters of Hā‘ena State Park is regulated by the State DLNR Division of Aquatic Resources (DAR). In 2006, Act 241 was enacted, establishing a community-based subsistence fishery area for Hā‘ena ahupua‘a to protect the fish stock and coral reef habitats. The rules of the HCBSF were adopted by the BLNR on October 24, 2014 and signed into law in August 2015 as Chapter 13-60.8, HAR. Figure 9 shows the location of the Hā‘ena Community-Based Subsistence Fishery (HCBSF) Area.

2.4.2.5 Historic Preservation, Burial Sites and Human Remains

Chapter 6E of the Hawai‘i Revised Statutes (HRS), entitled “Historic Preservation,” is the State’s historic preservation law. It establishes the State’s historic preservation program including the appointment of a State Historic Preservation Officer as well as regulates publicly and privately owned historic property and cemeteries. It also establishes specific state monuments and memorials as well as the enforcement and penalties for violations. Specific to the park, Chapter 6E requires that all public projects “which may affect [a] historic property, ... especially those listed on the Hawai‘i register of historic places,” be reviewed by the DLNR, as represented by the State Historic Preservation Division (SHPD), to determine the potential effect of the proposed project. “The proposed project shall not be commenced, or in the event it has already begun, continued, until the [DLNR] shall have given its written concurrence. The [DLNR] is to provide written concurrence or non-concurrence within ninety days after the filing of a request with the [DLNR]” (§6E-8, HRS).

The detailed administrative rules implementing the state historic preservation project review process for governmental projects are defined in Chapter 13-275, HAR. According to the rules, the primary participants in the process are SHPD and the agency with jurisdiction over the project. The rules also state, however, that any project that contains sites which are considered significant under criteria “e,” or have important value to the native Hawaiian people or to another ethnic group due to associations with cultural practices carried out or continued to be carried out at the property, then appropriate ethnic organizations or groups shall be consulted on the project. In addition, for those properties which may have significance to native Hawaiians, the Office of Hawaiian Affairs (OHA) shall also be consulted. Chapters 13-276 through 13-284, HAR provide further rules that shall be followed on any required studies or analyses, professional qualifications, permits, and procedures for inadvertent discoveries.

With regard to burial sites and human remains, Chapter 6E, HRS establishes the law relating to the treatment of prehistoric and historic burials discovered outside of known cemeteries over 50 years old (§6E-43, §6E-43.6) and establishes the island burial councils (§6E-43.5). The Rules of

Practice and Procedure Relating to Burial Sites and Human Remains (Chapter 13-300, HAR) relate to the management of burial sites over 50 years. The rules are implemented by SHPD. The division works with lineal descendants and other cultural organizations when burial remains are discovered. Island burial councils are administratively attached to SHPD and address concerns relating to Native Hawaiian burial sites. Any recommendation- whether it relates to relocation or preservation in place of previously identified Hawaiian burials over 50 years old- must obtain the approval of the appropriate Island Burial Council. The Kaua'i/Ni'ihau Islands Burial Council typically meets once a month. Any inadvertent find of human remains over 50 years old falls under the jurisdiction of SHPD and all work must stop immediately in the area until SHPD determines appropriate treatment.

2.4.2.6 Commission on Water Resource Management

Alterations to streams such as dams, diversions and even some restoration activities are subject to a Stream Channel Alteration Permit. These permits implement the State Water Code (Chapter 174C, HRS) and are administered by the Commission on Water Resource Management. Any alteration to Limahuli Stream would require such a permit.

2.4.2.7 Kūhiō Highway (Route 560) Historic Roadway Corridor Plan

Adopted in 2005 by the State DOT, the *Kūhiō Highway (Route 560) Historic Roadway Corridor Plan* was prepared by Belt Collins Hawai'i Ltd. and provides design guidelines to help preserve the natural, historic, and rural character of Route 560 on Kaua'i. Route 560 stretches roughly ten miles from Hā'ena to the west side of the Princeville entrance road (Ka Haku Road) and includes the section within the park. As noted earlier, Route 560 is listed on both the Hawai'i and National Registers of Historic Places and it has retained much of its original character including narrow lanes and pavement, one-lane bridges, winding alignments, concrete ford crossings, and timber and masonry guardrails.

The plan is used mainly by the Kaua'i District Office of the State DOT to guide the long-term "preservation, rehabilitation, restoration, reconstruction and improvement, and repair and maintenance work on Route 560 over the next 25 years" (Belt Collins 2005). The plan does not include specific improvement projects but provides guidance for any work that is required on Route 560. It notes that Route 560 is not on the National Highway System and therefore does not require Federal Highway Administration approval for design exceptions. If, however, federal aid is used for the project, federal review is required. It also recommends that any rockfall stabilization work be designed "in harmony with the historic character-defining qualities of the right-of-way corridor" while providing safety for motorists, bicyclists, and pedestrians (Belt Collins 2005).

2.4.3 COUNTY OF KAUA'I

2.4.3.1 General Plan

The General Plan (GP) of the County of Kaua'i is a long-range policy document that fulfills legal mandates of State Law and the Charter of the County of Kaua'i. It is intended to help guide long-range development for the enhancement and improvement of life on Kaua'i, advance the County's vision for Kaua'i and establish the strategies to help achieve that vision including

recommended land uses. The GP was last updated in 2000 and the Kaua‘i Planning Department is currently working on the next update.

The 2000 GP Update (4.2.8.3(e)) includes policy statements and goals such as, “*improve facilities, maintenance and management of activities at State and County Parks.*” The 2000 GP North Shore Planning District Land Use Map designates the areas of Hā‘ena State Park makai of the highway as Park. The areas mauka of the highway including the area around the heiau complex are designated as Open. See Figure 12.

The 2000 GP North Shore Planning District Heritage Resource Map identifies the park as an Open Space/Park area fronting a Scenic Roadway Corridor (Kūhiō Highway). It also identifies the coral reefs along the shore and two heiau sites within the park (see Figure 13). One is Ka Ulu a Paoa Heiau and the other appears to be located in the area of Lohi‘au’s House Platform although it is not labeled on the County’s map.

2.4.3.2 North Shore Development Plan

The North Shore Development Plan (DP) implements zoning and provides a framework for guidelines to direct the physical locations and relationships of major improvements, buildings and landscapes within the North Shore Special Planning Area. It was last updated in 1980 by Wilson Okamoto & Associates. The development plan designation and recommended zoning for the park are both Open. Parks are permitted uses in the Open District. See Figure 14. Applicable guidelines and policies from the DP include:

Goals and Objectives:

- **Goal A:** To preserve the unique natural beauty of the North Shore Planning Area.
 - To identify those features of natural beauty and the measures necessary to assure their preservation.
 - Retain the Nāpali Coastline as it is now.
- **Goal B:** To preserve the special rural charm of the North Shore Planning Area.
 - To provide for the development of man-made features that do not visually overwhelm the existing small structures and the prevailing plant materials and soft groundcover (landscape treatment).
 - To provide for the development of man-made features that will not require extensive services or modifications to the landscape, [or] not [be] in harmony with the rural character.
- **Goal E:** To preserve the wildlife and flora of the North Shore, recognizing man’s dependence upon this preservation for his own health and welfare.
 - Identify the habitats of birds, fish and animal life, and present programs for the preservation of endangered species.
 - Identify the major vegetation patterns and develop programs for the preservation of significant forests or particular species or plant associations.
- **Goal F:** To insure the preservation of the historic-archaeological sites in the North Shore Planning Area.
 - Identify and catalog the archaeological sites within the North Shore Planning Area and provide for their protection and appropriate future inspection by the public.
 - Identify the historic sites, trails, plant materials, buildings, water systems and other items of historic interest to the people and provide for their protection.

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- **Goal H:** To provide for recreational opportunities that are compatible with the unique qualities and natural features of the North Shore.
 - Develop a recreation plan that provides for a diversity of recreation opportunities for the people of the North Shore Planning Area and visitors.

Recommendations:

- **Economy:**
 - 1. In terms of maintaining the desired rural lifestyle, the agricultural industry is the most important industry to the North Shore.
 - 9. The natural beauty of the area is the primary attraction to tourists, and should be preserved and enhanced. Tourist accommodations or facilities must not be allowed at the expense of environmental degradation.
 - 10. Scenic and recreational resources should be made available to tourists only to the extent that proper management can assure the preservation of such resources from exploitation and irreversible loss.
 - 11. The values and lifestyle of the local residents should not be unreasonably compromised to accommodate the tourist industry.
 - 12. Commercialization of natural resources is to be discouraged.

- **Natural Resources:**
 - *Scenic/Historic:*
 - 1. Scenic views should not be adversely affected by man-made improvements.
 - 3. Archaeological reconnaissance surveys should be required for activities and new developments proposed on lands which may contain significant historical features.
 - 4. Discretion must be exercised in determining the value of preserving historical features, with respect to safety, hardship, maintenance costs, and educational, cultural, and aesthetic benefits.

 - *Outdoor Recreation:*
 - 1. Only basic supportive facilities should be provided at outdoor recreation areas selected for general public use in order to enhance the experience. Improvements should be limited to such things as access, comfort stations, trash receptacles, water fountains, emergency telephones, and parking.
 - 2. Multiple activity recreation areas must be managed to avoid hazardous conflicts between recreators and allow maximum use of resources (e.g. area suitable for swimming, paddling, and fishing; or area suitable for hunting, bird watching, and hiking).
 - 6. Although public access is obtained to recreational resource areas, publicity should be minimized unless the appropriate agency can assure adequate management and security measures. Local residents should be allowed to continue traditional patterns of resource use.
 - 7. New public access to resource areas should be limited to pedestrian trails rather than vehicular roads, if control of use is an objective. Vehicular access should be allowed only for maintenance and emergencies.
 - 8. Access to the Nāpali coast area [west of Kē‘ē] should be limited to foot trails by hikers and campers with permits only. Other modes of

commercial access such as helicopters and boats should be discouraged, except for maintenance and emergency purposes.

- *Wildlife:*
 - 1. Important natural habitat areas for wildlife should be protected and enhanced.
 - 2. Wildlife resources significant to traditional recreational and dietary habits of local residents must be managed to assure availability in the future.
 - 3. Rare and endangered animal and plant species habitats should receive particular attention, in order to assure viable future communities.

- *Natural Hazards:*
 - 1. Development in tsunami inundation areas should be discouraged. No high density improvements should be permitted.
 - 2. Development in areas subject to riverine flooding should be discouraged, unless adequate flood-proofing measures can be demonstrated. No high density improvements should be permitted.

- *Social Development:*
 - 3. Improve recreational facilities.

- *Land Use:*
 - Nāpali Subarea: 1. The region should be maintained primarily as a natural wilderness reserve, and secondarily as a limited outdoor recreational area.
2. Public access should be by foot trail only. Other modes of access such as boats and helicopters should be restricted to maintenance, emergencies, and scientific research only.

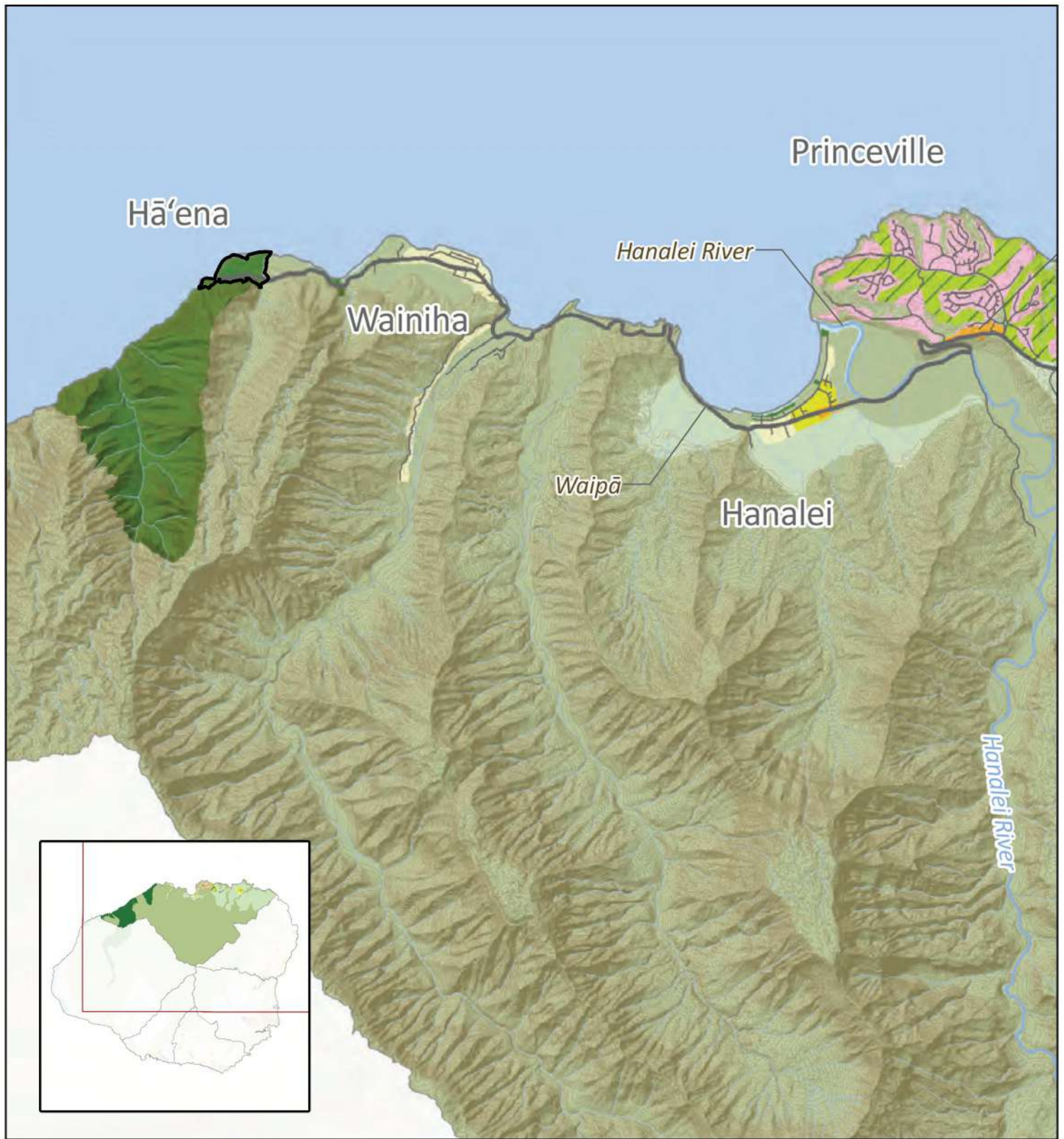
2.4.3.3 Zoning

Hā'ena State Park is in the State Land Use Conservation District. The DLNR regulates land uses in the Conservation District and the majority of the terrestrial portions of Hā'ena State Park are located within the Resource Subzone which includes parklands. A small portion of the mauka area south of the highway near the entrance is classified as Limited (see Figure 11).

2.4.3.4 Special Management Area

The Special Management Area (SMA) implements Chapter 205A, HRS, Coastal Zone Management Act and was established to protect coastal resources in areas extending inland of the shoreline. The majority of Hā'ena State Park is located within the SMA as shown on Figure 15.

Upon acceptance of a Final EIS, a Special Management Area (SMA) permit will be required for any park development within the SMA from the County of Kaua'i. An SMA permit was obtained for the constructed wetlands that were recently completed for the renovated comfort station at Kē'ē.



LEGEND

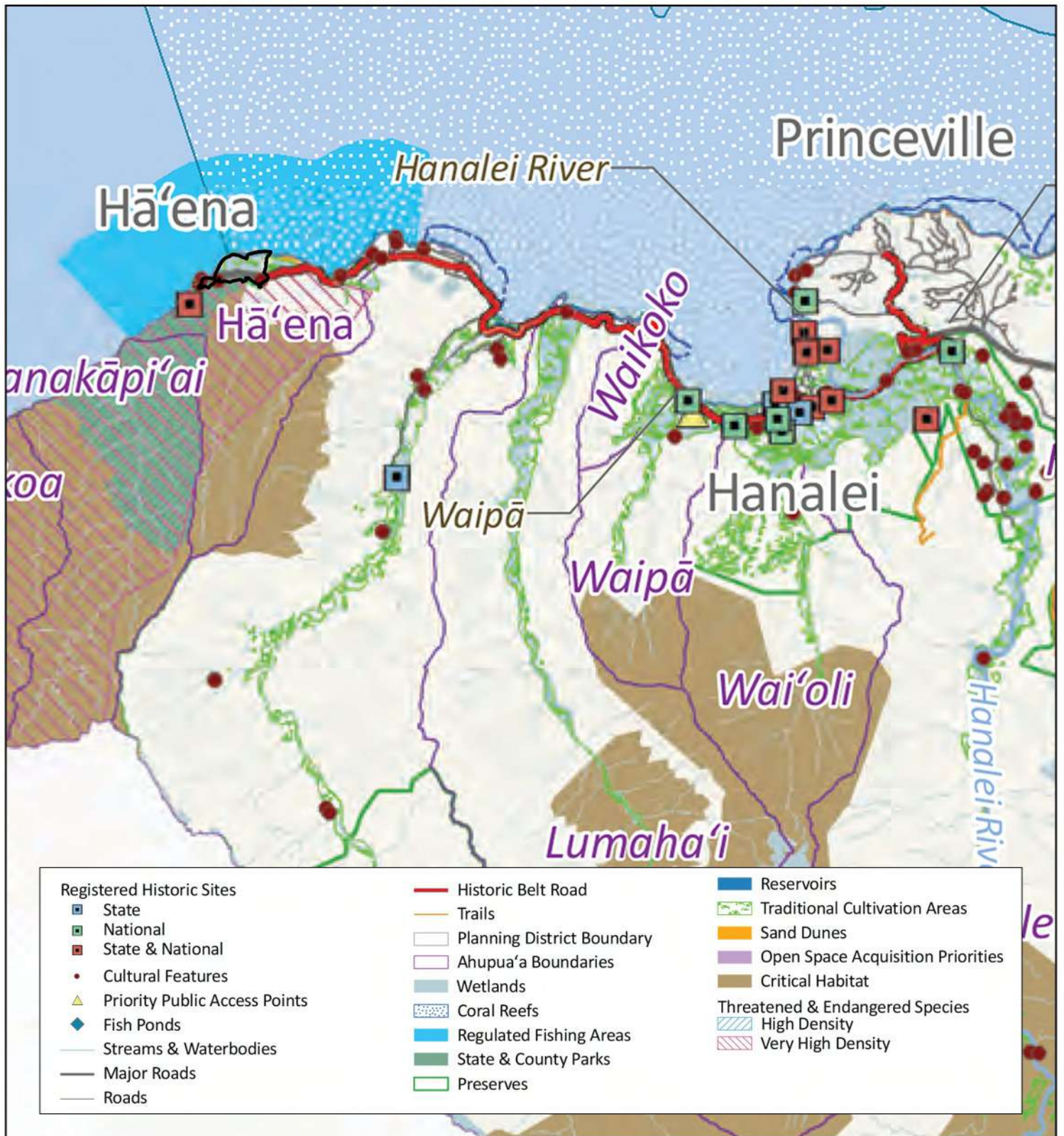
- Hā'ena State Park Project Boundary
- Planning District Boundary
- Major Roads
- Roads
- Streams
- Reservoirs
- Natural
- Agriculture
- Agriculture (IAL)
- Parks and Recreation
- Golf Course
- Homestead
- Residential Community
- Neighborhood Center
- Neighborhood General
- Resort
- Transportation

FIGURE 12
General Plan Land Use Map
HĀ'ENA STATE PARK

Department of Land and Natural Resources
 North
 Linear Scale (Miles)
 0 0.75 1.5 3

Island of Kauai

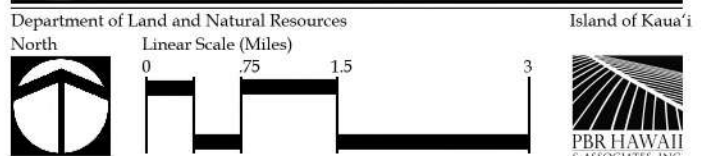
Source: Kauai County General Plan, Figure 5-7 North Shore Land Use Map (2018)
 Disclaimer: This graphic has been prepared for general planning purposes only.



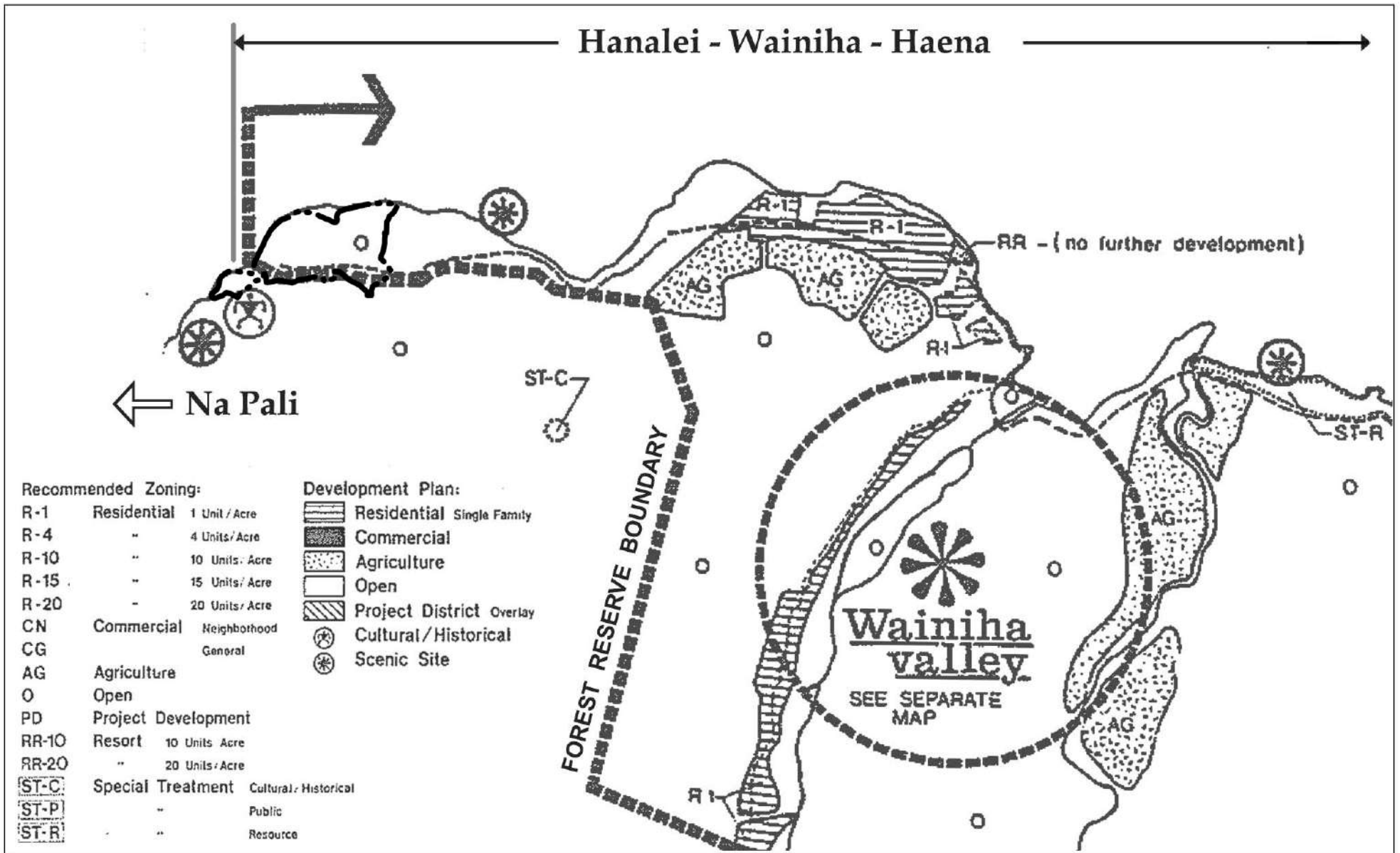
LEGEND

Hā'ena State Park Project Boundary

FIGURE 13
General Plan Heritage Resources Map
HĀ'ENA STATE PARK



Source: Kaua'i County General Plan, Figure 5-14 North Shore Heritage Resource Map (2018)
 Disclaimer: This graphic has been prepared for general planning purposes only.



LEGEND

Hā'ena State Park Project Boundary

FIGURE 14

North Shore Development Plan Update

HĀ'ENA STATE PARK

Department of Land and Natural Resources

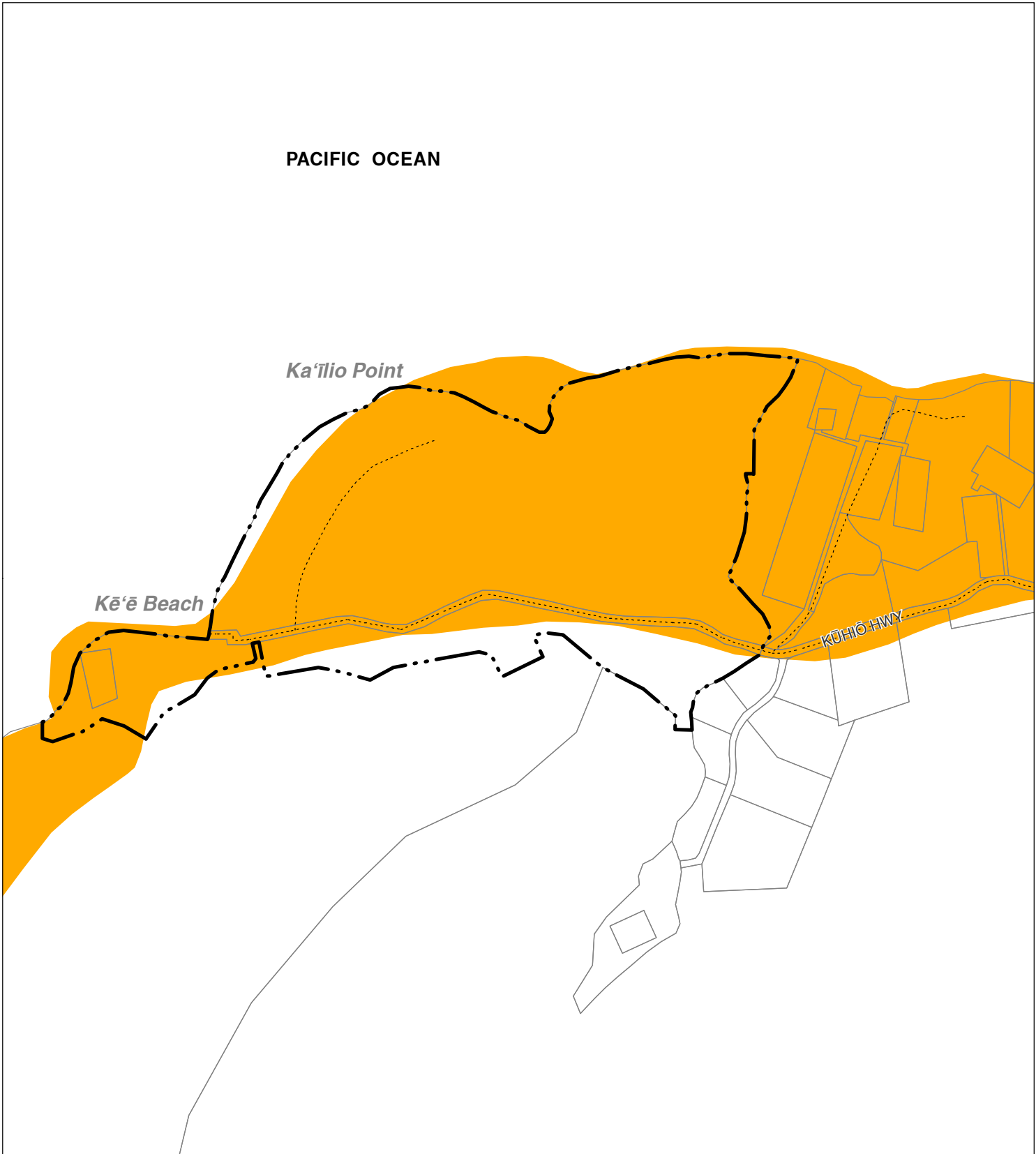
Island of Kaua'i

NORTH

LINEAR SCALE (feet)



Source: Wilson Okamoto & Associates (1980)
 Disclaimer: This graphic has been prepared for general planning purposes only.
 Incorrect or outdated Hawaiian spellings on source maps have not been corrected.



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

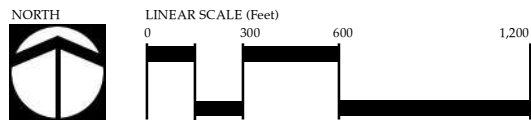
-  Hā'ena State Park Project Boundary
-  Road
-  Within the Special Management Area

FIGURE 15
Special Management Area
HĀ'ENA STATE PARK

Department of Land and Natural Resources Island of Kaua'i



Source: County Planning Department (GIS, 2008)
Disclaimer: This graphic has been prepared for general planning purposes only.

2.4.3.5 Shoreline Setback Ordinance

Ordinance 979, adopted December 5, 2014, sets forth a procedure for establishing building shoreline setbacks for the County of Kaua‘i (Section 8-27.3, KCC). The shoreline setback requirements are applicable to the Park since it abuts the shoreline (Section 8-27.1, KCC). The determination of the shoreline setback is based on a lot’s average depth and historic rates of shoreline change as shown in SOEST’s Kaua‘i Coastal Erosion Study as shown in Figure 18 for the Park. For lots with an average depth that is greater than 220 feet, the greater setback of the following shall apply:

- (A) Forty feet plus seventy times the annual coastal erosion rate as measured from the certified shoreline. In addition, ...for all applicable lots subject to the Kaua‘i Coastal Erosion Study, a mandatory twenty foot additional safety buffer shall be added to the setback area for episodic coastal events, sea level rise and other hazards; or
- (B) A shoreline setback line of one hundred feet from the certified shoreline.

The average depth of the Park’s shoreline parcel TMK 5-9-08:01 is approximately 1,000 feet. Even at its narrowest point, it is roughly 750 feet deep. The erosion rate ranges from zero to one foot per year along the Park’s shoreline. Therefore, at most the shoreline setback would be 130 feet from the certified shoreline where the erosion rate is one foot per year. At a minimum it would be 100 feet from the certified shoreline where the erosion rate is zero. A Shoreline Setback Determination will be required by the County of Kaua‘i for implementation. However, with the exception of the relocated lifeguard tower and dune restoration activities, State Parks should locate any proposed permanent structures described in the Master Plan outside of the shoreline setback area wherever practical.

2.4.3.6 Kaua‘i Historic Preservation Review Commission

Article 8-25 of the Kaua‘i County Code is the county law which established the Kaua‘i Historic Preservation Review Commission (KHPRC). The KHPRC is empowered, among other duties, to advise the County of Kaua‘i Planning Department and Planning Commission on matters related to historic resources within the County of Kaua‘i. They also advise and assist other Federal, State and County government agencies as requested in carrying out their historic preservation responsibilities. The County of Kaua‘i Planning Director, or his designee, is responsible for administering the KHPRC’s historic preservation program and serves as its liaison with SHPD (KCC §8-25.2(d)).

2.4.4 NATIONAL AND STATE REGISTERS OF HISTORIC PLACES

The park includes the Hā‘ena Archaeological Complex, which stretches from Limahuli Stream to Kē‘ē. It was listed on both the Hawai‘i and National Registers of Historic Places in 1984 (State site number 30-02-1600). Kūhiō Highway between Princeville and Kē‘ē is also listed on the National Register of Historic Places as “Kaua‘i Belt Road” (site number 30-02-9396). It was listed in 2004. The Nāpali Coast Archaeological District (30-02-3200) overlaps the park within TMK: 5-9-01:22 in the areas mauka of the highway and was listed on both National and State Registers in 1984 at the same time the “Hā‘ena Archaeological Complex” was listed.

2.5 RELATIONSHIP TO EXISTING RECREATIONAL FACILITIES

The County of Kaua‘i owns and manages a total of 67 parks totaling 487.4 acres in land area. County parks include facilities for active as well as passive recreation. Within the Hanalei District, there are 38.93 acres of County-run facilities. The County parks closest to Hā‘ena State Park are Hā‘ena County Park and ‘Anini Beach Park. Both County parks offer picnic and camping facilities. Hā‘ena County Park is staffed by lifeguards. ‘Anini Beach Park includes a boat ramp.

Photo 16 – Kalalau Trailhead Interpretive Signage



The Division of State Parks owns and operates ten park facilities on Kaua‘i, including Ahukini and Waimea State Recreation Piers, Kōke‘e and Waimea Canyon State Parks, Wailua River State Park, Russian Fort Elizabeth State Historical Park, Polihale State Park; Nāpali Coast State Wilderness Park, Wahiawa Mauka State Park Reserve, and Hā‘ena State Park. The facilities are located around the island and there are no other State parks on Kaua‘i’s north shore that offer the types of beach activities that occur at Hā‘ena State Park.

2.6 COMPLEMENTARY RESOURCES IN THE REGION

Opportunities for education/interpretation at Hā‘ena State Park are augmented by the complimentary resources on Kaua‘i’s north shore. Hā‘ena’s neighbor to the west, the Nāpali Coast State Wilderness Park is a popular hiking destination along the Kalalau Trail. With its trailhead located at Hā‘ena, existing interpretive boards relating to Nāpali’s history and important cultural resources have been installed to help educate hikers who might have not otherwise known the rich history associated with the area.

Hā‘ena’s neighbor to the east, Limahuli Garden and Preserve, is an established interpretive center in its own right. Strategic interpretive programming between the two facilities offers opportunities for collaboration and partnership. In addition to Limahuli Garden and Preserve, other educational institutions can be found on the north shore and should be considered for partnerships, including the Waipā Foundation and Kanuikapono Public Charter Elementary School.

At a regional level, the Hā‘ena ahupua‘a is the western-most valley in the moku of Halele‘a. The series of valleys, streams and unique geology within the moku offer context that could serve a north-shore based interpretive program. Kūhiō Highway also provides an opportunity for interpretation. The Highway’s bridges from Hanalei to the Limahuli Stream crossing tell an interesting story of Kaua‘i’s development and the ongoing effort to maintain the north shore’s character.

2.7 THE NATURAL ENVIRONMENT

2.7.1 PHYSICAL CHARACTERISTICS

At the northeastern end of the Nāpali Coast, the Hā'ena coastal plain is backed by high former sea cliffs, which have been cut by two small stream valleys, Mānoa and Limahuli. Makana, a mountainous peak at 1,280 feet in height is located south of the park and dominates the landscape. The narrow coastal plain between the cliffs and the beach is the result of colluvial and alluvial deposition in a basalt substrate. This alluvial flat is fronted by calcareous beaches and a sand dune system that extends from Kē'ē Beach eastward to Wainiha Bay. The park corresponds to the western end of the coastal plain and encompasses both the dune system and alluvial deposits. Portions of the western side of Limahuli Valley fall within Hā'ena State Park, with Limahuli Stream serving as the park's eastern boundary. The park contains two wet caves, Wai a Kanaloa and Waiakapala'e. These caves and the dry cave near Hā'ena County Park were created by fluctuating sea levels and wave action. Kē'ē Beach is located where the coastal flat meets the cliffs of Nāpali. Boulder beaches exist along the west side of Kē'ē Beach and the mouth of Limahuli Stream. Offshore is a narrow fringing reef, which at its western end forms a lagoon at Kē'ē.

2.7.2 GEOLOGY AND SOILS

At approximately five million years in age, the Island of Kaua'i is among the oldest within the major Hawaiian archipelago. Originally thought to have been built from a single shield volcano, there are other opinions that the island may have been built primarily by the initial Nāpali formation of the Waimea (also Wai'ale'ale) shield volcano 4.35-5.1 million years ago with a possible second shield volcano building upon the eastern portion of the island after a catastrophic collapse of the eastern side of the original volcano. This second volcano, the Līhu'e shield volcano, was active about a million years later and is believed to have been located in the area of the Līhu'e Basin. The flows along the coast in the area of Hā'ena are of the original Nāpali Member and have been dated between 4.27-4.36 million years old (Blay and Siemers 2004).

The Nāpali scarp's dramatic 1,000-2,000 foot cliffs that stretch for over fourteen miles along the northwestern coastline is generally believed to represent a major structural failure of the original volcanic dome. However, there have been some theories recently that this formation may have actually been created mainly by wave erosion (Blay and Siemers 2004). According to Blay and Siemers (2004), this remains a geologic controversy but believe it is probably a combination of both theories.

Kaua'i's post-erosional volcanic activity has largely been limited to the eastern portion of the island, leaving sedimentary processes the major geological influence affecting the Hā'ena State Park and the Nāpali Coast.

Hā'ena State Park sits at the western end of the Hā'ena Plain, a coastal plain comprised of a basalt substrate covered by alluvial deposits along its mauka reaches and sandy beaches makai. Biogenic reefs, comprised mainly of coral and coralline algae, have grown like a "fringe" around the island. These reefs have provided skeletal matter for fragmentation, transport and deposition at the shoreline to produce sandy beaches (Blay and Siemers 2004).

During the Pleistocene epoch (0.126 to 2.558 million years ago), the Earth experienced large fluctuations in global sea level. Drops in sea level lowered the erosional baseline for streams,

carving valleys and cliffs to steep grades. The lower sea level allowed for the deposition of calcareous and alluvial deposits, including calcareous dunes now lithified. These dunes run along the park's makai boundary and are a prominent feature along the existing beach.

Another geologic feature of note within the park boundary includes the sea caves carved into the side of the mountain through natural processes. These caves were carved as a result of a rise in sea level during the Pleistocene, when existing lava tubes were enlarged by wave action. Currently, the valley flats are a result of alluvial fill from stream erosion and a decrease in sea level of five feet from its highest stand.

The U.S. Department of Agriculture Soil Conservation Services Soil Survey (SCS) shows that there are a variety of soil types found within Hā'ena State Park, ranging from beach sand and dune lands along the coast to sandy loams, to clays, marshes and rocky outcrops.

The other two Hawai'i soil classification systems – the University of Hawai'i Land Study Bureau (LSB) Detailed Land Classification and the State Department of Agriculture's Agricultural Lands of Importance to the State of Hawai'i (ALISH) – mainly analyze soil suitability according to western cultivation practices. The LSB rates the entire area as E, or the lowest productivity rating, which more likely reflects the area's classification as State Land Use Conservation District more than an analysis of its soils. The ALISH classifies most of the lo'i area as Other Lands and the area along the dunes as Prime Lands.

2.7.3 TOPOGRAPHY

The majority of Hā'ena State Park lies on coastal plain formed by colluvial and alluvial deposition. The bulk of the park area is at a ground elevation of between 10 and 30 feet above sea level. However, mauka of Kūhiō Highway, the land rises steeply into the Nāpali cliffs. A dune system parallels the shoreline while the area of the park bound by the dunes and Kūhiō Highway is generally flat with hydrology altered by 'auwai that date to pre-western contact. Figure 17 is a topographic map of Hā'ena State Park. As the land rises mauka of Kūhiō Highway, weathering has exposed rock formations and talus boulders piled up along the cliffs. Within the boundary of Hā'ena State Park the cliffs stand nearly 500 feet in elevation. Beyond the park boundaries into the Nāpali Coast State Wilderness Park, the shoreline cliffs rise to over 800 feet.

2.7.4 CLIMATE

In general, northeasterly trade winds, interrupted by the occasional large-scale storm, are present year round at Hā'ena. Nearby Wai'ale'ale receives an annual rainfall of approximately 450 inches per year. Due to the orographic effect (the process of moisture-laden northeasterly tradewinds lifting along windward slopes), Hā'ena receives an estimated 50-70 inches of rainfall annually (Blay and Siemers 2004). At Hā'ena State Park, it is higher at roughly 97 ± 2.5 inches on average per year (Giambelluca et al 2011).

Although no climatic data is officially collected for Hā'ena, the Western Regional Climate Center (a three-partner program with NOAA's National Climatic Data Center, the Regional Climate Centers and State Climate Offices) collects historic weather data at Wainiha, which can provide some generalities about climatic conditions along this stretch of Kaua'i's coastline. At Wainiha, the average annual temperature ranges between a high of 79.5 degrees to a low of 63.3

degrees Fahrenheit. While December through February are generally the coolest months, June through September are the warmest. Mean annual relative humidity ranges between 61 to 80 percent (NCDC 2009).

Surface winds are generally around 13 to 24 miles per hour from the northeast. There are some seasonal changes in prevailing wind direction in winter with southerly Kona winds. Strong winds occur at times in connection with storm systems moving through the area. Wind velocities and directions are influenced by the mountainous terrain to the south and west. Daily variations include diurnal effects of winds from the southwest quadrant during the night and morning hours, shifting to the northeast during the day.

2.7.5 OCEAN CONDITIONS

Surf conditions in Hā'ena are typical of other exposed north shore environments in Hawai'i with the low surf season occurring between May and October and the high surf season during the second half of the year from October through May. Southern swells usually arrive in the summer months and Kona swells usually arrive during the winter months. According to Clark, both originate to the south of the islands and normally only strike southern shores, but in Kaua'i's case, because of the island's rounded shape, both southern and Kona storm swells can wrap around the west end of Kaua'i and hit the Hā'ena shoreline with surf from two to six feet. Kona storm swells from the west or southwest may produce surf heights up to ten feet (Clark 1992).

2.7.6 MARINE ENVIRONMENT

In 2008, SWCA Environmental Consultants investigated the existing marine conditions at Hā'ena State Park. The subsequent report (SWCA 2010) analyzed the adjacent nearshore waters around Kē'ē Beach and is attached as Appendix F. As part of the initial master planning efforts, a beach and ocean recreation study for Hā'ena State Park was prepared for DLNR by John Clark in 1992. In addition to analyzing potential recreational opportunities and constraints, the study also provides a description of the nearshore marine environment including the reefs that fringe the Hā'ena coastline. The SWCA report included a review of Clark's 1992 report and provided updates to Clark's findings where necessary.

Hā'ena State Park is located in the Ka'ilio shoreline sub-section of Hā'ena. Three outlets bisect the beach within the park boundaries—Limahuli Stream, a small intermittent tributary stream and freshwater seeps.

Ocean conditions in the park are typical of northern exposed coasts in Hawai'i which can experience dangerously high surf conditions particularly during winter months. Between October and May, swells can be in excess of ten feet at Hā'ena, but during summer months when trade wind swells typically dominate, the surf is generally reduced (Clark 1992). Recent observations show that many of the tree roots along the shoreline have become exposed due to erosion from wave action (SWCA 2010).

According to SWCA, northeast trade winds are present between 90-95 percent of the year and almost always generate some surf activity on the outer reef margins. Predominant long shore currents run east to west outside the reef. Add high surf conditions and a powerful rip current can be generated that runs out of the narrow channel at the west end of Kē'ē Lagoon to the open ocean, creating a hazard for swimmers and divers (SWCA 2010). Previous studies found tidal

currents ranging from 0.1 to 1.0 knots, and Clark (1992) suggested that such current velocities were not usually a concern for nearshore ocean recreation activities. However, lifeguards at Kē‘ē Beach strongly objected to SWCA biologists’ plan to conduct snorkel surveys of the outer reef in November 2008 even during a day with unusually calm conditions (SWCA 2010).

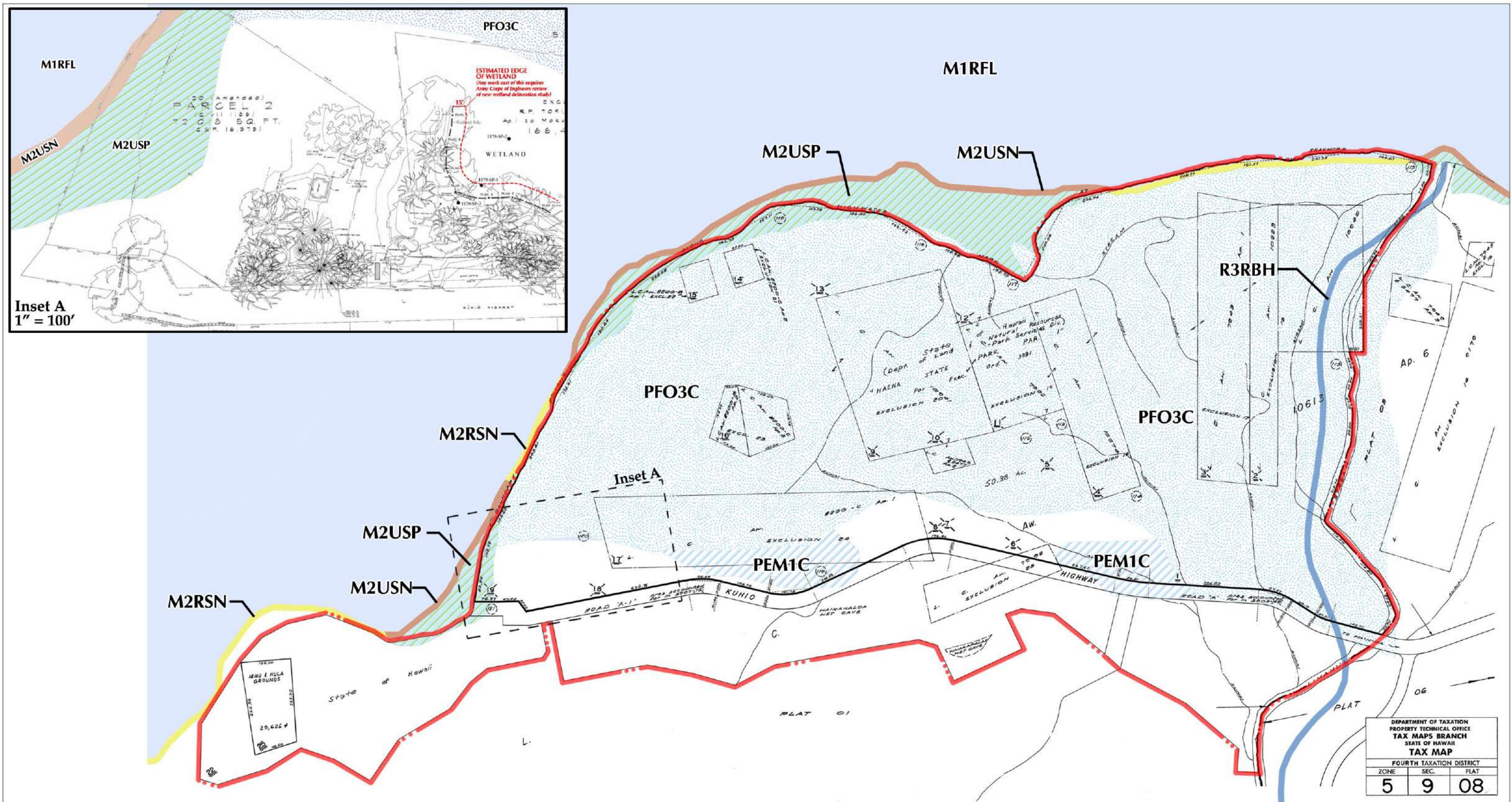
Between Kē‘ē Beach and Limahuli Stream, the beach is the widest and extends up to 150 feet mauka. The edge of the beach is lined with false kamani and ironwood trees. The area between Hā‘ena Point and Kē‘ē Beach is backed by low sand dunes roughly four to eight feet high. Growth of these sand dunes is limited due to the presence of introduced tree stands. Clark noted a continued recession of the existing shoreline based on historical photo analysis of the region since the 1920s.

Since Clark’s inventory, the University of Hawai‘i, School of Oceanography and Earth Science and Technology (SOEST) has further studied beach erosion. Depending upon the location along the shoreline at Hā‘ena State Park, SOEST has found different transects along the beaches to be eroding at a rates between zero and one foot per year. See Figure 18.

The major swimming area in Hā‘ena State Park is Kē‘ē Lagoon which is a large sand pocket protected by the surrounding platforms of fringing reef. SWCA found that much of Clark’s description of the reef in 1992 still remains accurate in 2008. “Sand and reef pavement comprise the dominant marine geomorphologic structures between Kē‘ē Beach and Maninihola Bay to the east. From Maninihola Beach west to Hā‘ena Point the reef consists of aggregate reef, scattered coral and rock, and rubble with small patches of reef pavement. The reef pavement is covered with macro-algae, coralline algae, and corals; however, the sandy lagoon floors and channels are uncolonized” (SWCA 2010). SWCA continues, “live coral cover in Kē‘ē Beach ranges between four to 47 percent in some areas due to large amount of visitor traffic. There are a variety of inshore reef species in addition to macroinvertebrates, algae, and live coral species” (SWCA 2010).

With regards to water quality, the State Department of Health (DOH) has designated the offshore marine waters of Hā‘ena with a Class AA rating which recognizes the area’s significant ecological and recreational value. According to SWCA, Class AA waters are bounded by areas less than 18 meters (60 feet) in depth. Uses to be protected in the class of waters include oceanographic research, the support and propagation of shellfish and other marine life, conservation of coral reefs and wilderness areas, compatible recreation, and aesthetic enjoyment.

Based on initial samples collected in 2005-2006, the DOH (2008) found that state standards for Class AA waters for enterococci and coliform were attained at Kē‘ē Lagoon. State standards for Class AA waters were also attained at Hā‘ena State Park for temperature, salinity, dissolved oxygen, pH, and turbidity (SWCA 2010).



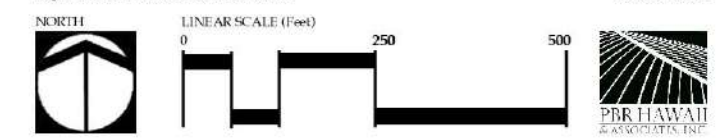
LEGEND

- - - - Project Boundary
- - - - Estimated Edge of Wetland (USACOE)
- - - - Wetland Boundary (AECOS, Inc.)

NATIONAL WETLAND INVENTORY

- Estuarine and Marine Wetland (M2USP)
- Freshwater Emergent Wetland (PEM1C)
- Estuarine and Marine Deepwater (M1RFL)
- Estuarine and Marine Wetland (M2RSN)
- Estuarine and Marine Wetland (M2USN)
- Riverine (R3RBH)
- Freshwater Forested/Shrub Wetland (PFO3C)

FIGURE 16
Wetlands
HA'ENA STATE PARK
Department of Land and Natural Resources
Island of Kauai



Source: AECOS, Inc. (October 31, 2008)
Dept. of Army, Corps of Engineers letter (File Number FOH-2009-00067, June 15, 2009)
U.S. Department of the Interior, Fish and Wildlife Service (GIS)
Disclaimer: This graphic has been prepared for general planning purposes only.
Incorrect or outdated Hawaiian spellings on source map have not been corrected.



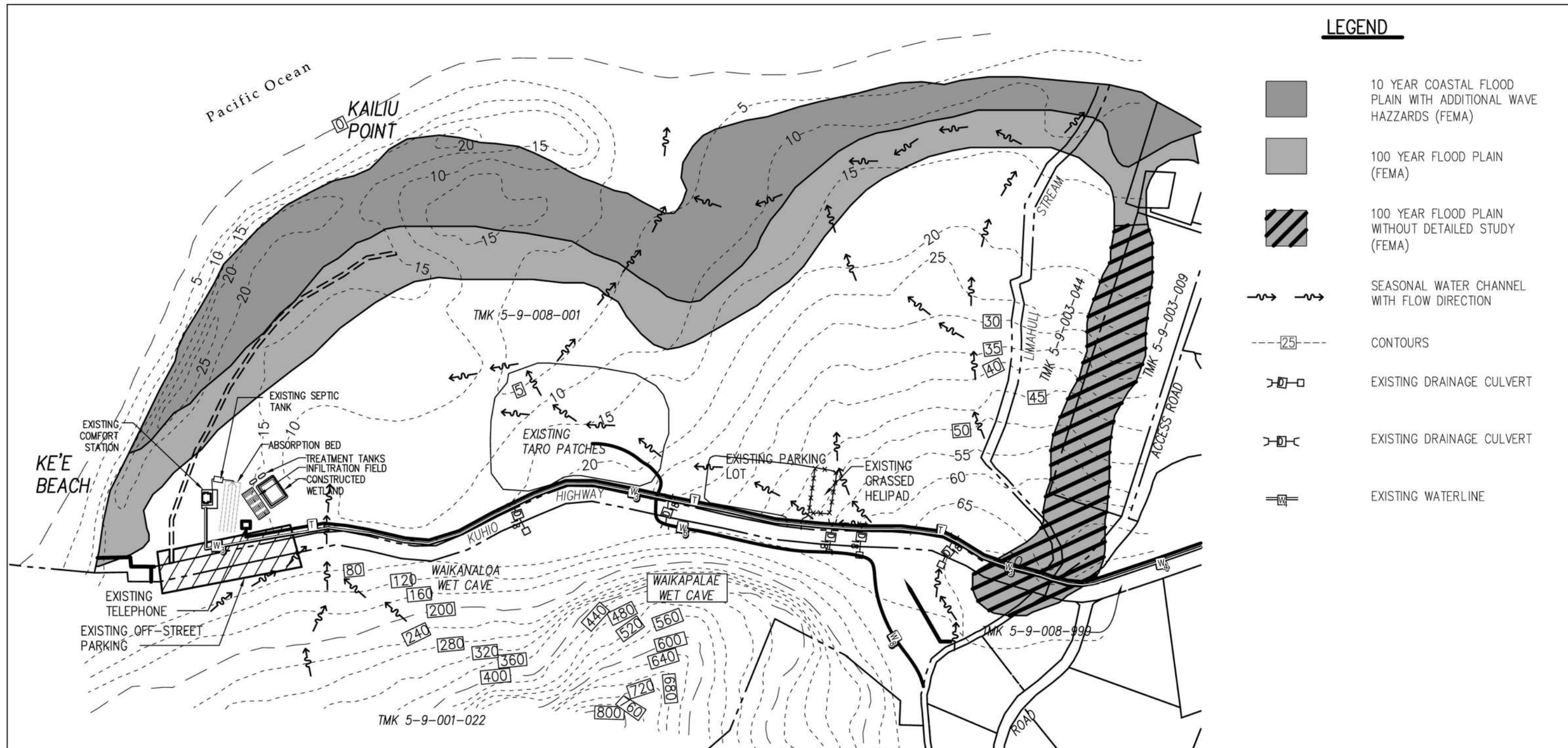
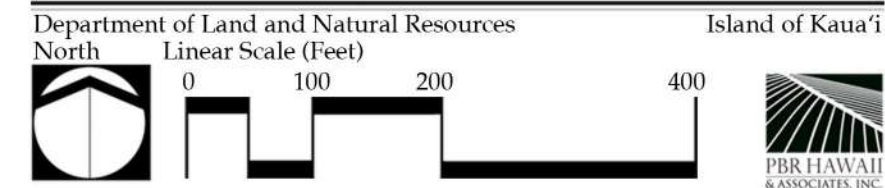


FIGURE 17
Topography and Drainage Map
HĀ'ENA STATE PARK



Source: Kennedy Jenks Engineers (January, 2001) Figure 3

Disclaimer: This Graphic has been prepared for general Planning purposes only and should not be used for boundary Interpretations or other spatial analysis.

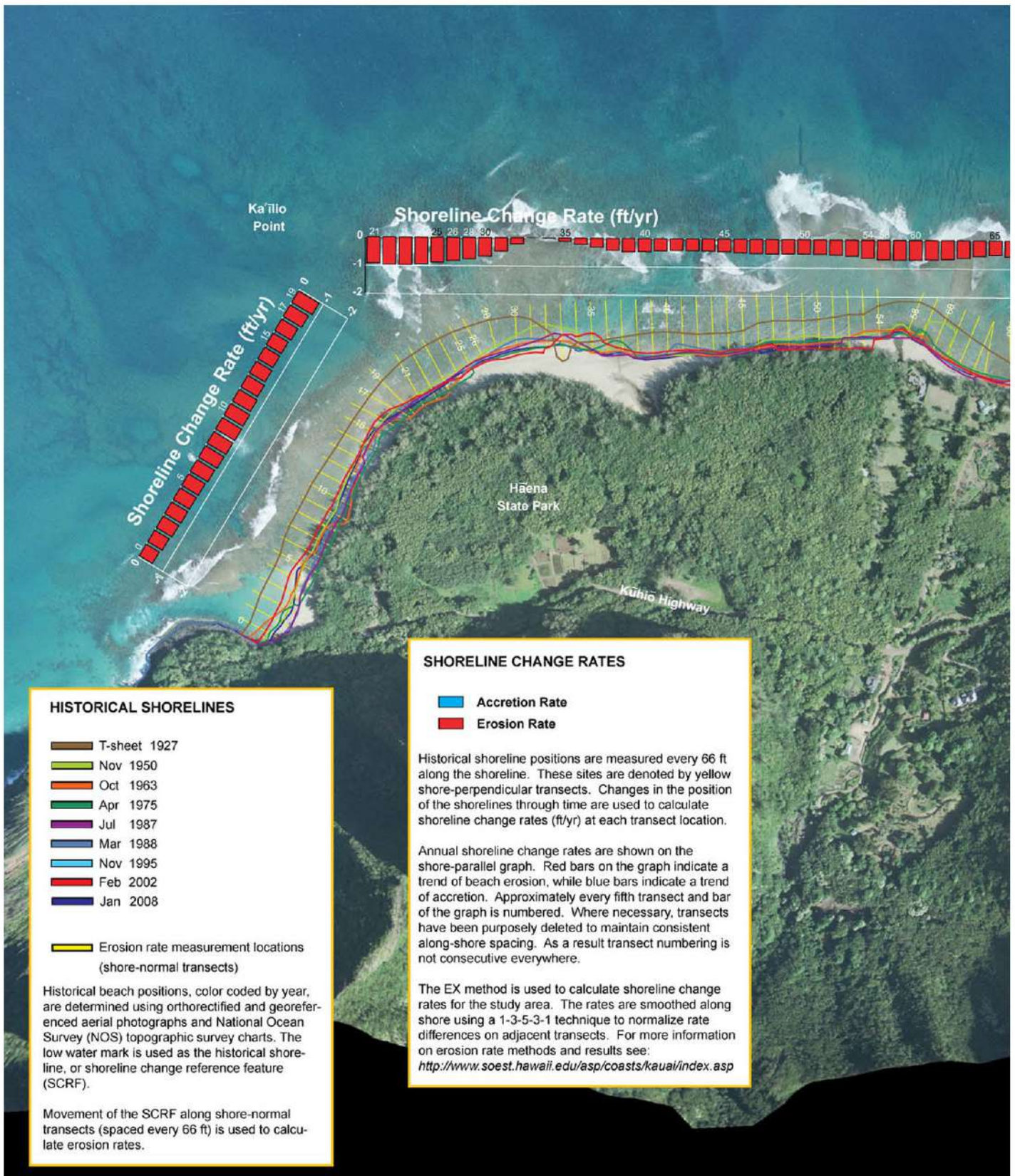
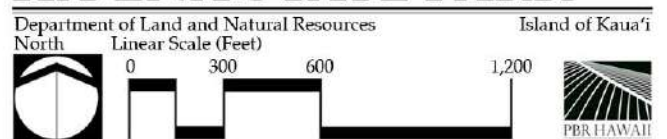
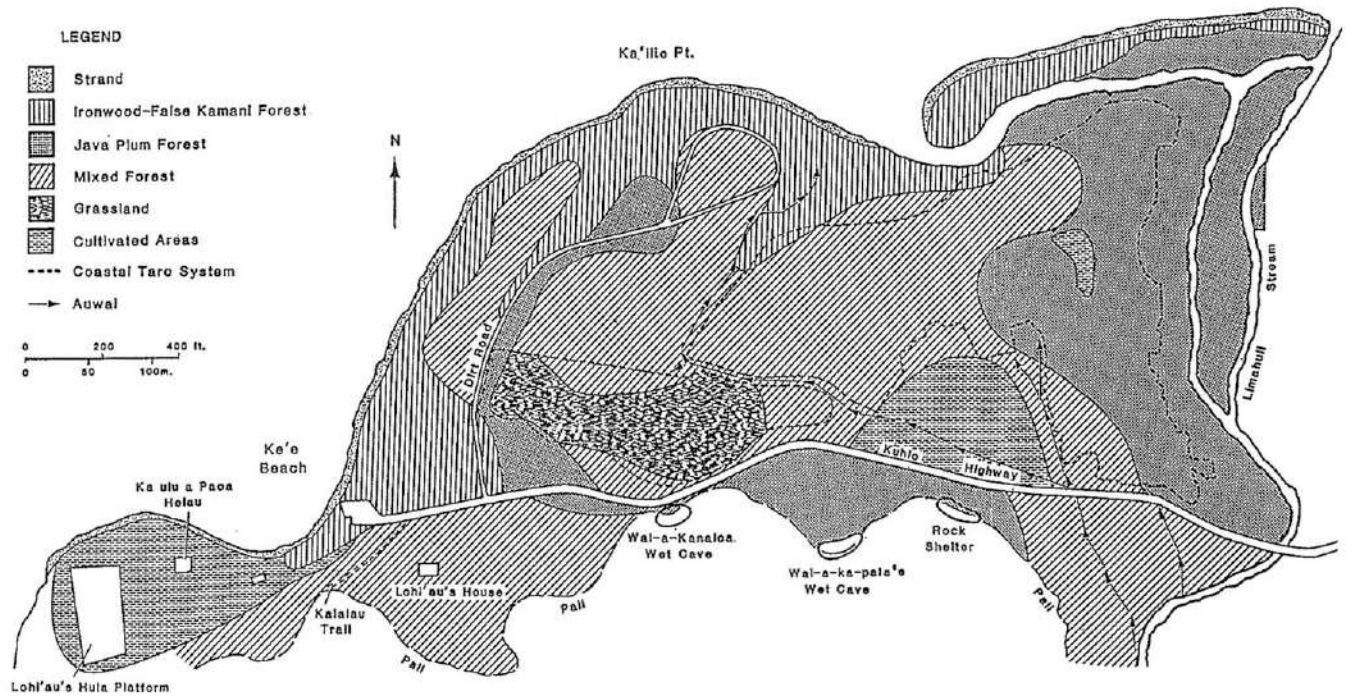


FIGURE 18
SOEST Shoreline Erosion Rates
HĀ'ENA STATE PARK



Source: University of Hawaii School of Ocean and Earth Science and Technology (2008)
 Disclaimer: This graphic has been prepared for general planning purposes only.
 Diacriticals added to Hawaiian place names.

1991 Nagata Report



2009 SCS/Geometrician Report

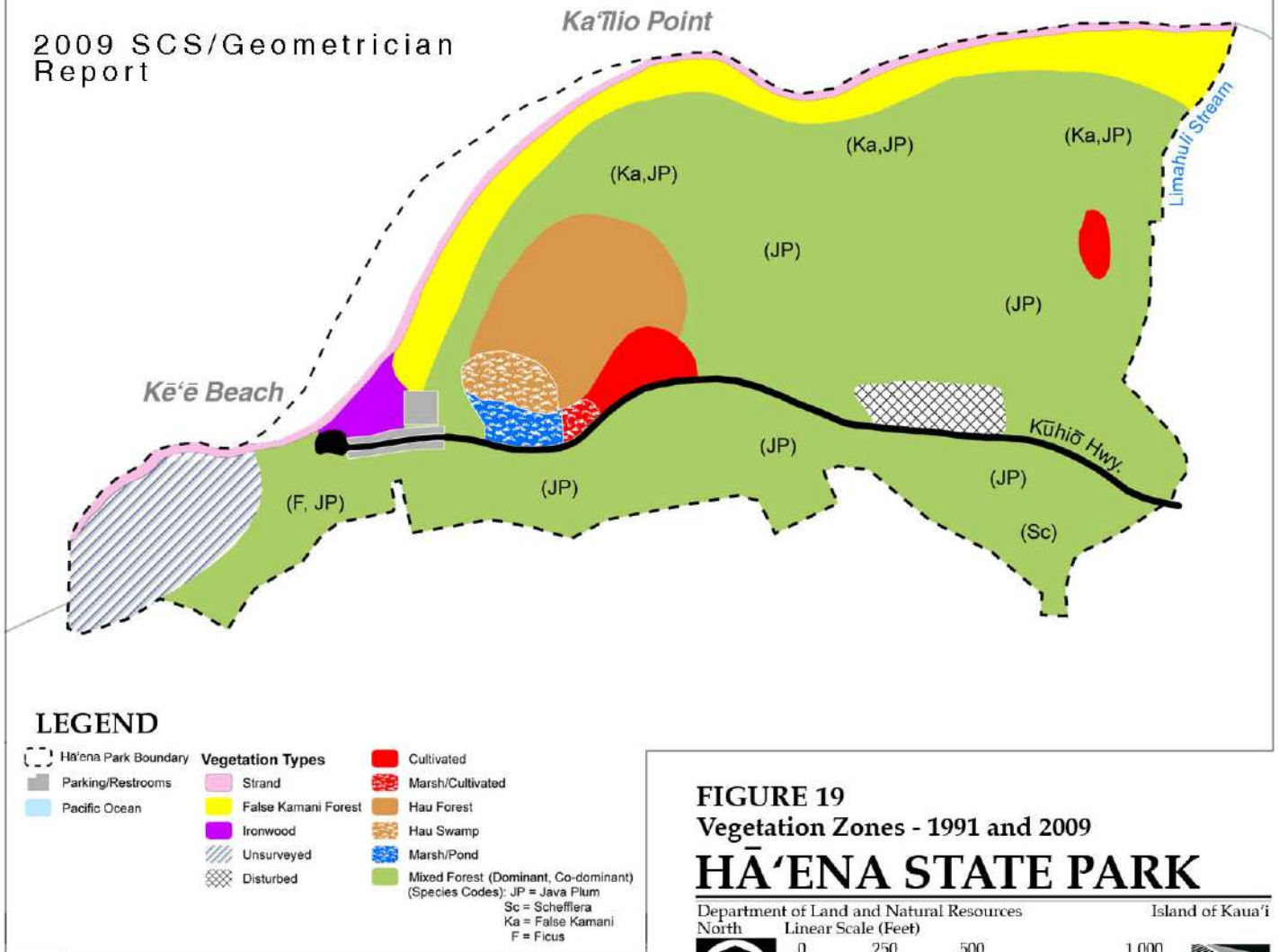
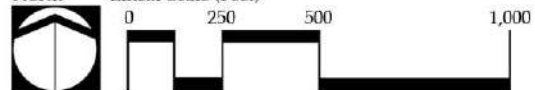


FIGURE 19
Vegetation Zones - 1991 and 2009
HĀ'ENA STATE PARK

Department of Land and Natural Resources
 North
 Linear Scale (Feet)



Source: Nagata (1991); Scientific Consultant Services, Inc./Geometrician Associates (2009)
 Disclaimer: This graphic has been prepared for general planning purposes only.
 Incorrect or outdated Hawaiian spellings on source maps have not been corrected.

2.7.7 WETLANDS

Throughout the park there are areas designated as wetlands by the US Fish and Wildlife Service's National Wetlands Inventory (NWI). See Figure 16. The primary designation, PFO3C, covers most of the interior areas behind the dunes and makai of the highway. It is classified as a palustrine (inland, non-tidal) wetland that is forested with broad-leaved evergreen vegetation and is seasonally flooded. The PEM1C wetland type is mapped over Loko Kē'ē and east of the parking area. These areas are palustrine (inland), persistently emergent (characterized by hydrophytic plants) and seasonally flooded.

Along and off the coast are several classifications of marine wetlands. M1RFL is the predominant offshore classification indicating a subtidal (permanently submerged below tidal waters) marine wetland with coral reefs. Along the narrow splash zone of the coast are two different intertidal marine wetlands – M2USN (unconsolidated shores that are regularly flooded at least once daily such as beaches and flats) and M2RSN (rocky shorelines that are regularly flooded by tidal waters). Within the two broader beach areas are M2USP wetlands which are intertidal, unconsolidated shorelines that are irregularly flooded (less than daily). Limahuli Stream is classified as an upper perennial (high gradient with fast water velocity) riverine system with a rocky bottom that is permanently flooded (R3RBH).

In October 2008, a wetland delineation study was prepared by AECOS, Inc. for the renovated comfort station's individual wastewater system (constructed wetland) project. AECOS interpreted the western edge of the PFO3C wetland to be a former pond wall (thought to be the edge of Loko Kē'ē). However, in their June 15, 2009 letter,¹ the US Army Corps of Engineers (USACOE) determined that the wetland did not extend as far as the wall and recommended that any work performed fifteen feet east of the wall require a new wetland determination study. The new study would also require a new determination by the USACOE.

Figure 16 compiles the approximate NWI wetland boundaries from the USFWS online Wetland Mapper maps, the AECOS wetland survey map, and the recommendation from the USACOE. The AECOS wetland delineation study and USACOE determination letter are attached as Appendix G. Presently, ongoing management of the wetlands is limited to the stocking of the surface water with mosquito guppies as a vector control measure (Juran, personal communication).

2.7.8 WATER RESOURCES

2.7.8.1 Ground Water

In Hawai'i, there are four general types of groundwater, dike, perched, unconfined basal and confined basal. The groundwater resource beneath Hā'ena State Park is basal water floating on salt water (UH Department of Geography 1983). However, due to the presence of a discontinuous, unmapped confining layer, the nature and extent of the basal ground water lens is not well understood (Wilson Okamoto 2008). Further mauka beneath Nāpali, the water is confined by dikes and not floating on salt water (UH Department of Geography 1983). According to the State Commission on Water Resource Management (CWRM)'s Water Resource Protection Plan, Hā'ena State Park is located within the Wainiha System (Hanalei

¹ USACOE File Number POH-2009-00067.

Sector), which has an estimated sustainable yield of 24 million gallons per day (Wilson Okamoto 2008).

2.7.8.2 Surface Water

Surface water resources in Hā‘ena State Park include Limahuli Stream, water in the two wet caves, and Loko Kē‘ē located makai of Kūhiō Highway. There is also an extensive ‘auwai system that irrigated the lo‘i up until recent times when it was actively cultivated. It still exists in parts and there is a strong desire among community members to restore it wherever possible in conjunction with the restoration of the lo‘i.

The Hawai‘i Stream Assessment (1990) lists Limahuli Stream as a perennial stream that flows to the sea year-round and identifies it as an “outstanding aquatic resource” due to the presence of native ‘o‘opu. The source of freshwater within Hā‘ena State Park begins at the top of the valley at 3,300 feet above sea level and reaches the valley floor after plummeting down an 800-foot waterfall. Only the lower 1,500 feet of the stream courses through Hā‘ena State Park.

In October 2001, Mike Kido with the University of Hawai‘i’s Hawai‘i Stream Research Center produced an overview of the existing conditions, flora, and fauna in Limahuli Stream. Kido reported that between 1994 and 1999, average stream flow was approximately 6.3 million gallons per day (mgd). Even in severe drought periods, substantial groundwater flow in the valley sustains base flows of approximately 2.6 mgd. According to USGS Annual Statistics for Hawai‘i, for the period of 1999-2005 the average surface flow was 7.72 mgd.

Limahuli Stream water is diverted for irrigation and residential purposes by multiple landowners. According to the State Commission on Water Resource Management (CWRM), there were seven separate diversions from Limahuli Stream, six of which are still active. Of the six active diversions, three supply Limahuli Garden and Preserve and three serve private residences. A portion of the water diverted for Limahuli Garden is conveyed to the lo‘i at Hā‘ena State Park by PVC pipe. Two of the diversions serve domestic uses and the rest are for agricultural, landscaping, or other irrigation purposes. The total diversion amount for five of the diversions is 0.8822 cfs, or just over 570,000 gpd. The amount diverted for one of the private residences is unknown. Table 1 provides a summary of the registered diversions from Limahuli Stream.

Table 1 – Registered Diversions from Limahuli Stream

Diversion Diameter	Operator	Quantity Diverted (cfs)	Water Use
3" pipe	NTBG	0.00203	Irrigation
1.5" pipe	NTBG	0.44557	Irrigation (May have been restored to the stream)
6" pipe	NTBG	0.3342	Agriculture, Landscaping, Irrigation
Pipe (unknown)	Private Residence	0.0892	Domestic, Irrigation
2" pipe	Private Residence	0.0112	Agriculture, Landscaping, Irrigation
5" pipe	Private Residence		Domestic
TOTAL		0.8822	

Source: CWRM (2008, 2011)

2.7.9 FLORAL AND FAUNAL RESOURCES

2.7.9.1 Terrestrial Species

In May 1988, Kenneth M. Nagata conducted a botanical study for Hā'ena State Park on behalf of DLNR (Nagata 1991). In addition to identifying the various types of vegetation found within the confines of the park, Nagata also provides additional recommendations to preserve existing fauna. In January 2009, Drs. Terry and Hart (Geometrician Associates, LLC) conducted an updated biological survey of Hā'ena State Park. The survey included a physical survey of flora and fauna; a review of previous surveys of the area (including Nagata's work); report of the results describing plant communities, and habitats; and, discussion of potential effects from increased recreation on wildland resources.

Terry and Hart found that biological resources within the park have been drastically affected by the introduction and proliferation of non-native, invasive plants and trees. They identified eleven vegetation zones compared with Nagata's six. Over time, areas that were grasslands have become more wetland-like. Terry and Hart dug several soil pits during their winter survey (January 2009) and noted the presence of mucky, sulfidic soils indicating frequent saturation and reducing conditions, meaning that the inundated condition is not unusual and recommended further investigation to delineate the boundaries of the wetlands per the definitions of Section 404 of the Clean Water Act (U.S. Department of the Army 1987). The area also included approximately an acre of standing water and they noted native koloa or Hawaiian ducks (*Anas wyvilliana*) utilizing the ponds daily.

Additionally, areas that Nagata found to be dominated by ironwood trees (*Casuarina equisetifolia*) near the dunes have been encroached upon by Java plum (*Syzygium cumini*) and false kamani (*Terminalia catappa*) forests. A comparison of the vegetation zones found in 1991 and 2009 are shown in Figure 19.

A total of 117 flowering plants and nine ferns or fern allies were observed by Terry and Hart at the park in 2009. Most of the plant species found were alien. However, fifteen were indigenous and six were Hawai'i endemics. Several of the alien species recorded are also considered invasive. No listed or proposed threatened or endangered plant species (USFWS 2009) were found on site.

The native plants Terry and Hart did find were scattered within the park and in small numbers. The exceptions were along the strand associated with the dune complex, on rugged pali cliffs, and in the wetland areas where hau (*Hibiscus tiliaceus*) dominates although even the hau is a relatively recent newcomer and was not nearly as widespread in 1991 as it is today. Of the 15 native species, only koali, or morning glory (*Ipomoea indica*), and the ni'ani'au fern (*Nephrolepis exaltata hawaiiensis*) are widely common today, with hala (*Pandanus tectorius*) and hau scattered but locally abundant. Pōhuehue (*Ipomoea pes-caprae*) is considered abundant in the strand zone. Except in the pali area, all of the endemic species are uncommon in the park (Terry and Hart 2009).

The two endemics found in 1988 were also found in 2009. They are ko'oko'olau (*Bidens forbesii*), a common lowland species on the north shore, and 'āhinahina (*Artemisia kauaiensis*), which is found throughout the sea cliffs of Kaua'i. Both are restricted to Kaua'i.

Kumu Roselle Bailey noted in her article published in *Humu Mo'olelo: Journal of the Hula Arts*, that the native 'ālula (*Brighamia citrina*) and 'ēkaha (*Elaphoglossum*) once grew at Ke Ahu a Laka but disappeared after a news story of the Keonelo petroglyphs made the site popular to the general public (Bailey 2008). Terry and Hart unfortunately make no mention of them in their 2009 survey.

Species of cultural importance, such as ki or ti (*Cordyline fruticosa*), 'ōhi'a 'ai or mountain apple (*Syzygium malaccensis*), kō or sugar cane (*Saccharum officinarum*), mai'a or banana (*Musa paradisiaca*), noni (*Morinda citrifolia*), niu or coconut (*Cocos nucifera*), 'ulu or breadfruit (*Artocarpus altilis*), 'ape (*Alocasia macrorrhizos*), kalo or taro (*Colocasia esculenta*) and kukui or candlenut (*Aleurites moluccana*) are found in small numbers throughout the park, with some larger specimen of kukui and breadfruit indicating old plantings.

Thirteen species of birds were observed by Terry and Hart during their January 2009 survey including the endangered koloa maoli, or native Hawaiian duck (*Anas wyvilliana*), two indigenous shorebirds (kōlea, Pacific golden plover, *Pluvialis fulva* and 'ūlili, *Heteroscelus incanus*) and koa'e kea, the white-tailed tropicbird (*Phaethon lepturus dorotheae*), an indigenous seabird. All other birds sighted were non-native introductions.

Additional species of seabirds, waterbirds, shorebirds and forest birds that are federally listed as endangered or threatened may use the park. The wetlands may also provide feeding and nesting areas to the indigenous 'auku'u or Black-crowned night-heron (*Nycticorax hoactli*). Other federally endangered waterbirds that would likely use the wetlands are the ae'o or black-necked stilt (*Himantopus mexicanus knudseni*), 'alae ke'oke'o or Hawaiian coot (*Fulica alae*), 'alae'ula or Hawaiian moorhen (*Gallinula chloropus sandvicensis*), and nēnē or Hawaiian goose (*Branta sandvicensis*).

It is also expected that the federally endangered 'ua'u or Hawaiian petrel (*Pterodroma phaeopygia sandwichensis*), federally threatened 'a'o or Newell's shearwater (*Puffinus auricularis newelli*) and the 'ake'ake or band-rumped storm-petrel (*Oceanodroma castro*), listed by the State of Hawai'i, as endangered would fly over Hā'ena State Park to their nests in the mountains. These birds, especially the young, can be affected by artificial lighting and become disoriented.

Although not sighted during the survey, the endangered 'ōpe'ape'a or Hawaiian hoary bat (*Lasiurus cinereus semotus*), probably utilizes Hā'ena State Park as it has been seen in the Hanalei and Princeville areas.

Terry and Hart detected feral cats (pōpoki; *Felis catus*) during their survey, and also recognized that mice ('iōle li'ili'i; *Mus* spp.) and rats ('iōle; *Rattus* spp.) are likely also present. They also acknowledged the presence of wild pigs (pua'a; *Sus s. scrofa*) and goats (kao; *Capra h. hircus*) that are known throughout this part of Kaua'i. Terry and Hart's survey also identified various skinks, anole, gecko and bullfrog in the park, and acknowledge that there are likely more species of reptiles and amphibians throughout the park. All were alien species and common on Kaua'i.

2.7.9.2 Limahuli Stream

Terry and Hart (2009) also surveyed the freshwater species inhabiting Limahuli Stream. They note five species of endemic and indigenous 'o'opu or Hawaiian gobies may inhabit this stream,

including the ‘o‘opu alamo‘o (*Lentipes concolor*), ‘o‘opu nopili (*Sicyopterus stimpsoni*), ‘o‘opu naniha (*Stenogobius hawaiiensis*), ‘o‘opu akupa (*Eleotris sandwicensis*) and ‘o‘opu nakea (*Awaous guamensis*).

According to an unpublished report prepared for the Division of Aquatic Resources (DAR) by Mike Kido, riparian cover along the streams contours are predominantly alien species and provide shade for approximately 70.4 percent of the stream. Native tree species account for less than one percent of all riparian areas below Limahuli Falls. Approximately 328 metric tons of plant litter is deposited within riparian areas annually, which Kido estimates translates into 48,204 metric tons of plant litter being processed within the stream environment and exported as organic nutrients in times of flooding (Kido 2001 unpublished).

Invasive species in Limahuli Stream include the Tahitian prawn (*Macrobrachium lar*) and poeciliids (swordtails, *Xiphophorous helleri* and guppies, *Poecilia reticulata*). According to Kido, in particular the presence of poeciliids poses a serious threat to the native ‘o‘opu. Poeciliids are known to carry water-borne pathogens which infect ‘o‘opu (Kido 2001 unpublished).

2.7.9.3 Marine Species

The nearshore waters of Hā‘ena are known for their abundance of marine life. The plant and animal life of Hā‘ena’s waters provided sustenance for the ahupua‘a and have become an attraction for sport fishers and snorkelers. Historically, Hā‘ena is particularly known for abundant limu kohu (*Aparagopsis taxiformis*) and a strong population of octopus (*Octopus vulgaris* and *Octopus ornatus*).

In 1999, Carl Stepath and Save our Seas compiled a variety of studies and found that fish populations in Kē‘ē were not as diverse as in other areas. During the survey, approximately 40 species of fish were identified by divers. In neighboring Hanalei Bay, approximately 160 species of fish were identified. However, the majority of fish observed in the study areas were in their juvenile stage which indicates Kē‘ē is an important nursery area for native fish species.

The results of these studies in concert with a brief snorkel survey conducted by SWCA biologists Dr. Robert Kinzie and John Ford in November 2008 which found 80 species of fish along Kaua‘i’s North Shore, with only 46 of those species occurring in Kē‘ē lagoon. The studies do note that fish species diversity is much greater on the seaward side of the reef and over 160 species were recorded off Limahuli Stream and in Hanalei Bay.

As noted earlier, endangered Hawaiian monk seals (*Monachus schauinslandi*) or ‘Īlio-holo-i-ka-uaua, translates into, “the dog who runs in the sea,” are frequently observed at Hā‘ena State Park and the entire shoreline and marine environment to the 200-meter depth contour fronting the park is designated a critical habitat for the species. The honu, or green sea turtle (*Chelonia mydas*), is listed as threatened under the Endangered Species Act (ESA) and are known to graze upon algae in shallow nearshore reef waters around the north shore of Kaua‘i, including the waters of Hā‘ena State Park. Although no evidence of turtle nests were reported in SWCA’s survey, the sandy beaches within Hā‘ena State Park are suitable for sea turtle nesting, and the possibility of a future turtle nesting there cannot be dismissed (SWCA 2010).

2.7.10 SCENIC RESOURCES

Kūhiō Highway's present alignment provides access to many of the park's varied scenic resources, culminating at Kē'ē, where the vista opens to the ocean and the beginning of the Nāpali coastline. At the park entrance, Limahuli Stream is a rare example of a natural and relatively intact, perennial stream. Under the shadow of Makana, the roadway passes the wet cave, Wai a Kanaloa, the seasonally-flooded wetlands of Loko Kē'ē and ultimately terminates at Kē'ē Beach. Other areas rich with scenic resources are along the shoreline and Kalalau Trail. Also, the dense invasive tree canopy that covers much of the interior of the site blocks much of the scenic resources within this area and clearing strategic areas of it should be the focus of earlier phases of restoration and improvement. See Figure 20, Figure 21, and Figure 22 which illustrate Hā'ena's visual resources and constraints to viewing those resources.

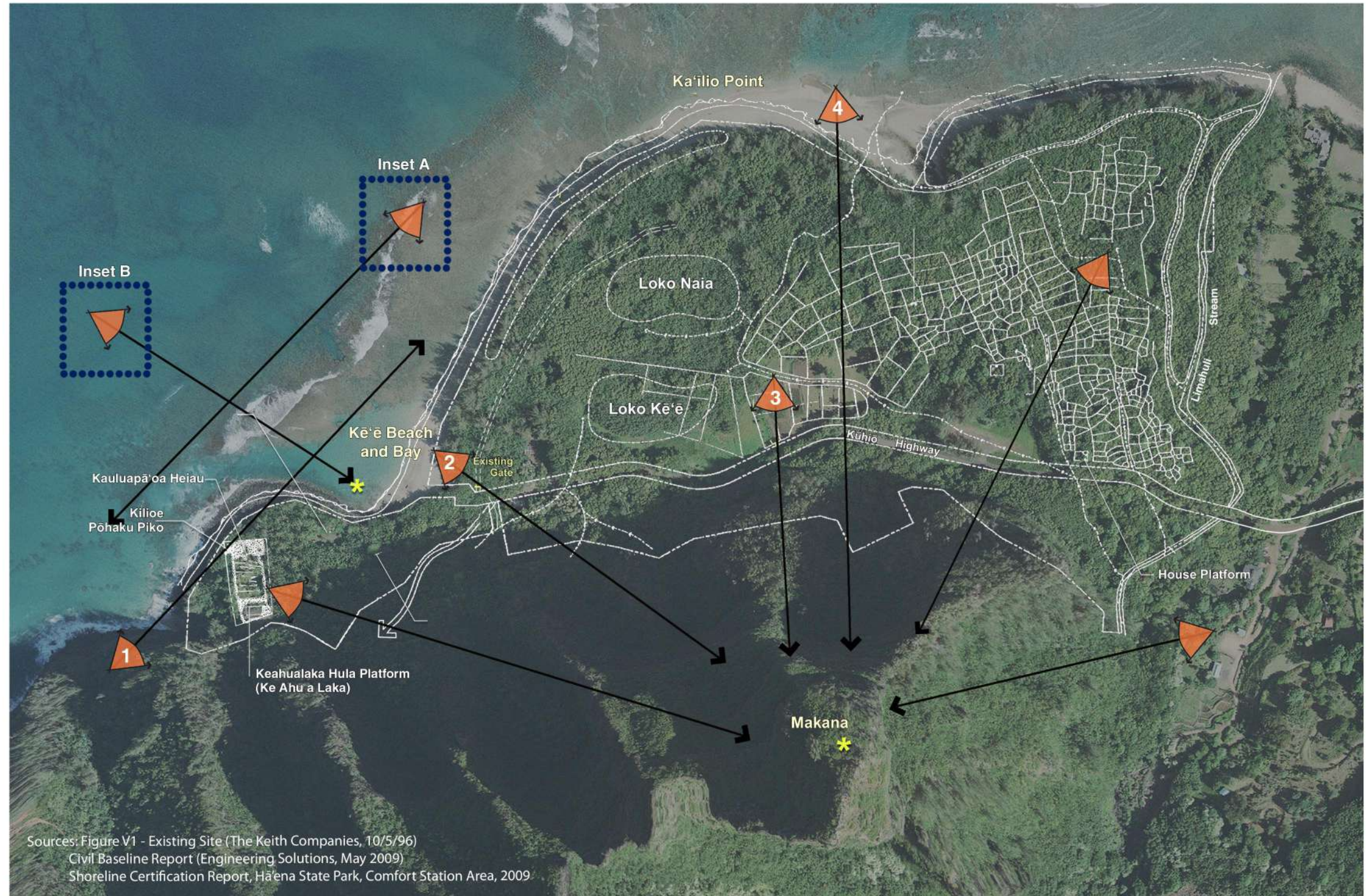
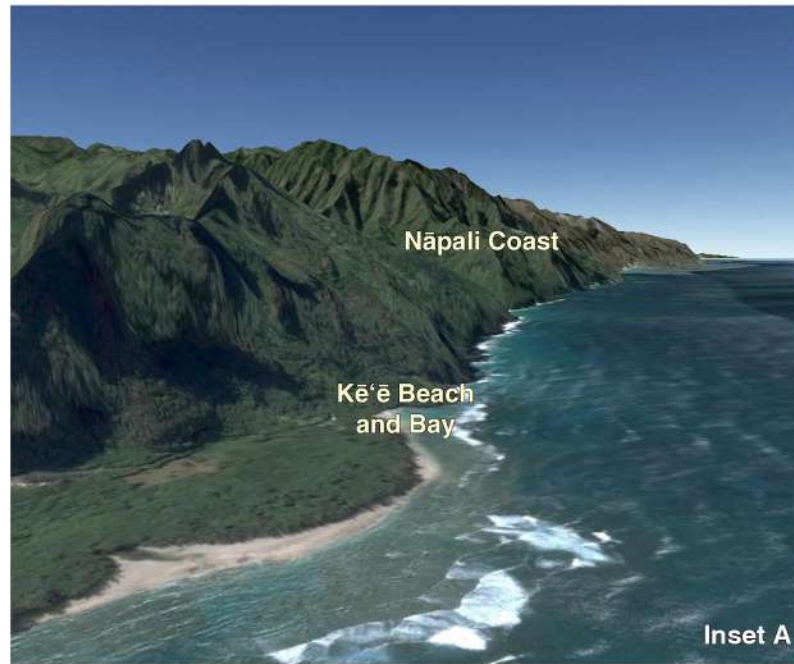
2.8 THE CULTURAL ENVIRONMENT

A brief history of the site including the prehistory and post-contact history of the area was discussed earlier in Section 2.2. However, given the rich cultural environment of the site, the long line of families who inhabited this place, and the people and communities who continue to fight for its protection and recognition today, it is worth reiterating some of their thoughts on the cultural significance of this place. The following information was primarily shared by the MPAC at various meetings, and via phone calls, emails and other communications. As this summary is but a snapshot of these core values, the hope is that these basic concepts and understandings drive the implementation of the master plan and management plan and that the discussions between State Parks, the families, the practitioners and the community continue as implementation moves forward at the park.

For the families and kūpuna who remember living here and tending to this place, everything is connected. The health of the land, flora and fauna, the health of the ocean, streams and waterways, and the health of the people are all connected. Many feel that the people and families who are from this place need to return and need to feel welcomed to help take care of this place as well as the kūpuna whose iwi and spirits still reside in the park. Many also feel that there are currently too many visitors in the park and that the place needs space and time on a regular basis to rest and to be restored.

During one of the MPAC meetings, Kehaulani Kekua graciously shared with the group the deep connection that exists between hula and the forests and how this area is sacred to hula. She explained that hula is not just about dance for the sake of beautiful movements, but about regeneration and that there is a profound connection between the practice of hula and the health and regeneration of the natural environment.

She described the three kuahu (shrine) of hula that are recognized by the guild of hula practitioners. The first kuahu is the native forest. The second is the kuahu within the hālau hula, which could be described as a miniature of the native forest within the hālau. The third kuahu is the body of the hula practitioner. When adorned with greenery from the native forests, the dancer's body itself becomes a kuahu. So in practicing hula, it is the forest that is central and it is for the forest that hula is practiced. The health of our native forest in turns brings good health to the waters that flow in our streams and eventually to the ocean. The health of the forest brings health to the land, the waters, and the people.



LEGEND



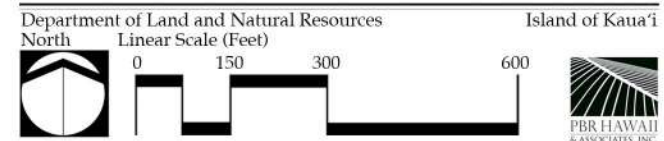
-  Historic and Scenic Resources
-  View Planes Documented in Current Study

FIGURE 20
Major Views to Makana and Kē'ē
HĀ'ENA STATE PARK



View 1: View of Kē'ē from 1/2 mile point on Kalalau Trail



View 2: Makana from Kē'ē



View 3: Makana from the cleared lo'i



View 4: Makana from 'auwai outlet near Ka'ilio Point



View 1: Hula Platform looking northeast



View 2: Kē'e from Allerton Caretakers Cottage



View 3: Kē'e Beach

LEGEND



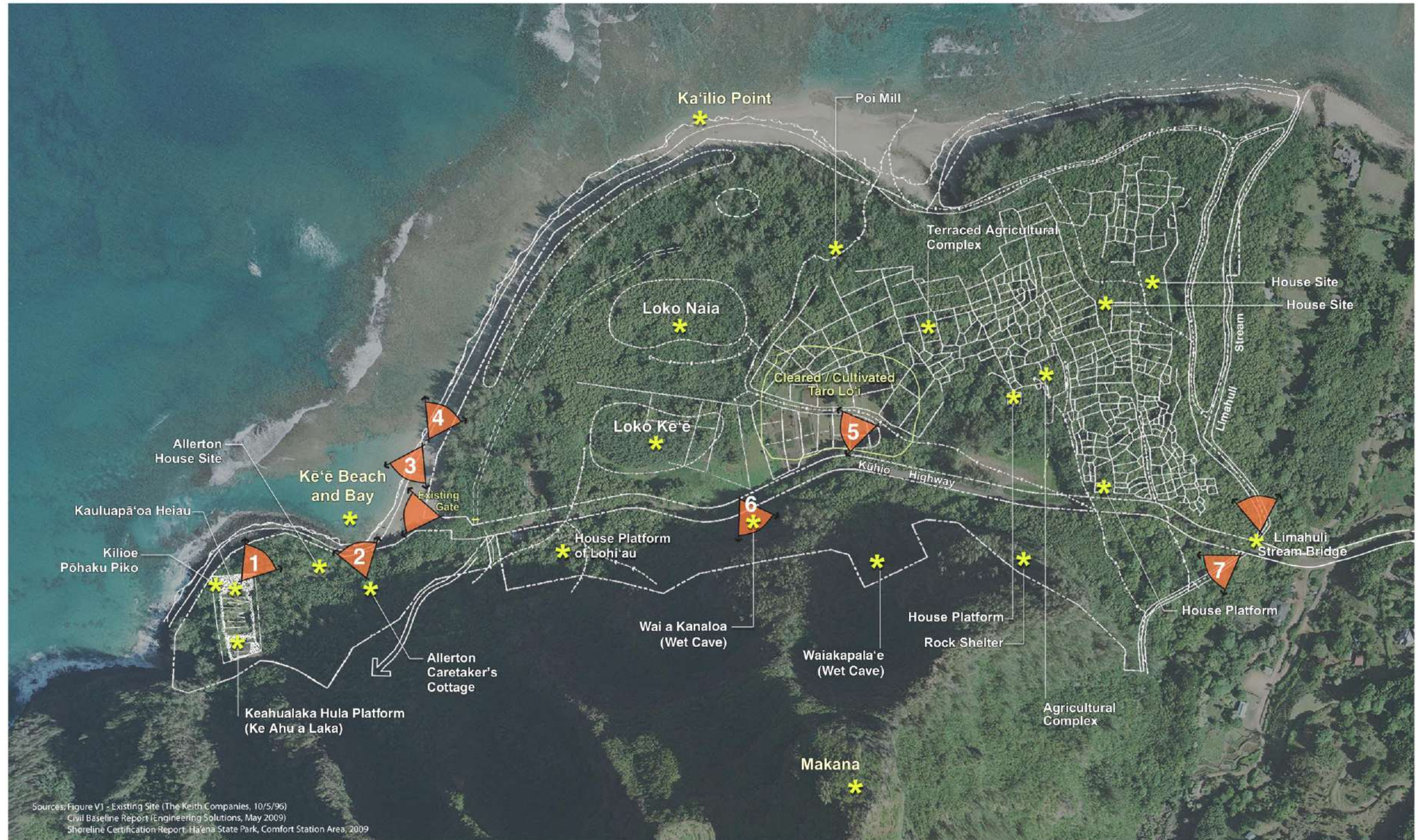
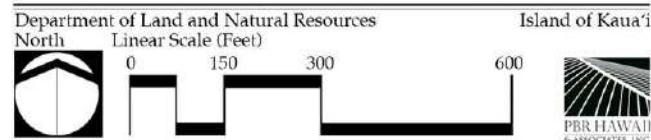
-  Points of Interest
 -  View Planes Documented in Current Study
- Note: View 7 photo credit to Kennedy Jenks.

FIGURE 21
Scenic Resources
HĀ'ENA STATE PARK



View 4: Looking toward Ka'ilio Point



View 5: Cleared lo'i looking west



View 6: Wai a Kanaloa (Wet Cave)



View 7: Limahuli Stream looking upstream from crossing



Inset A: Non-native vegetation at Kīlīo Pōhaku Piko as seen from Keahualaka Hula Platform



Inset B: Trees blocking views of Kē'e

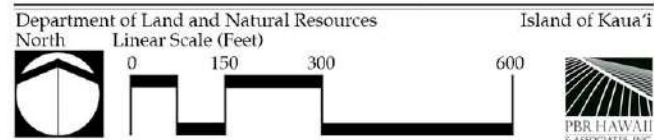


Inset C: Cars and Trees at Kē'e Beach

LEGEND

- Non-Native Vegetation that obscures visual resources
- Parking (legal & illegal) that obscures visual resources

FIGURE 22
Scenic Resources Constraints
HĀ'ENA STATE PARK



Inset D: Cars at Waiakanaloa



Inset E: Poi Mill site, hau trees



Inset F: View of Makana blocked by non-native vegetation

2.9 EXISTING PARK INFRASTRUCTURE AND UTILITIES

Much of the following information on existing park infrastructure is provided by Kennedy/Jenks (formerly Engineering Solutions, Inc.), the civil engineer, and Austin Tsutsumi and Associates (ATA), the traffic engineer. The civil baseline report is attached as Appendix B and the traffic study is attached as Appendix D.

2.9.1 ROADS

Public vehicular access to Hā'ena State Park is limited to Kūhiō Highway (State Highway 560), which runs the length of the park and terminates at Kē'ē Beach. The highway is owned and managed by the State Department of Transportation (DOT) and consists of two twelve-foot lanes.

In 2004, a ten-mile stretch of the highway between Princeville and Kē'ē Beach was listed on the National Register of Historic Places (State Site Number 30-02-9396). It includes thirteen one-lane bridges within this span, a ford crossing at Mānoa Stream, and a stream crossing at Limahuli Stream. These narrow crossings give the highway its unique and scenic character and attract thousands of visitors to the North Shore each year. However, the narrowness and weight limits of these bridges also essentially eliminate the passage of large tour buses and trucks through this portion of the North Shore. Passenger vehicles are limited to a 15-20-person maximum and the vehicle weight limits for the bridges range between 16,000 and 50,000 pounds (gross vehicular weight) according to the State DOT (DOT personal communication 2011). However, these are not the tested strengths of these historic bridges and it could be far less in reality. A typical 15-passenger van has a gross weight limit (includes passengers and load) of 10,000 pounds (ATA 2011).

Paved shoulder lanes were installed along the highway within the park in 1985 and later guardrails were added in 2002 (Kennedy/Jenks 2011). However, the shoulders are often used for illegal parking, particularly in areas around Wai a Kanaloa and closer to Kē'ē.

Unpaved access roads exist within the park, including the coastal access road which runs behind the sand dunes and was recently gated, the access road to the Montgomery House which is covered with laua'e, an access road to the cleared lo'i, and the driveway/access road to the former Allerton property.

2.9.2 WATER SYSTEMS

2.9.2.1 Potable Water

According to Kennedy/Jenks, the County of Kaua'i Department of Water (DOW) currently provides potable water to the park via a four-inch PVC pipe that terminates at the entrance to the park and has a one-inch meter. Water is gravity-fed from a 0.1 million gallon (MG) reservoir 1.1 miles away at a ground elevation of 126.5 feet above mean sea level (amsl). Within the park, a three-inch galvanized iron pipe runs along Kūhiō Highway in an east-west direction and serves the comfort station and associated shower at Kē'ē Beach. Most of the three-inch pipe is installed above ground and buried pipe depths are unknown. Recorded water usage from October 2003 to November 2006 averages 2,125 gallons per day (gpd).

2.9.2.2 Non-Potable Water

An average of 760,000 gpd of water is diverted from Limahuli Stream to irrigate the lo‘i kalo within the park. The intake is located on the south side (mauka) of the highway and the water flows by gravity through an HDPE pipe to and into the lo‘i (Photo 17). The line begins as an eight-inch HDPE line at an elevation of 95.9 feet amsl and transitions to a six-inch HDPE line at 57.5 feet amsl. It crosses the highway through one of the 18-inch drainage culverts (Kennedy/Jenks 2011).



Photo 17 – Irrigation Line Running in ‘Auwai

2.9.2.3 Fire Protection

There is no fire protection water system within the park. If needed, seawater is airlifted to the site of any fire. The last fire hydrant/standpipe is located outside of the park, roughly 75 feet away, and is connected to the County’s potable water system.

2.9.3 WASTEWATER SYSTEMS

A separate Wastewater Preliminary Engineering Report was prepared for this project by Kennedy/Jenks and is attached as Appendix E. Hā‘ena State Park’s first comfort station was built in 1979 at Kē‘ē Beach by DLNR and wastewater previously emptied into a six by eight-foot diameter cesspool. In 2001, a 2,500-gallon individual wastewater system (IWS) including a 2,500 gallon septic tank and 2,700 s.f. leach field was built for the comfort station to comply with EPA’s large capacity cesspool closures.

In 2008, the existing comfort station was demolished and replaced by a new one built in the same location (Photo 18). It maintains the same number of fixtures as the original – three water closets, one urinal, and two lavatories (sinks). These fixtures are estimated to generate 2,016 gpd (Kennedy/Jenks 2011). According to DOH standards for picnic parks, this equates to approximately 403 visitors per day based on an average 5-gallons per day per person (toilet wastes only). An outdoor shower with multiple shower heads and spigots is located to the south of the comfort station and runoff water is allowed to drain and infiltrate into the surrounding soils.



Photo 18 – New Comfort Station and Showers

In the years 2007-2010, DLNR and members of the Hā'ena community collaborated on the design of an alternate individual wastewater system to mitigate impacts to cultural and archaeological resources beneath the existing leach field. The result has been approval and construction of a subsurface flow-based wastewater treatment system. A "subsurface" system is one where the constructed wetland is contained within a liner, but the wastewater flows beneath the surface of a gravel medium within the liner so there is no exposed water under normal operating conditions. Native plants such as makaloa (*Cyperus laevigatus*) and ahu'awa (*Cyperus javanicus*), two perennial sedges, are native species that were planted within the constructed wetland. Wastewater is first treated within a primary treatment tank. Then, the wastewater flows to the constructed wetland where it is further treated by having the plants take up nitrogen and more importantly, create an environment where organisms that thrive in the root systems can feed on bacteria in the wastewater, further improving water quality before discharging it into the leaching chambers. The new infiltration field is located to the east of the archaeological site but west of the delineated natural wetlands of the two loko. See Figure 27. The comfort station and treatment facilities are sized to manage the same amount of wastewater, 2,016 gpd, or roughly 403 visitors per day, based on Department of Health standards (Kennedy/Jenks 2010). The existing septic tank and leach field continues to serve as an emergency backup system in the event the constructed wetlands system is not operational.

In addition to the existing comfort station wastewater system, an abandoned cesspool was found at the Montgomery House. The existing Allerton House and Caretaker's Cottage also probably have abandoned cesspool(s). Kennedy/Jenks recommends upgrading these facilities if either of these areas will require wastewater service.

2.9.4 SURFACE WATERS, DRAINAGE AND STORMWATER MANAGEMENT

As will be discussed in Section 2.11.1, the coastal areas and the areas along Limahuli Stream are within the 100-year flood plain with base flood elevations determined in both the special flood hazard areas (Zone AE) and coastal flood areas with velocity hazard (Zone VE) (see Figure 23). Much of the park is also classified as wetlands makai of the highway with the exception of the main parking lot area and the area around the existing comfort station (see Figure 16). Limahuli Stream is the only perennial stream within the park. However, there is an extensive 'auwai system that once served the lo'i and intermittent flows during heavy rainfall events coincide with many of these channels. Kennedy/Jenks (2011) notes that during heavy rains, stormwater runoff is typically full of sediment, soil, plant and animal material and other debris which causes muddy plumes at the outfalls. The two main outfalls are Limahuli Stream and Pohoikeiki Channel (Kennedy/Jenks 2011). However, the Kē'ē lifeguards and community members have also witnessed heavy runoff flowing from the end of the highway across the beach, eroding the sand and emptying into Kē'ē Lagoon. In March 2012, a significant washout of the beach at Kē'ē required emergency repairs (see Photo 20).

According to Kennedy/Jenks, drainage improvements on the site consist of five 18-inch reinforced concrete drain culverts that allow storm water to cross beneath Kūhiō Highway from south to north. Three have at-grade 3'x4' drain inlets and the other two have headwalls. It is estimated approximately 56.8 cubic feet per second (cfs) and 37.9 cfs of runoff from approximately 14.2 acres above Kūhiō Highway flows down Maunahou into the five culverts, during the 10-year and 2-year storm, respectively (Kennedy/Jenks 2011).

The drain culverts satisfy the requirements set forth in the County of Kaua'i Department of Public Works Storm Drainage Standard. However, during a 50-year storm, an estimated 7,300 cfs of runoff flows directly to the ocean. This includes runoff from the west end of Maunahou that flows over Kūhiō Highway as well as the entire area of the park below Kūhiō Highway. During heavy rain storm events, the entire park is inundated with rushing waters from this surge of rainwater. The existing drainage improvements do not have the capacity and were not designed to handle the larger storm events (Kennedy/Jenks 2011).

2.9.5 ELECTRICAL POWER AND COMMUNICATIONS

According to Kennedy/Jenks, there is no electrical power service currently at the park. Kaua'i Island Utility Cooperative (KIUC) service stops at the entry to the park. A DLNR-owned 11 pair cable telephone line runs along Kūhiō Highway to the pay phone and emergency phone at Kē'ē Beach (Hawaiian Telcom, personal communication). It parallels the existing three-inch water line (Kennedy/Jenks 2011).

2.9.6 CIVIL DEFENSE

Currently, there are no State Civil Defense (SCD)/Hawai'i Emergency Management Agency sirens in the park and no tsunami evacuation signs on Kūhiō Highway within the park. The closest siren is located at Hā'ena County Park roughly 3,500 feet to the east. According to SCD, there are no immediate plans to include a siren at the park. However, there may be a point in the future when SCD may require one or an upgrade of an existing siren. If a siren is needed at the park, the siren tower would require approximately 25 s.f. of land and would stand roughly 45 feet tall (directional speakers). Solar photovoltaics are typically used to charge the batteries so no electrical connection is required.

2.9.7 SOLID WASTE

Trash receptacles and recycle bins are stationed throughout the Kē'ē Beach area. State Parks staff provides routine trash removal on a daily basis.

2.10 TRANSPORTATION, TRAFFIC, AND PARKING

2.10.1 PUBLIC TRANSIT

The County of Kaua'i Transportation Agency provides public transit service between Hanalei and Kekaha via the Kaua'i Bus. Service between Līhu'e and Hanalei is provided six days a week, Monday through Saturday, between 6:20 a.m. and 8:00 p.m. Route 400 runs from the Hanalei Courthouse to Kaua'i Community College and Route 500 runs in the opposite direction. Fares are \$2.00 per trip for adults, \$1.00 per trip for seniors (60+ years) and youth (7 – 18 years). The County also offers monthly passes for \$35.00. All buses are wheelchair accessible. Folding baby strollers, musical instruments, and body boards are permitted onboard. However, surfboards, large backpacks and other bulky items that block the aisle or seat are not permitted onboard. Currently, there is no public transportation service to Hā'ena. Private shuttles and taxis can be arranged for a fee.

In 2014, the County provided a \$75,000 grant to a private shuttle operator, Experience Kaua‘i, to supplement the County’s transit service between Princeville and Kē‘ē in an experiment to see what the ridership potential would be and to reduce traffic along this stretch of the highway. In its first month of operation in November 2014, they had over 1,000 passengers. In December, there were more than 1,500 riders. The shuttle used two 15-passenger vehicles and charged introductory fares of \$2 each way for visitors and \$1 each way for residents during its first two weeks. Then, the fares increased to \$4 and \$2, respectively. It was estimated that half of the riders were residents which supports the potential for general shuttle service on the north shore.

The shuttle service ran from 6:00 AM until 7:00 PM originating at the Westin Princeville, stopping at major resorts, the Princeville Center, Hanalei Town, the Wainiha Store, Hanalei Colony Resort, and Hā‘ena Beach Park before heading to Kē‘ē. The shuttle then reversed its route back to Hanalei Town. At 9:00 AM, the second shuttle started its route between Princeville and Hanalei, while the earlier shuttle looped between Hanalei and Kē‘ē to increase frequency of service. Funding to support the shuttle, however, was not continued by the County in the following year and the shuttle service terminated.

2.10.2 PEDESTRIAN AND BICYCLE FACILITIES

There are currently no designated pedestrian or bicycle facilities within the park or en route to the park. Pedestrians and bicyclists typically travel along the side of the highway or in the shoulder of the roadway (Kennedy/Jenks 2011). However, there are many areas where rock slopes, vegetation, and guardrails block the shoulder, forcing them to share the narrow vehicle travel lanes, creating a dangerous situation where they may be hit and vehicle traffic is forced to slow down.

2.10.3 TRAFFIC

Access to Hā‘ena State Park is dominated by the personal vehicle, whether rented or privately owned. According to the 2007 OmniTrak survey of 283 park users performed for the Hawai‘i Tourism Authority (HTA), 69 percent of visitors from Hawai‘i and 42 percent of non-Hawai‘i visitors arrived by private vehicle and another 19 percent of visitors from Hawai‘i and 55 percent of non-Hawai‘i visitors arrived by rental cars.

A Traffic Impact Analysis Report (TIAR) was conducted by Austin, Tsutsumi & Associates, Inc. (ATA) to evaluate potential traffic impacts resulting from the proposed Hā‘ena State Park Master Plan. Their report (2013) is provided in Appendix D. Traffic data was collected via pneumatic tubes placed at the Hā‘ena State Park entrance between August 14, 2008 and August 18, 2008. During this analysis period, a three day weekend was included in the study (Admission’s Day, prior to the recession and downturn in Hawai‘i visitor counts). According to 1993 data from County of Kaua‘i Lifeguards, Kē‘ē experiences its highest attendance during the month of August.

Weekend peak hour traffic occurred between 12:00 p.m. and 1:00 p.m. However, a large influx and efflux of traffic occurred between 10:45 a.m. and 3:45 p.m. Regional weekday morning and afternoon commuter traffic was assumed to occur between 8:00 a.m. and 9:00 a.m. and between 3:00 p.m. and 4:00 p.m. respectively. A total of 1,550 vehicles per day were counted entering and exiting Hā‘ena State Park. On the average over the study period, there are 781 vehicles entering the park and 767 vehicles leaving the park. Peak traffic was observed on Sunday,

August 17th between 12:00 p.m. and 1:00 p.m. where a total of 107 vehicles entered and 85 exited the park. ATA concluded that observed traffic was well below the potential capacity of a two-lane highway (two-lane highways have the potential capacity of 1,700 passenger vehicles per hour per direction of travel). However, congestion within the park occurred due to the slow speeds resulting from pedestrians on the roadways and cars waiting for parking stalls. Some waited as long as five minutes for a stall.

Although no standards exist for determining the capacity of the one-lane bridges along the highway leading up to the park, ATA used Simtraffic Analysis software to estimate a baseline for the existing traffic. The Waipā Bridge was used for the analysis since it has the longest one-lane span and is located near the State DOT's count location. With 487 vehicles crossing the bridge in both directions per hour and an estimated bridge capacity of 1,250 vehicles per hour, the existing volume-to-capacity (VTC) ratio for the bridge is about 39%. This number was used to compare different scenarios for the master plan.

ATA also noted the considerable amount of vehicles that were parked alongside the highway within the park leading to Kē'ē. Visitors that park alongside the roadway or parked in the lot closer to the entrance were exposed to oncoming traffic due to a lack of pedestrian sidewalks.

The June 2013 biennial DOT traffic counts registered 6,700 vehicles per day on the stretch of highway just before the County's Hā'ena Beach Park. This includes vehicles traveling in both directions with the counts split almost exactly in half for each direction, or roughly 3,350 traveling in each direction (DOT Kaua'i District 2015). This is a roughly 55 percent increase since the 2003 biennial counts, which recorded over 2,100 vehicles per day in each direction in August (DOT Kaua'i District 2007).

Photo 19 – Parking Area near Kē'ē



2.10.4 PARKING

There are currently two parking areas at Hā'ena State Park. The first is a visitor parking lot located approximately 750 feet west of the park entrance. This previously disturbed area was recently enlarged to approximately 30,000 s.f. and can accommodate roughly 80-100 cars. The parking area is approximately

three to four feet below the elevation of the highway. The second parking area is an off-street parking area located at the end of Kūhiō Highway near Kē'ē Beach. Based on a rough count, there were between 50 and 70 cars parked both legally and illegally in this area. Neither parking area is paved nor are any of the parking stalls striped except for the four ADA stalls near Kē'ē. Because the lots are unpaved, both areas are uneven and have erosion problems. The Hui also has been given HTA funding to resurface the parking lot. However, with no striping, drivers use their own judgment on where to park and therefore the use of these parking areas can be inefficient and underutilized.

Despite the two parking areas, there is often a shortage of parking stalls during peak periods. In addition, there are restricted areas along the highway with “no parking” signs posted. However, as the designated parking areas fill up, visitors often disregard the signs and park illegally along the highway leading up to Kē‘ē. These vehicles block the shoulder lanes, forcing pedestrians and bicyclists into the vehicular lanes. During especially high usage, cars are also parked along the highway outside of the park boundaries.

Vehicle counts have also been collected by park staff. On average, park staff found that there are approximately 200 vehicles in the park (parked legally and illegally) during the peak mid-day hours in the months of May, June and July.

2.10.5 HELIPAD

A clearing for helicopter landings is currently located on the eastern end of the entry parking lot. The area is grassed, fenced, and well-maintained. Typically, it is used for emergency rescues and fires (Kennedy/Jenks 2011). However, State Parks has also used it for ongoing maintenance of the trails and the Nāpali Coast Wilderness Park.

2.11 NATURAL HAZARDS

Typical natural hazards impacting the Hawaiian Islands include flooding, tsunami inundation, hurricanes, volcanic eruptions, and earthquakes. The following sections describe the natural hazards that may impact the park and general area, as appropriate.

2.11.1 FLOOD HAZARD

According to the Flood Insurance Rate Map (FIRM) Panel 1500020030E (9/16/05) prepared by the Federal Emergency Management Agency (FEMA), National Flood Insurance Program, there are several Special Flood Hazard Areas within Hā‘ena State Park (see Figure 23). They are located along the coast and along Limahuli Stream and include Zones VE, AE and A. Zone VE is a coastal flood zone with velocity hazard for wave action subject to the one percent chance annual flood (100-year flood). Within the park and nearshore waters, base flood elevations have been determined and range between 10 and 21 feet with the lower base flood elevations at the furthest eastern and furthest western edges of the park. The highest base flood elevations are located offshore of Ka‘ilio Point.

Moving inland of the Zone VE areas are the Zone AE areas. These are the Special Flood Hazard Areas subject to the one percent chance annual flood and where base flood elevations have been determined. Base flood elevations start at 10 to 11 feet near Limahuli Stream and increase to 15 feet near Kē‘ē and 18 feet near Ka‘ilio Point.

The base flood elevations have not yet been determined along the mauka portions of Limahuli Stream and therefore these areas are located in Zone A. However, they are still within the Special Flood Hazard Areas subject to the 100-year flood. Also according to Kennedy/Jenks, there are mapping discrepancies between the location of Limahuli Stream on the FEMA maps, the Kaua‘i Online Hazard Assessment (KOHA) database, and the Hawai‘i National Flood Insurance Program (NFIP) database. As a result, the exact location of the Zone A area is not clear and Kennedy/Jenks has contacted DLNR who is currently working to resolve this issue with EPA

Region 9. Kennedy/Jenks recommends maintaining a buffer along the stream until this can be resolved.

2.11.2 WIND AND STORM HAZARDS

Since 1980, two hurricanes have had devastating effects on Kaua‘i—Hurricane ‘Iwa, a Category 1 on the Saffir-Simpson scale, in 1982 and Hurricane ‘Iniki, a Category 4, in 1992. Since Hurricane ‘Iniki hit from the south, there was no significant storm surge or overwash in the area. However, ‘Iniki’s sustained winds reached over 100 mph with gusts up to 150 mph as it passed over Kaua‘i, making landfall near Hanapēpē and sweeping northward to Hanalei (Businger 1998). ‘Iwa’s sustained winds were 75 mph with maximum winds at 110 mph and did not make landfall. However, its diameter was so great that it enveloped Kaua‘i as it passed to the north. While it is difficult to predict such natural occurrences, it is reasonable to assume that future incidents are likely, given historical events and the FEMA Special Flood Hazard Areas along the coastline.

2.11.3 TSUNAMI HAZARD

Hā‘ena is exposed to northwest swells and has been struck by tsunami waves multiple times in recorded history. The tsunami of 1946 is remembered as particularly devastating, destroying homes, a church, and a school and taking lives. Another destructive tsunami struck in 1957, leaving only four of the 29 homes in Hā‘ena standing, although it did not result in loss of life. The land makai of the highway within Hā‘ena State Park is located within the tsunami evacuation zone. During the 1946 tsunami, wave heights reached 30 feet near Kē‘ē and 24 feet off Ka‘īlio Point. Wave heights reached 28 feet off Ka‘īlio Point in the 1957 tsunami. Both of these tsunamis were generated by large earthquakes (magnitude 7.1 and 8.3, respectively) in the Aleutian Islands off Alaska. See Figure 24. The nearest State Civil Defense siren is located at Hā‘ena County Park.

2.11.4 SHORELINE EROSION

The coastal geology group at the University of Hawai‘i School of Ocean and Earth Science and Technology (SOEST), has documented shoreline rates of change since 1927. As shown in Figure 18, shoreline erosion takes place along the entire park site at rates between zero and nearly one foot per year. Significant rain events can also cause beach washouts such as what happened in March 2012 (Photo 20).



Photo 20 – Kē‘ē Beach Damage Following Heavy Rains, March 2012

Photo courtesy of Kawika Winter

2.11.5 ROCKFALL HAZARD

A Rockfall Hazard Assessment was performed by AECOM during the months of August and September, 2008 and updated in 2013 with a supplemental rockfall analysis and computer simulation in the area between the main parking lot and Wai a Kanaloa. The assessment, attached in its entirety as Appendix H, included a geological survey of the site and rockfall hazard identification which included a visual assessment and preparation of a geological report, locating rock outcroppings with GPS readings, and color photography. The Assessment also included an engineering planning study of the rockfall condition, development of preliminary rockfall protection design options and cost estimates. A summary of their findings is presented graphically in Figure 25.

As described previously in this report and in AECOM's report (2013), the rock formation exposed at Hā'ena State Park belongs to the Nāpali Formation, the oldest shield volcano formation above ocean water. Fallen rocks piled against the high cliffs called talus is another major rock formation exposed at Hā'ena. The Nāpali Formation consists of basaltic lava flows with two morphology types, 'a'ā and pāhoehoe. 'A'ā flows are more dense and viscous with clinkers compared to the smooth pāhoehoe flows, which are fluid, volatile and tend to form lava tubes.

Both types of lava are prone to rockfall due to differential erosion of their flow components. However, 'a'ā flows are prone to overhang and rockfall because the poorly cemented clinkers erode faster than the dense cores, whereas pāhoehoe flows are prone to collapse and rockfall because the thin, poorly cemented internal flow layers of the tubes erode faster than the thicker outer crust of the lava tube.

Also according to AECOM, both chemical and mechanical weathering processes are involved in erosion and contribute to rockfalls. Examples of mechanical weathering include stream and wave action, the wedging of growing plant roots, and the fragmentation of rock faces caused by gravity. Chemical weathering involves a change in the chemical composition of the soils and new materials such as clay minerals and hydrated iron oxides are typical products of chemical weathering. Due to the high temperature, rainfall and abundant vegetation, conditions for chemical weathering are nearly optimum at Hā'ena State Park. Breaking up of the rock by mechanical weathering greatly aids chemical weathering and chemical weathering in turn, hastens mechanical weathering. Stress between outer, more weathered and inner less weathered portions of rock can cause rock to break apart, the mutual reinforcement of chemical and physical weathering is an ongoing process, the degree and rate of which will largely determine the stability of rock in the area (AECOM 2013).

Water is the most important agent in the weathering process and the most important factor affecting the timing of rockfall events. Due to hydraulic pressure and erosion, rockfall events tend to occur more frequently during or after heavy rains in Hawai'i. At Hā'ena, the generally wet climate and the average annual rainfall of 122 inches is considered high, contributing to higher rockfall risks (AECOM 2013).

To evaluate rockfall risk, AECOM utilized the DOT/FHWA (Department of Transportation/Federal Highway Administration) Rockfall Hazard Rating System methods and guidelines. This rating system evaluates a number of criteria including: slope height, ditch

effectiveness, structural conditions, rock friction, erosion rates, volume of rockfall events, climate and presence of water on slope, rockfall history and slope topography. It uses a three-class rating system for hazardous conditions based on its potential to impact adjacent properties.

- **Class A** – high estimated potential for rockfall on adjacent properties with high historical rockfall activity. Chances for rockfall is moderate to high and when rockfalls occur, they will more than likely reach adjacent properties.
- **Class B** – moderate estimated potential for a rock to fall on adjacent properties with moderate historical rockfall activity. Class B rating indicates that although a rockfall is probable, the chances of it reaching adjacent properties are low to moderate. This could involve scenarios where risk is mitigated by the presence of catchment ditches or large flat areas that can contain rockfalls.
- **Class C** – low to no estimated potential for rockfall on adjacent properties with low historical rockfall activity.

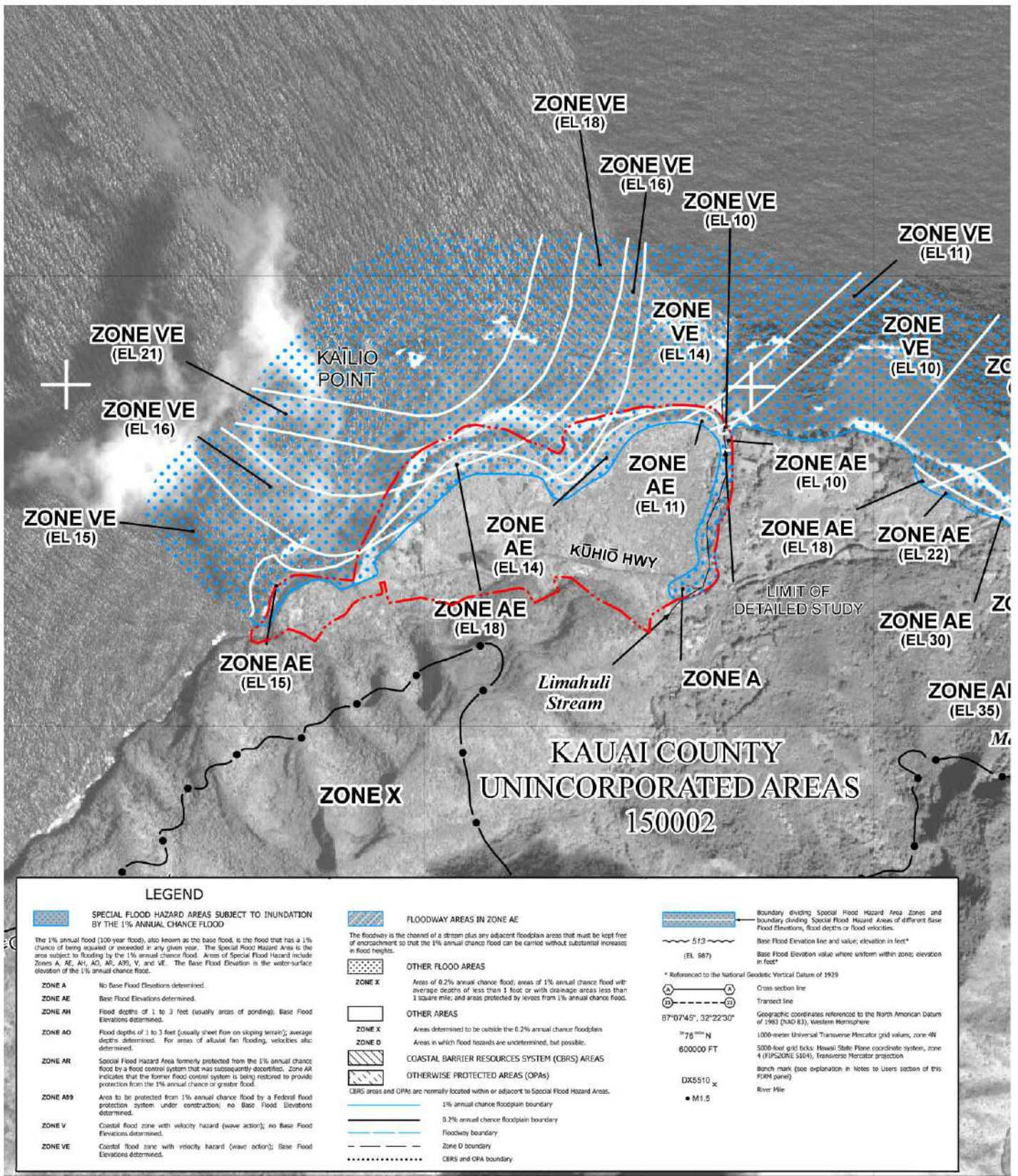
AECOM also analyzed the chance of rockfall. This is primarily based on the stability of the rock face and condition of the supporting materials. There are four categories:

- **Category 1** – imminent potential for rockfall (could happen anytime)
- **Category 2** – short term potential for rockfall (within several to a dozen years)
- **Category 3** – medium term potential for rockfall (within dozens of years)
- **Category 4** – long term potential for rockfall (up to or more than a hundred years)

Please note that the time scale references are used symbolically and are not meant to represent an actual timeframe within which the rockfall events may occur.

AECOM used computer simulation to model rockfall events along five transects within the park. They determined that the rockfall hazard conditions at Hā'ena State Park consists of both Class A and Class B rockfall ratings based on the potential for rockfalls to reach the highway at various positions as well as at Kē'ē Beach and the Kalalau Trailhead. See Figure 25. The area around Wai a Kanaloa is the most hazardous rockfall area (Class A) because: 1) many rockfall features exist here; 2) the very high probability for rockfalls to reach the highway and Wai a Kanaloa; and 3) the almost constant presence of visitors (AECOM 2013). Rockfalls are less likely to reach the highway or beach at the other areas (Class B).

AECOM also analyzed the chance of rockfall at specific locations within the park which are also shown on Figure 25. They range from Category 1 through 3. AECOM performed supplemental analysis in the area between the main parking lot and Wai a Kanaloa to help guide the design of the proposed park master plan. Using computer modeling, they provided a baseline estimate of how far simulated rockfalls would reach. The 0% and 5% chance of simulated rockfall lines were determined based on computer modeling and then used to help locate all major facilities outside of the rockfall zones. These designs are discussed in more detail in Chapter 3.0 and shown on Figure 27 and Figure 28.



LEGEND

Hā'ena State Park Project Boundary

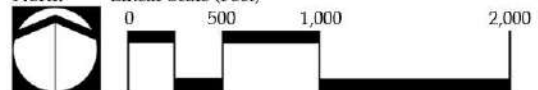
FIGURE 23

Flood Insurance Rate Map

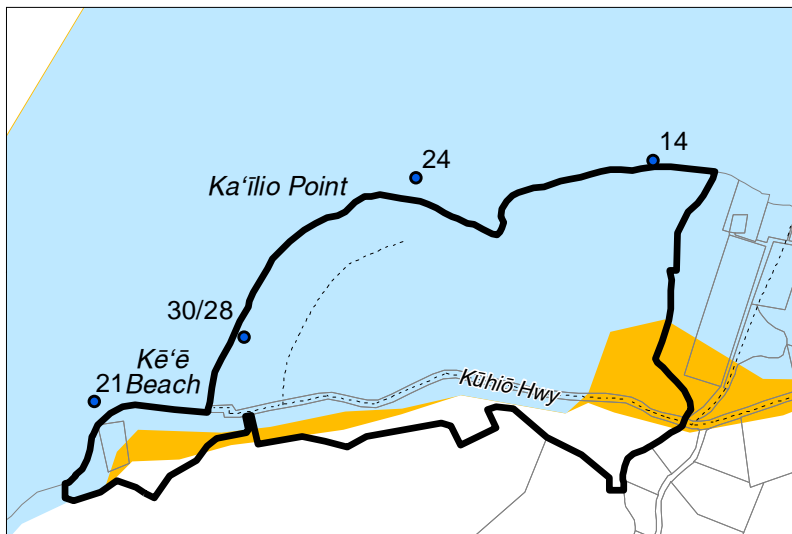
HĀ'ENA STATE PARK

Department of Land and Natural Resources
North Linear Scale (Feet)

Island of Kaua'i

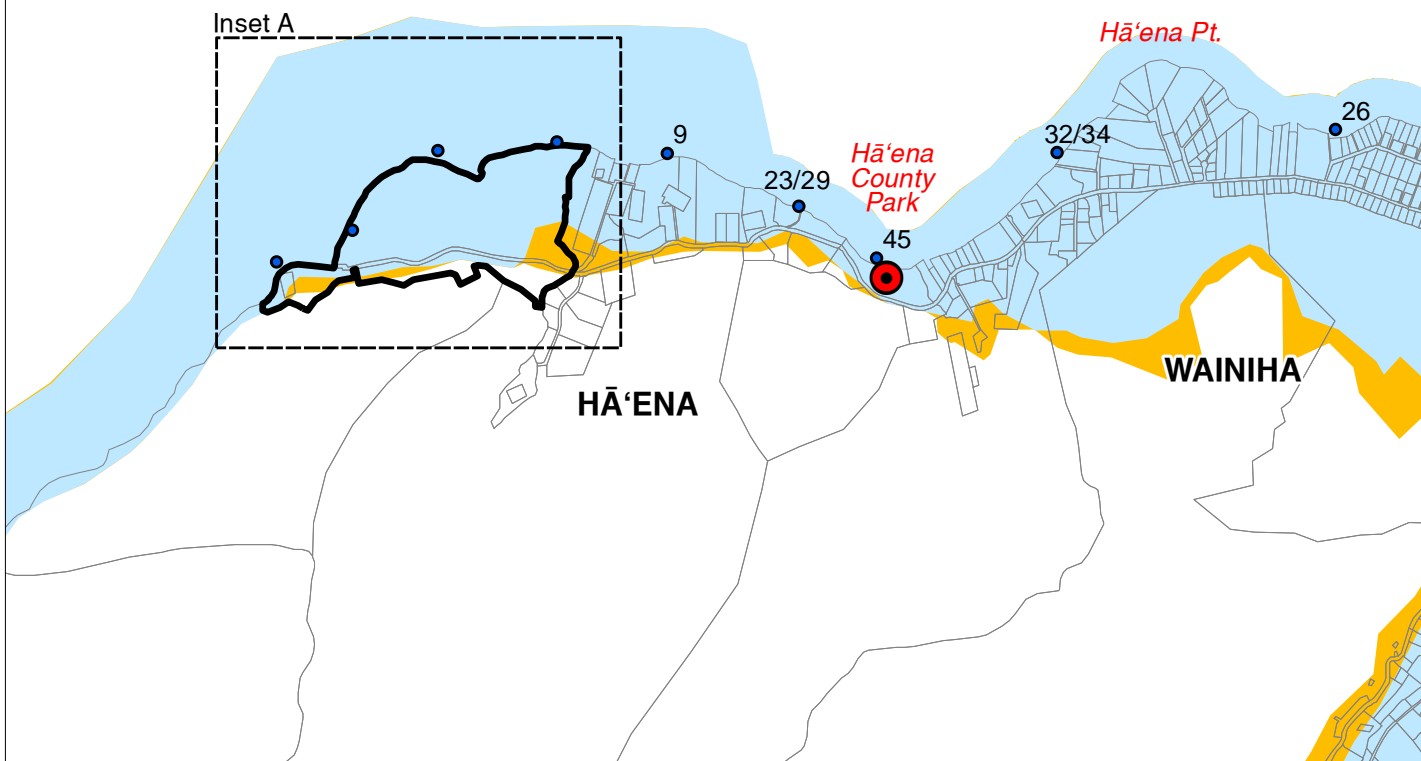


Source: Federal Emergency Management Agency (Map No. 1500020030E) (9/16/2005)
Disclaimer: This graphic has been prepared for general planning purposes only.









Inset A : 1" = 1,000'

PACIFIC OCEAN



LEGEND

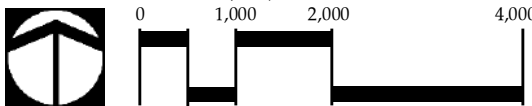

-  Hā'ena State Park Project Boundary
-  Road
-  Tsunami Evacuation Zone
-  Extreme Tsunami Evacuation Zone
-  Existing Civil Defense Siren
-  Tsunami Wave Heights (Height in Feet, 1946/1957)

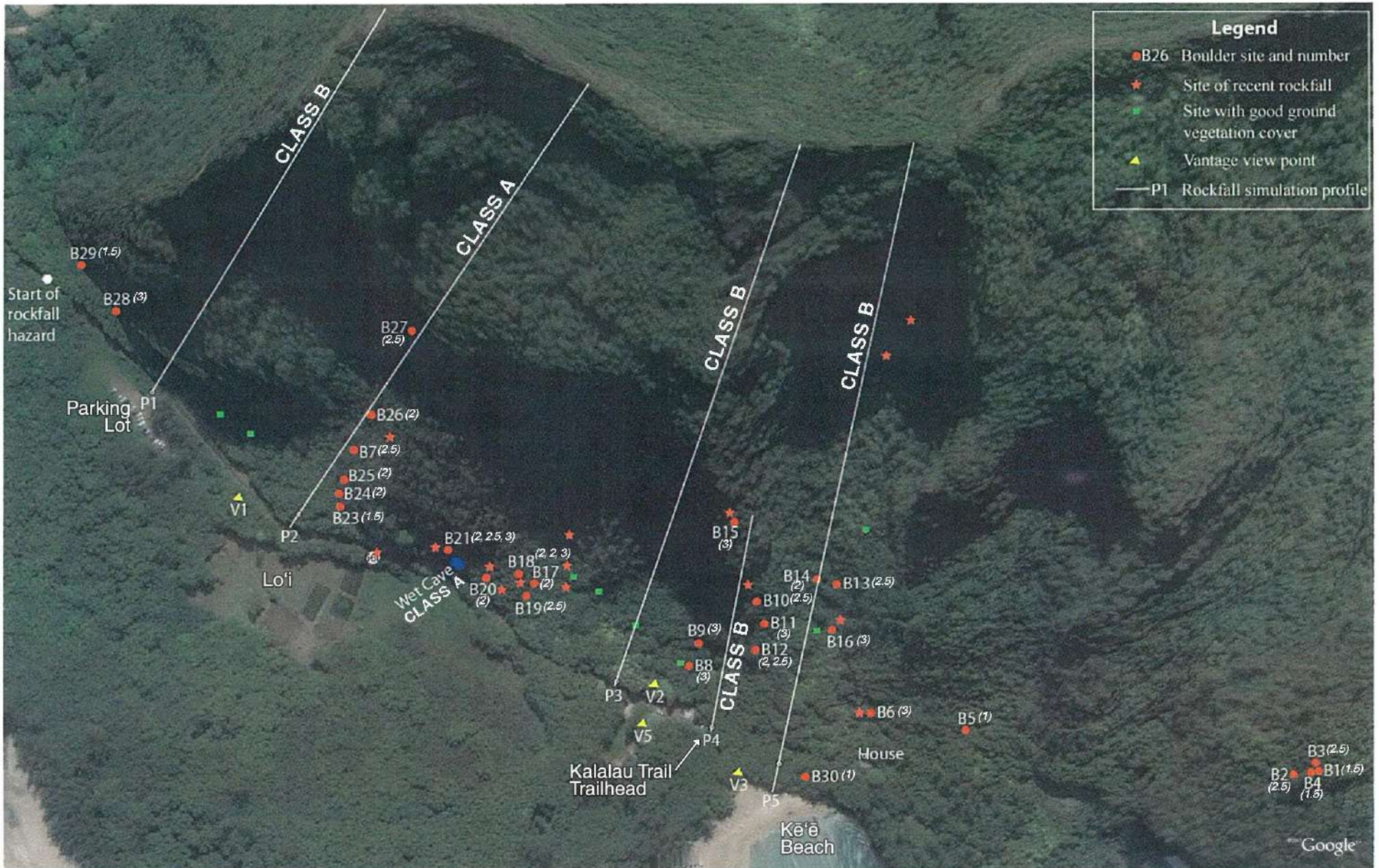
Source: County of Kauai (2014); UH, NOAA, State and County Civil Defense (2016); State GIS (1999, from Loomis 1976)
 Disclaimer: This graphic has been prepared for general planning purposes only.

FIGURE 24
Tsunami Evacuation Zone and Tsunami Wave Heights
HA'ENA STATE PARK

Department of Land and Natural Resources Island of Kaua'i

North Linear Scale (Feet)



LEGEND

Rockfall Hazard

- Class A - High Estimated Potential
- Class B - Moderate Estimated Potential

Chance of Rockfall

- Category
- (1) - Imminent
 - (2) - Short-term Potential
 - (3) - Medium-term Potential
 - (4) - Long-term Potential

FIGURE 25

Rockfall Hazards

HĀ'ENA STATE PARK

Department of Land and Natural Resources
North

Island of Kaua'i



NOT TO SCALE



Source: EarthTech (2008): Figure 1-1
Disclaimer: This graphic has been prepared for general planning purposes only.

2.12 SIGNIFICANCE, SUITABILITY, AND SUSTAINABILITY OF PARK SITE FOR RECREATIONAL ACTIVITIES

2.12.1 VISITOR COUNTS

Hā'ena State Park is one of the State's most visited parks. Although visitor counts have not been consistently performed over the years, the available data from various sources indicate a steep increase within the past twenty years. Monthly visitors in 1993 ranged from 1,500 in off-peak months to as many as 10,600 visitors per month during the high season month of August. This equates to an average of 50 to over 350+ visitors per day. By 1999, the DLNR reported approximately 1,700 daily visitors to the park with an estimated 450 visitors accessing the Kalalau Trail (Stepath 2006).

In 2008, Austin Tsutsumi & Associates, Inc. (ATA) conducted a traffic count and counted roughly 780 vehicles per day entering and exiting the park. They estimated an average of 2.5 persons per vehicle, which equates to 1,950 persons per day visiting the park (ATA 2011).

In 2009, the park ranger counted the number of parked vehicles, finding an average of between 181 and 210 vehicles within the park at any one time for the months of May through July. Also, according to the head lifeguard at Kē'ē, the parking lots remained full even with the recent economic downturn (C. Listman, personal communication, February 4, 2009). The most recent count was taken in July 2011 by students from the UH Hawaiian Studies program. It showed 2,028 visitors came to the park between 6:00 a.m. and 6:30 p.m. There were 761 cars which entered and 47 arrived by either foot or bicycle.

Table 2 summarizes the daily visitor counts recorded over the years. Some of the data is either extrapolated or averaged based on the available information.

Table 2 – Summary Table of Daily Visitor Counts

Year	Month/Season	Day of the Week	Visitors per Day	Source	Notes
1993	Off-peak		50 (average)	The Keith Companies 2001	
1993	August		353 (average)	The Keith Companies 2001	
1998	September	Friday	1,501	DLNR State Parks	
1999			1,700	DLNR via Stepath 2006	
2008	August	Holiday weekend	1,950 (est.)	ATA 2011	Estimated based on 2.5 persons per vehicle
2010	February	Wednesday	1,247 (est.)	DLNR State Parks	Counts only conducted from 9 a.m.-4 p.m. Estimated based on 2.5 persons per vehicle
2011	July	Monday	2,028 (761 cars)	UH Hawaiian Studies (C. Andrade)	Measured from 6:00 a.m. to 6:30 p.m. Includes 8 on bicycles, 14 hikers, 5 joggers, 20 pedestrians.

The Kē‘ē lifeguards currently take daily counts of the number of people on the beach at 9:00 a.m., 12:00 noon, and 4:00 p.m. During the summer months, there are anywhere from 200 to 400 people on the beach with 250 to 300 at any one time. In the winter, the beach is still busy with 100-150 people at Kē‘ē (C. Listman, personal communication, February 4, 2009).

During their three-day human use survey performed in July 1999, Save Our Seas volunteers noted that peak visitor usage at Kē‘ē was at 4:00 p.m. with a high level of usage starting at 10:00 a.m. and lasting until 6:30 p.m. By 2006, Save Our Seas noted that visitors arrived much earlier than in 1999 with the parking lots full by 9:30 a.m. (Stepath 2006). Vaughan also summarized human use data collected in 2009-10 from the Kē‘ē lifeguards (68 counts over 18 weekdays and 30 counts over 8 weekend days) and community volunteers (121 counts over 17 weekdays and 36 counts over 6 weekend days) and found that peak usage for both swimmers and sunbathers at Kē‘ē was at 1:00 p.m., with relatively higher usage starting at 11:00 am and dropping after 4:00 p.m. (Vaughan 2010).

However, visitors and residents alike agree that the park needs better management and maintenance. Many in the community and on the MPAC also feel there are too many people utilizing the park. These sentiments can be interpreted as perception that the Park’s environmental, cultural, psychological or social carrying capacity is exceeded. In the report, *Loving them to Death? Sustainable Tourism in Europe’s Nature and National Parks*, The Federation of Nature and National Parks of Europe describes environmental carrying capacity as the “degree to which an ecosystem, habitat or landscape can accommodate the various impacts of tourism without damage being caused or without losing its ‘sense of place’” (FNNPE 1993).

2.12.2 CARRYING CAPACITY

Clark (1992) defines carrying capacity as “the number of users that can be accommodated by a given area without loss in the quality of the natural environment and the visitor experience.” He describes it as the “optimal capacity” or “desirable capacity,” the median between the minimum number of users needed to keep a recreation setting open, and the maximum number when the recreation setting is full and often accompanied by many problems such as overcrowded facilities, diminished resources, inappropriate activities and a deterioration of safety. “Carrying capacity in general ... is the level of use beyond which impacts exceed acceptable levels of change” (Clark 1992).

The Federation of Nature and National Parks of Europe (FNNPE) describes the cultural or social carrying capacity as the “level beyond which tourism developments and visitor numbers adversely affect local communities and their ways of life” (FNNPE 1993). Psychological carrying capacity is described by FNNPE as “the level beyond which the essential qualities that people seek in the protected area (such as peace and quiet, few other people, few signs of human developments) would be damaged by tourism developments” (FNNPE 1993). In other words, park visitors have an expectation of what their experience will be like and this in turn can define the level of acceptable carrying capacity of a park.

SWCA (2010) summarizes the impacts of increased recreational uses at Hā‘ena State Park:

An increase in recreational uses at the Hā‘ena State Park would place greater demands on existing facilities infrastructure, and on the physical, ecological, and societal capacity of the area. Attracting more recreational users would further increase current traffic congestion and parking

issues for both visitors and residents. More users would also have the potential to impact stream and nearshore water quality by increasing the amount of non-point and point-source pollution in the area. The reef ecosystem would be significantly impacted by an increase in unregulated recreational activity at the Park. Potential impacts to the coral reef ecosystem as a result of increased recreation in the nearshore area include: decreased coral coverage, altered coral growth, decreased fish populations, reduced local biodiversity and increased propagated pressure of invasive species. Without an enforceable Park management plan, an uncontrolled increase in current recreational activities at the Hā'ena State Park would lead to further dune erosion and the removal of dune vegetation; create untenable traffic congestion and conflicts; increase the level of pollutants in non-point [sic] source stormwater runoff; create conflicts between recreational and subsistence fishers, and between other and various users of the Park's marine waters; loss of the unique socio-cultural character of the Park and surrounding neighborhood; reduced level of enjoyment by visitors and residents alike; and ultimately as a 'worst case,' the potential economic collapse of the area as a visitor destination. (SWCA 2010)

However, SWCA does believe that with proper management, "most of the recreational uses currently occurring at Hā'ena State Park can be sustainable," but recommends that an ecological carrying capacity study be completed to determine the sustainability of existing recreational uses. The concept of an ecological carrying capacity takes into account "the various recreational activities and the unique physical conditions at a particular reef site to provide a scientific basis for proactive management and to allow managers to identify optimal levels of use and set limits of use... before projected increases occur" (SWCA 2010).

However, some members of the MPAC felt that there is a danger in using an ecological basis to determine the park's carrying capacity. The example of Hanauma Bay Nature Preserve on O'ahu was cited where its ecological carrying capacity was determined to be 3,000-3,500 visitors a day. Current City and County of Honolulu rules for Hanauma Bay limit access to the lower level (beach area) to 2,000 visitors at any one point in time. For Hā'ena, given its limited access and the density of cultural and historic resources, the fear is that the environment itself may scientifically lend itself to more visitors than it currently receives, which many members of the MPAC already feel is too many. Many in the community felt that the park is overrun by visitors and that the place needs space and time to "breathe," to be cleansed, restored and renewed. Therefore, acknowledgement, consideration or establishment of a carrying capacity for the park must also consider the park's many cultural, scenic and recreational values, as discussed in Section 2.1.2 of this report. In addition, however, the State is obligated to maintain outdoor recreation at the park as park acquisition was funded in part through the LWCF as discussed in Section 1.5.

This master plan therefore proposes to set an initial limit of the number of visitors to 900 visitors per day which can be adjusted over time. It also proposes ways in which the State can fulfill its many obligations without doing so at the expense of the environmental, historic, or cultural resources. The concept is to enrich those recreational activities by improving the environment and adding educational value to recreational activities making the experience more meaningful for visitors and increasing their respect, understanding and appreciation for these resources. The following sections describe specific recreational activities and some of the existing conflicts and hazards in more detail.

2.12.3 NEARSHORE RECREATION RESOURCES

The park includes a variety of beach and ocean recreational activities, including beachcombing, sunbathing, swimming, scuba diving, snorkeling, surfing, stand up paddle boarding, and kayaking. When wind conditions are right, windsurfers and kite boarders ride the nearshore waters. The shoreline fronting the park is well-known for the many breaks and reef environments which attract ocean recreationalists (see Figure 26). Windsurfing and other board sports can disrupt other recreational users by coming close to swimmers, snorkelers and divers sometimes at high speeds. This is also a potential conflict for fishers. Similarly, these other users can obstruct windsurfing zones and launching areas, creating conflict.

Hā'ena is still used for subsistence fishing, but fishing for recreational purposes also occurs. According to SWCA (2010), "fishers of all kinds tend to target specific species, many of which are top carnivores. Today, these resources are scarce. ... Declines were evident among fishes targeted by fishers, but not among non-target groups of fishes in hard bottom and mid-depth habitats. Standing stock of highly desired target species (e.g. surgeonfishes, wrasses, parrotfishes, snappers, goatfishes, big-eyes, jacks, squirrelfishes, barracuda, moi, milkfish, and hawkfish) in accessible and populous locations were significantly lower than in areas where public access was prevented and also in lightly populated or remote areas."

In August 2015, Governor David Ige signed into law the Hā'ena Community-Based Subsistence Fishing Area rules (HAR 13-60.8), which seeks to sustainably manage the nearshore ocean resources in the Hā'ena ahupua'a through culturally-rooted community-based management. It includes the establishment of limits on the harvest of aquatic life as well as protection of customary and traditional native Hawaiian fishing practices and will involve substantive community input on resource management from residents and resource users.

SWCA also noted that the use and disposal of inexpensive monofilament gillnets have had a major effect on reef fish by the indiscriminate taking of unwanted as well as target species as well as habitat destruction and fatal entanglement of endangered and threatened species. Other methods of fishing can also affect endangered and threatened species. SWCA cited that "during the period 1982-2007, there have been 49 documented cases of interactions between fishers and monk seals in the Main Hawaiian Islands (Katekaru 2008). Over half of these cases were reported from Kaua'i, two of which were from Hā'ena State Park. These cases usually involved the accidental hooking by ulua fishers using slide-bait tackle (SWCA 2010)." Sea turtle strandings, including trauma induced by hook-and-line and gillnet fishing gear have also been linked to fishing-related incidents throughout Hawai'i (SWCA 2010).

SWCA notes that "damage to coral reefs as a result of diving has been documented worldwide (Rouphael and Inglis 1995, Tratalos and Austin 2001, and Tabata 1992). Divers and snorkelers can physically damage reef corals, invertebrates, and algae by standing on the reef, accidentally kicking coral with their fins, or stirring up silt that suffocates coral. Contact with corals can facilitate disease transmission. Physical damage to coral species can be long lasting due to generally slow tissue regeneration (Davenport and Davenport 2006)."



LEGEND

--- Hā'ena State Park Project Boundary

FIGURE 26
Reef Environment and Surf Breaks
HĀ'ENA STATE PARK

Department of Land and Natural Resources
 North
 Linear Scale (Feet)

0 300 600 1,200

Island of Kaua'i

Source: SWCA Environmental Consultants (2009)
 Disclaimer: This graphic has been prepared for general planning purposes only.

SWCA reports that reef walking occurs at Hā'ena when visitors climb the reef to view tide pools and some divers transverse the reef to dive off the outer portion at Kē'ē. Reef walking has the potential to trample corals resulting in damage to coral tissue, growth rates, reproductive success, and community structure, leading to mortality and overall reduction in coral cover (SWCA 2010). The decrease in coral cover can also affect fish populations which are dependent on coral for shelter and food supply (algae).

According to SWCA (2010), divers and snorkelers feed fish at Kē'ē Lagoon which can disrupt normal distribution and abundance patterns as well as alter normal reproductive output of marine species. It can also modify natural feeding cycles and have negative effects on prey populations by minimizing feeding on algae. Feeding large fish can attract predators that scare off smaller fish, reducing local biodiversity and interfering with natural instincts and behaviors required for fish survival. Feeding fish can also alter their behavior towards humans and they may become aggressive, leading to attacks.

Ocean activities in Kē'ē lagoon occur year around, as the reef makes it one of Kaua'i's more protected swimming areas. However, ocean conditions in general can be unpredictable and are especially dynamic during winter months. Thus, effective safety signage and education are critical components to ensuring visitor welfare while enjoying the park's nearshore resources.

2.12.4 WILDLAND RECREATION RESOURCES

There are no maintained hiking trails within Hā'ena State Park. However, the trailhead for the popular Kalalau trail is located within the park which provides access to Nāpali Coast State Wilderness Park. Potential conflicts caused by the hiking activity associated with the trailhead include, parking demand, increased wastewater effluent from comfort station use, introduction of invasive species carried on hiking boots, and water quality/sedimentation impacts when muddy hikers rinse off in Kē'ē Lagoon and Cold Pond along Limahuli Stream.

According to SWCA (2010), some of the recreational activities occurring at Hā'ena State Park are also known to affect the coastal dunes. Vehicle and pedestrian traffic on the dunes causes erosion and sand movement as well as disturbance of archaeological deposits including burials. They cite Vogt (1979) who found that fewer than 10,000 pedestrians walking over sand dunes during a single season can eliminate dune vegetation and result in erosion (Tabata 1980) and note that dune vegetation has little resistance to trampling due to the extremely low soil penetration and is slow to recover (Davenport and Davenport 2006).

The 2001 Draft Park Plan noted that ORVs were known to drive through the sand dunes and across the sandy beaches at Ka'ilio Point flattening dunes and impacting strand species (Clark 1992, DLNR 1999). However, this activity has essentially ceased since 2007 when a gate blocking vehicular access to the dunes was installed.

Sightseeing within the park is also a major attraction. The park's location and visual access to the ocean and Nāpali cliffs make it a good location for birding and whale watching.

Unique geological features such as the wet caves are also of particular interest to visitors. The proximity of the caves to Kūhiō Highway makes them easy to access. However, their location at the toe of the mountain slope is a safety concern due to the high potential for rockfalls.



Photo 21 – Visitors at Wai a Kanaloa

Limahuli Stream is also an attractive, scenic resource and the 2001 Draft Park Plan considered whether dipping or wading in Limahuli Stream may also contribute to soil erosion, sedimentation, and temporary impacts to water quality.

Interestingly, while recreation and tourism are often at odds with conservation, there are conservation-related reasons people visit outdoor recreational areas. According to the public survey conducted for the 2015 SCORP Update, “having fun” (~96 percent [of respondents]) was the top reason respondents recreated outdoors. However, the survey also found that people participated in outdoor recreation “to be outdoors” (~92 percent), “to be close to nature” (~70 percent), “to visit/see new places and things” (~67 percent), and “to learn” (~55 percent).

Given the sensitivity of the dune areas, the lack of supervision by lifeguards, and the popularity of the site for monk seals and its designation as a critical habitat, only passive outdoor activities such as walking, sunbathing and sightseeing should be allowed along the shore outside of the lagoon area.

2.13 COMPLEMENTARY AND CONFLICTING USER OPPORTUNITIES

Due to the relatively heavy usage of Hā‘ena State Park, several potential risks and conflicts have been identified above that are connected to the presence of visitors and unmanaged activities occurring at the park. However, there are opportunities to mitigate user impacts and conflicts while improving both the visitor experience and health and condition of resources at the park. A detailed discussion of resource use and user group conflicts can be found in Section 4.5 of the Background Research Report.

A summary of the conflicts include:

- Damage to archaeological sites such as rock walls
- Traffic congestion and parking
- Effects of nonpoint source pollution
- Effects of certain sunscreen chemicals on coral reef
- Effects of fishing debris on marine species
- Inadvertent damage to corals by divers and snorkelers
- Damage to corals by reef walking
- Effects from fish feeding
- Damage to dune ecosystem by trampling

- Introduction of invasive species
- Ahupua‘a ‘ohana vs. visitors and other Hawai‘i residents
- Recreation vs. conservation
- Windsurfers/kite boarders vs. other water users
- Off-road vehicles vs. other users
- Traditional fishery management vs. recreational/commercial fishing
- Commercial vs. private use
- Homeless/squatters vs. park users
- Rockfall hazards vs. cliff and Wai a Kanaloa/Waiakapala‘e viewing

2.13.1 MINIMIZING RESOURCE AND USE CONFLICTS THROUGH EDUCATION

Certain uses, such as reef walking and fish feeding are clearly inappropriate in most settings where ecological function is valued. Other inappropriate uses, such as ORVs and driving on the dunes have been sharply curtailed by the simple addition of a gate near the end of Kūhiō Highway that now blocks vehicular access from the dunes. Conflict also arises due to uninformed or inconsiderate human activity within the park. Independent of the Master Plan, the Community and the State Department of Land and Natural Resources have worked together to create the Hā‘ena Community-based Subsistence Fishing Area, including the waters at Hā‘ena State Park. As noted earlier, the rules were signed into law in August 2015 to help mitigate conflicts between recreational uses, including recreational fishers and traditional subsistence fishers.



Photo 22 – Improvised Signage

Most of the recreational activities currently occurring within the park could actually be enriched if managed correctly and coupled with an educational program. It is expected that with proper orientation and instruction, park users will be better equipped to appreciate the park’s resources and would become more knowledgeable about how to interact properly and appropriately with them. For example, snorkelers and swimmers can learn about marine life, help take counts of marine life, and learn how to view the coral reef without harming the ecosystem. Similarly, hikers can learn about native plants and wildlife as well as learn about the significant cultural and archaeological sites including the prehistoric and current use of the area by Native Hawaiians. Recreational fishers can be provided the opportunity to learn of traditional fishing practices, the appropriate fishing seasons and equipment, ocean and nearshore safety. Providing guidance to visitors in best practices for interacting – or avoiding – certain resources can both enhance the visitor experience and help to protect the resource.

Educational tools that may enhance the visitor experience and protect resources include:

- Orientation video or educational session prior to park entrance (could be posted online as well as played during shuttle rides to the park)

-
-
- Interpretive displays and wayside exhibits located appropriately throughout the park
 - Volunteer activities within the park accompanied by environmental and cultural education

One of the major goals in the 2015 SCORP is to "promote recreational opportunities that preserve and sustain Hawai'i's natural and cultural resources." Under Objective 4-1, strategies include:

- Coordinate with tourism industry to disseminate information to increase awareness about and respect for the fragility of Hawai'i's natural and cultural resources,
- Involve outdoor recreation participants in management of recreation resources as a means of education and sharing information with other users, and
- Implement monitoring programs to assess impacts/damage to natural and cultural resources at heavily used facilities and areas and share these findings with users through interpretive and resource management messages.

2.13.2 MINIMIZING RESOURCE AND USE CONFLICTS THROUGH TRANSPORTATION AND PARKING MANAGEMENT

Traffic congestion and parking create conflicts within the park and are major sources of concern for safety. The conflicts include:

- An inadequate number of parking spaces to accommodate the volume of visitors. The result is illegal parking along Kūhiō Highway (inside and outside the park) and drivers circulating through the park looking for spaces.
- Illegal parking along Kūhiō Highway within the park. The result is a narrow roadway for vehicles, pedestrians and bicycles to navigate and visual obstruction of the park's scenic resources.
- The volume of vehicles turning around at the end of the highway near Kē'ē creates a situation where vehicles are idling and or making multi-point turn around movements. The result is congestion and vehicle/pedestrian conflicts. The vehicle congestion at this location also is a distraction and a nuisance near the park's gateway to the beach.
- The potential for vehicle congestion in the event of a tsunami evacuation.

The key to managing the conflicts caused by traffic and parking is to provide a range of transportation and access options, improve management of those options, and provide the public, including the Kaua'i visitor industry, with better information and clarity about what to expect when visiting the park. The following list summarizes the range of potential tools and management solutions to help mitigate the parking and circulation issues currently occurring at the park.

- Transportation to the Park
 - Personal Vehicles
 - Shuttles (private and/or public services)
 - Bicycles
 - Pedestrian

- Parking
 - Number of parking stalls (onsite and/or offsite)
 - Parking fees
 - Parking passes
 - Special access parking areas
 - Shuttle parking
 - Bicycle parking

- Communications
 - Intelligent Transportation Systems (ITS)
 - Signage
 - Broadcasts to Kaua'i hotels and visitor industry (up-to-the-minute, text messages, web-based)

2.14 PARK USE

2.14.1 USER SURVEYS

The OmniTrak Group Inc. conducted 283 park user surveys on random days between July 1 and October 31, 2007 on behalf of the HTA. The survey found that the majority of park visitors (83 percent) were from the U.S. (excluding Hawai'i), and Hawai'i visitors comprised less than 10 percent. The balance of the visitors were from Canada (2.5 percent), Japan (<1 percent) and "other" nations (4 percent).

The survey also found that visitors came to Hā'ena State Park for various reasons. For Hawai'i residents, an outing with family or friends motivated the visit. For out-of-state or international visitors, ocean activities were the primary motivation and outing with family or friends second (see Table 3). The actual activities carried out by both sets of visitors varied widely with ocean/water recreation being the top activity for both (see Table 4).

Table 3 – Park Visit Motivation

	HI RESIDENT	NON-HI VISITOR
Outing with family/friends	63%	31%
Ocean/water activity	19%	46%
Hike trails/walk	7%	7%
Scenic view	4%	7%
Party/Celebration	4%	0%
Other	4%	1%
See flora/fauna		2%
Event by an organization you belong to		1%
Guided tour stop		0%
Use restrooms		0%
Famous landmark		4%
Source: OmniTrak (2007)		

Table 4 – Park Activities

	HI RESIDENT	NON-HI VISITOR
Ocean/water recreation	65%	81%
Picnic/Outing	46%	39%
Scenic views/Photography	42%	71%
Hike/Walk	35%	30%
Use restroom	27%	32%
See park flora/fauna	23%	23%
Visit historical/cultural site	8%	7%
Other	8%	2%
Camp	4%	0%
Fishing/Hunting		1%
Source: OmniTrak (2007)		

Most visitors stayed at the park between two to five hours for both Hawai‘i residents and non-Hawai‘i visitors alike. The average length of stay for the Hawai‘i resident, however, was longer at 5.3 hours compared with non-Hawai‘i visitors who stayed 3.6 hours on average. See Table 5. It should be noted that this survey does not account for the visitors who drive to the end of Kūhiō Highway at Kē‘ē Beach, and leave without staying at the park.

Table 5 – Length of Park Stay

	HI RESIDENT	NON-HI VISITOR
Less than one hour	14%	5%
One to two hours	11%	19%
Two to five hours	50%	55%
Five to ten hours	7%	9%
More than ten hours	4%	1%
Average	5.3	3.6
Source: OmniTrak (2007)		

The average party size for all users was 4.3 people with typically three adults and one to two children. For the majority of non-Hawai‘i visitors, it was their first time to the park (70 percent) compared with only 39 percent of Hawai‘i residents. They also found that the vast majority of visitors arrive at Hā‘ena State Park by vehicle, either a rental or personal vehicle (88 percent of Hawai‘i visitors; 97 percent of non-Hawai‘i visitors).

In 2009-10, 175 user surveys were conducted by Vaughan (2010) within the park and found similar results although a much higher percentage of Kaua‘i and Hawai‘i residents were interviewed (~21 percent). High percentages of both Kaua‘i residents and non-residents snorkel and swim at Kē‘ē (between 40 and 90 percent). Nearly 40 percent of non-residents also sunbathe and hike at the park while less than 15 percent of residents did either activity.

During this survey, park visitors were also asked about their willingness to pay an entrance fee (Vaughan 2010). The survey found that non-resident visitors were more willing to pay a \$5 fee than Kaua‘i residents. In fact, over 40 percent of Kaua‘i residents were either unwilling or very unwilling to pay compared to only 17 percent who were very willing or willing to pay. However, when asked if they would be willing to pay a fee knowing that 60 percent or more of the funds would be used at Hā‘ena, both non-Kaua‘i visitors and Kaua‘i residents responded with a greater willingness to pay the fee. Therefore, an entrance fee is more likely to deter local residents from

visiting the park than non-locals. However, there would be more of a willingness to pay by locals if the fees collected went directly to support and maintain the park.

2.14.2 PROBABLE PARK USERS

One theme that repeatedly surfaced throughout the master plan process was a desire to reconnect the local community to the park and increase local presence in the park. It is anticipated that the park will continue to be popular with visitors from outside the Hā'ena and North Shore communities and that they will continue to come for many of the same reasons as listed in Table 3 and Table 4.

However, with implementation of the visitor limit and management objectives of this master plan, the hope by the local community is that there will be an increase in local residents using the park as a place of employment, for volunteer projects/community work days, for cultural practices or to simply enjoy the park's resources and facilities as they once did in the past. The vision shared by the project team is to also enrich the visitor experience by providing more authentic learning opportunities and meaningful interaction with the natural environs of the park, and to involve the actual people and community from Hā'ena in educating visitors.

2.14.3 IMPACTS OF INCREASED RECREATION ON RESOURCES

Some of the issues associated with uses at the park such as traffic congestion and improper interaction with natural and cultural resources have less to do with the recreational uses that are occurring in the park and are more a product of the lack of management and visitor information.

Currently, visitors have little to no onsite guidance on: 1) the importance or fragility of the park's resources; or 2) how to best interact within (or avoid) sensitive park resources. In fact, a recent survey (Vaughan, 2009) found that most visitors from out-of-state and abroad learn about the park from guidebooks and once in the park they acquire information about the park's resources from these same guidebooks. Therefore, the primary concern that this master plan attempts to address is how to better manage the park, providing visitor orientation, interpretive devices internal to the park as well as improved infrastructure, traffic control, and transportation options so that both natural and cultural resources can be better protected and the overall visitor experience improved.

2.14.4 POTENTIAL PARK EXPANSION

The extensive and varied cultural, archaeological, historic and natural resources within the park coupled with high user volumes create conflicts between resource use and protection when left unmanaged. Within the park, most of the areas are considered significant for either its cultural or natural resources. Even disturbed areas, such as Kūhiō Highway, are designated as historic resources on the National Register. The sensitivity of the park's resources makes it difficult to disperse or significantly expand park facilities within its current boundaries unless parking and/or other facilities are relocated outside the park.

Expansion of the park could relieve congestion and overuse of the resources. However, surrounding properties do not easily lend themselves to acquisition for park expansion purposes. The park is bound to the north and west by the Pacific Ocean. Lands mauka of the highway are comprised of rugged, steep terrain which would not permit expansion for general visitor services

or parking. This leaves an assemblage of parcels east of the park that are held by the National Tropical Botanical Garden and used for taro cultivation or other private entities and developed with single-family dwellings. However, options for locating visitor parking outside of the park's boundaries on non-contiguous property are being considered and explored.

Aloha Hā'ena

Carlos Andrade

Aloha nō 'o Hā'ena i ka 'ehukai
Me nā 'ale e holu 'ana i ke Kai o Hiala'a.

Ua la'a ka pu'u o Makana e hea mai ana
I ka po'e 'ō'iwi, e ho'omalū i ka 'āina.

Ho'ola'i i ka poli o Makua one hānau o nā kūpuna
Kīa'i, mālama, 'onipa'a, he kuleana ko nā Mamo.

Kilohi aku iā Mānoa me ka wailele ona
He Pilipali ka makani, he Moani ko Maniniholo.

Holo aku i ka Hale Pōhaku, kahi o Pōhakuloa.
Nānā i uka iā Pōhaku Kāne, nānā i kai iā Hauwā.

Ne'e aku i ke awāwā 'o Limahuli, inu i ka wai aloha.
'Au'au i ka waipuna hu'ihu'i, ho'opili i ka Mea Aloha.

Mā'alo i ka wai o Kanaloa, akahēle i ka pali o Ke'ē
Hihia pa'a 'o Lohi'au iā Pele, hō'ola 'ia e Hi'iaka.

Hā'ina 'ia mai ka puana o kēia mele o nā wahi pana.
Aloha 'ia nō o Hā'ena e ka Hui Maka'āinana,
Hui Maka'āinana o Makana.

*Hā'ena loves indeed the spray of the sea
with the deep ocean waves swelling and undulating on the sea of Hiala'a.*

*Sacred is the mountain Makana that is calling
to the Native people to protect the land.*

*Shelter in the bosom of Makua, birth sands of our ancestors
Stand guard! care for! stand fast! this is the responsibility of our generation.*

*Look upward to Manoa with its falling water.
Pilipali is the wind, Moani is that of Maniniholo.*

*Travel on to Hale Pōhaku, to the place of Pohakuloa.
Look inland to Pōhaku Kāne, look seaward to Hauwā.*

*Move onwards to the valley of Limahuli, drink the water of aloha.
swim and bathe in the cool of the water pool, closer the Ka Mea Aloha*

*Passing by the water of Kanaloa, be cautious of the cliffs at Ke'ē
Lohi'au was ensnared by Pele, revived by Hi'iaka*

*Let the refrain of this song of the storied places be told.
Beloved is Hā'ena by the people of the land,
the people of the land of Makana.*

3.0 *Master Plan*

As noted in the Introduction, the 2001 Draft Park Plan presented and evaluated three master plan alternatives plus a “no change” or “no action” alternative for a total of four alternatives. The Keith Companies, with Earthplan, DLNR, and various community groups worked together to determine which version best suited their vision for the park.

The “no change” alternative was rejected outright due to the continued degradation of cultural and natural resources and the worsening traffic and parking congestion that would occur if nothing were done. The proposed master plan described in this section builds upon the 2001 Draft Park Plan also referred to as the “community preferred plan” in The Keith Companies’ report (or “Alternative One”). This alternative was selected out of remaining alternatives during that earlier effort due to its minimal impact to the park’s natural, cultural and historic resources. However, refinement was needed as the plan recommended distributing recreational uses throughout the park which could potentially impact cultural resources and result in degradation of the natural environment. It located picnic facilities along the dunes, active beach recreation at Ka‘ilio Point, and bicycle trails along the ‘auwai and Limahuli Stream. The 2001 Draft Park Plan, however, did include physical improvements that were intended to help manage human use of the park, such as a Visitor Center, Caretaker’s Cottage, and baseyard at the main entry, a gate near the main parking area, and another gate restricting vehicular access from the dunes at Kē‘ē.

The master plan presented below has undergone several iterative revisions since the 2001 Draft Park Plan and has been refined further through the EIS process. It incorporates comments and markups received during the community meetings, open houses and public surveys, as well as the in-depth working sessions with the two advisory committees and public agencies, and recommendations from the technical consultants and EIS comments. The current version of the master plan also prioritizes the cultural and natural aspects of the site, restricting recreational uses of the park to appropriate, non-sensitive areas, and incorporates sustainable design elements. Pedestrian access is emphasized within the park while shuttle access to the park is encouraged.

In addition, due to the potential for rockfall hazards, particularly in the area between the Welcome Hale and Wai a Kanaloa, AECOM prepared a map showing the location beyond which the potential for simulated rockfalls diminish to a 0% chance based on computer modeling. The master plan locates all the proposed visitor facilities including the pedestrian path makai of this line. The exact alignment and materials used to construct the path and other facilities should be designed with input from rockfall engineers, State Parks archaeologists and staff, the Cultural and Community Advisory Groups, and the Hui.

This chapter provides the physical description of the various master plan improvements while Sections 4.0 and 5.0 describe the key management, operations, interpretive, and implementation recommendations. Figure 27 presents the master plan in map form with a detailed view of the main entry area provided in Figure 28.

3.1 KEY FEATURES OF THE MASTER PLAN

The following section provides conceptual descriptions of the key features of the master plan. It starts at the park entrance and continues toward Kē‘ē. The exact locations and designs of the proposed features are subject to change and refinement during the detailed design and construction phases based on conditions at the time of implementation.

3.1.1 PARK ENTRY, TURNAROUND, AND NEW MAIN GATE

A new main gate is recommended to be installed when the highway is closed to general vehicle traffic to reduce visitor exposure to the rockfall hazards. Only those with special access to Kē‘ē, such as the lifeguards and rescue personnel, those with valid ADA parking placards or plates, park staff, the Hula Complex and other cultural practitioners will be allowed along the limited access portion of the highway. It is envisioned to be a low, simple swing gate with an open design to maintain visual connection to Kē‘ē. Rockfall hazard warning signs will be installed on the gate across the highway and a swing gate on the mauka half of the right-of-way could be automated to open for exiting traffic only.

A vehicle turnaround is provided just past the park entry and provides separate accesses to and from the main parking lot, as well as the special access parking at Kē‘ē, and a separate staging area that could be used for various park purposes. Those who do not have valid park parking access may continue around the turnaround and exit the park without blocking traffic. Also located at the turnaround, shade structures are provided to support general visitor drop-off and pick-up areas or can be used as a shuttle or bus stop when such services become available. Shuttle and transit schedules should be posted at the stop if they are established. Should shuttle or transit service to the park become successful enough to eliminate or reduce the need for the parking lot, the shuttle stop area can be enlarged to accommodate the required passenger drop offs and pick-ups. The shade structures could also be designed with photovoltaic panels to help power the nearby facilities.

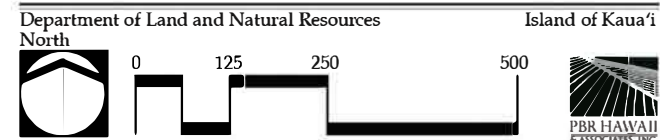
3.1.2 PARKING

Most of the visitor parking will be consolidated into one main visitor parking lot near the park entry as much of the highway will be closed to general traffic. Only a small special access parking area will remain at Kē‘ē as noted earlier for ADA accessibility, the lifeguards, park staff, the Hula Complex and other cultural practices. It will also be accessible for emergencies as well as safety and rescue operations.

The preferred medium for the parking lot is permeable pavement or structural grass over the entire parking lot or at least half of the parking lot so it can be used for multiple purposes. The parking lot as shown in the plan is large enough to park roughly 100 vehicles. However, to encourage use of the shuttle or transit system being planned for the North Shore, the number of available stalls may be reduced and the grassed areas of the lot can be used for outdoor activities, staging areas, or educational purposes related to the adjacent traditional house site (Feature 8, Site 1600-8) and lo‘i. The areas shown in different shades of green show how the parking lot could be partitioned for the different users, whether they are fee-paying visitors or non-fee paying visitors, and can be adjusted with movable bollards and cordons depending on the number of cars for each user group. Eventually, if the transit system proves successful, the area no longer needed for parking could permanently be converted into other park uses.

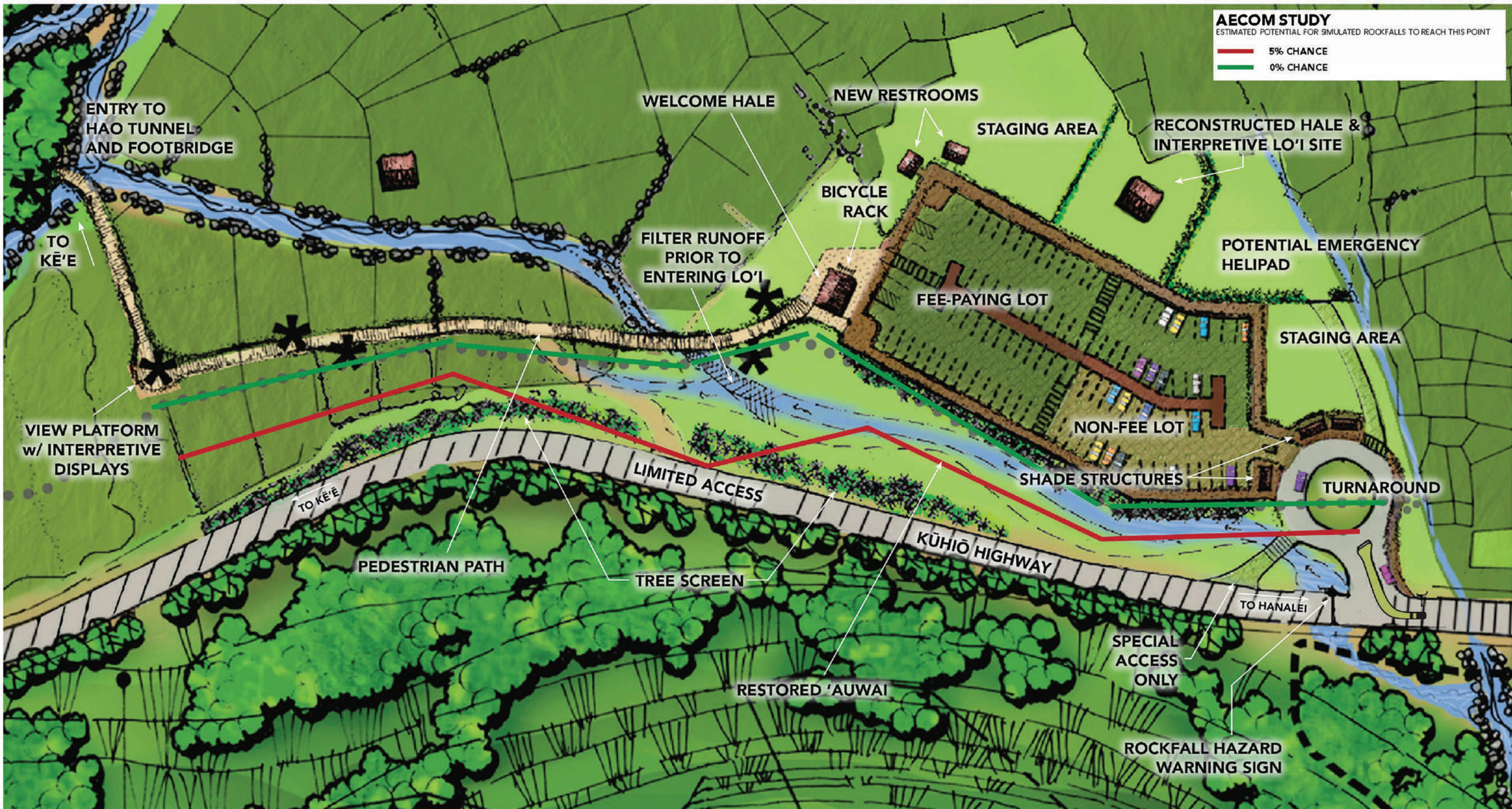


FIGURE 27
Master Plan
HA'ENA STATE PARK



Source: Based on 2001 Community Preferred Master Plan Prepared by The Keith Companies

Disclaimer: This Graphic has been prepared for general Planning purposes only and should not be used for boundary Interpretations or other spatial analysis.



AECOM STUDY
 ESTIMATED POTENTIAL FOR SIMULATED ROCKFALLS TO REACH THIS POINT

- 5% CHANCE
- 0% CHANCE

FIGURE 28
 Detailed View of the Entry Complex
HA'ENA STATE PARK

Department of Land and Natural Resources
 North
 Island of Kaua'i

Disclaimer: This graphic has been prepared for general planning purposes only and should not be used for boundary interpretations or other spatial analysis.

A larger shuttle stop with shelters, benches and informational signage may also be required with expanded shuttle/transit service. In the meantime, this design gives State Parks the flexibility to provide enough parking until the shuttle/transit system is operational and to adjust the number of parking stalls that are available for the different user groups and to encourage multimodal access to the park once it starts.

Pedestrian paths should be provided throughout the parking lot and drop-off/pick up areas to clearly delineate where people should walk. The pedestrian path itself could be curbed or edged for easier maintenance and should be surfaced with permeable pavers or pavements or natural soil hardeners to increase rainwater infiltration while providing a stable, weatherproof surface.

At the special access parking area, bicycle racks should also be installed and drainage improvements should be made in the area to prevent ponding, soil erosion, and beach washouts as has happened at Kēʻē during heavy rainfall events (see Photo 20). It is also recommended that access to this special access parking area be managed by special permit or access codes at a controlled entry off the turnaround. Access should also be coordinated with safety and rescue personnel during emergencies and rescue operations.

3.1.3 WELCOME HALE AND RESTROOMS

The Welcome Hale is envisioned as an open pavilion without walls where information about the park can be posted. The displays should include a park map and orientation information, park rules and cultural protocols. Daily weather, ocean and hazard conditions could also be posted at the Welcome Hale.

New public restrooms and bicycle parking are provided outside of the hale near the main parking lot. This second set of restrooms will help reduce the use of the Kēʻē comfort station, which is located near sensitive archaeological sites. Technological advances in individual wastewater treatment systems are providing higher-quality effluents and should be considered when designing the new restrooms. If possible, the effluent should be reused and the leach field for the new restrooms could be located beneath the parking lot. Dual waterlines and rainwater catchment systems can also be installed for the restrooms and the loʻi to minimize potable water use. Solar photovoltaic systems can also be installed to support electrical needs.

3.1.4 PEDESTRIAN PATH

Due to the potential for rockfall hazards along the highway, a pedestrian path will be provided makai of the highway, connecting the Welcome Hale to Kēʻē Beach. It will traverse the loʻi along the first berm separating the first two rows of loʻi and then turn north to avoid the wetlands. It will cross an ʻauwai over a footbridge and connect to a path through the hau tunnel. This path will then connect to the trail behind the dunes and turn south, leading visitors past the comfort stations and lifeguard tower to Kēʻē. The path will remain low to the ground but slightly floating over the berm, with structural supports located to avoid any archaeological sites. Handrails will be provided for safety if needed. It should also be designed with lightweight, durable, and easy-to-maintain materials that are resistant to vandalism and weathering.

Interpretive displays and wayside exhibits will be installed along this path, including directional signage and educational information for the varied sights along this trail. From here, distant

views of Wai a Kanaloa can be seen as well as spectacular views of Makana, the lo'i, loko and the wetlands.

3.1.5 RESTORED 'AUWAI

The master plan shows an 'auwai running along the mauka edge of the parking lot. It is in roughly the same alignment as the original 'auwai that used to cut through this area before it was cleared for the dirt parking lot. There have been requests by some members of the MPAC to determine whether it can be restored and made functional again, connecting to the rest of the 'auwai system. Further investigation to see if the 'auwai can be restored to serve the lo'i without extreme requirements or costs should be done prior to detailed design of the parking lot. If it is found that it can be restored, the grading and landscaping of this area should be done so that stormwater runoff from the parking lot is diverted away from the 'auwai and directed to flow across the grassed areas of the parking lot or bioswales and adjacent landscaped areas which could be designed as rain gardens. In addition, overflow drainage swales could be designed in this area to help mitigate larger rainfall flows that may overtop the 'auwai. If it cannot be restored as an 'auwai, another alternative is to aesthetically integrate its design into the drainage system and to see if it has potential for microhydro power generation. This area can also double as a catchment ditch for rockfall events. Native or Polynesian-introduced trees could also be planted in a thick screen along the highway and parking lot as an added rockfall mitigation measure and to soften the view of the highway from the pedestrian path.

3.1.6 RECONSTRUCTED HALE AND LO'I INTERPRETIVE SITE

A traditional house site (Feature 8, Site 1600-8) is located on the northern side of the main parking lot. According to the State Parks archaeologists, it likely has been modified by the addition of a lanai in historic times. Recent reconnaissance of the site shows it to be in relatively good condition and provides an opportunity for a reconstructed hale pili and lo'i interpretive site at the entrance to the park. Final design of this area will be done once a more detailed condition analysis of the site is conducted and the feasibility of reconstruction is determined. The layout shown in the master plan is purely conceptual and subject to revision based on the condition analysis. It should, however, be designed to be ADA accessible from the parking lot if possible.

3.1.7 DLNR HELIPAD AND STAGING AREA

The helipad and staging area will be used only by DLNR for maintenance of their facilities including the Nāpali trails and sites. One potential location is makai of the entry turnaround and will need to be designed with the new turnaround so the area is large enough and does not impact archaeological sites. Since it is infrequently used, the helicopter landing area can be designed as a level, grassed site. The final design and location, however, will be decided upon as part of the detailed design process for the main parking lot and entry complex.

For emergency helicopter landings, the Fire Department prefers the open grassy area near the Hui's current shelter, which is marked on the master plan as an alternate landing area. This area may continue to be used as an emergency landing zone as it is unsuitable for lo'i restoration and proposed to remain as an open grassy field for educational and special events makai of the Welcome Hale. However, the Fire Department noted they will land wherever they need to as appropriate for the emergency situation.

3.1.8 LIMITED ACCESS CORRIDOR

The highway between the turnaround and Kē'ē will be closed to general vehicle traffic and used only for special vehicle access due to the potential rockfall hazard. The only vehicles that will be permitted beyond the gate will be special access vehicles such as the lifeguards and emergency and rescue teams, park staff, hula and other cultural practitioners, and ADA vehicles. Because this segment of the highway is currently owned by the State Department of Transportation, it will need to be transferred to State Parks or an agreement must be made between the two state agencies for State Parks to take over management of it. In emergency situations such as tsunami warnings, visitors will be able to evacuate along this corridor to escape to higher ground and out of the park if it is deemed safe.

3.1.9 HULA COMPLEX

Given the extreme importance of the area around the ancient heiau and its worldwide recognition as a wahi kapu, the entire area makai of the Kalalau Trailhead and encompassing the area of the former Allerton estate and the heiau is designated as the Hula Complex. It is the first priority of the MPAC to restore the area and to develop a culturally appropriate management plan. The complex includes Ka Ulu a Paoa Heiau and Ke Ahu a Laka, the former Allerton property, and the State lands surrounding them. Restoration of the heiau and Ke Ahu a Laka utilizing Kekahuna's map and all available maps is recommended.

The County has established a stewardship agreement with Hui Maka'āinana o Makana to care for the sites within its parcel and is working with State Parks on access and coordination. It is recommended that appropriate cultural protocols be established as part of the management, access, and use of the area. Review by both KHPRC and SHPD will be required for any improvements and proposed management plans.

Rehabilitation of the historic Allerton Caretaker's Cottage is currently underway for reuse to support park use, including the Hula Complex. The Allerton house site and existing foundation should be maintained as an open, grassed platform as hula hālau often use that area. State Parks notes that recent changes at the site may require short-term improvements to preserve it in place. If restroom facilities are provided, potable water and an individual wastewater treatment system will be needed due to the remoteness of this facility. Sustainable design elements should be considered to make it as self-sufficient as possible including high efficiency fixtures, renewable energy, rainwater catchment, and wastewater treatment and reuse.

3.1.10 DUNE RESTORATION

The dunes and beach strand were identified by both the MPAC and biologists at Geometrician Associates as priority sites for restoration. For the MPAC, it would be an opportunity to take care of the iwi kūpuna interred there. According to the biologists, the restoration of a native dune ecosystem would involve the removal of alien species and the planting of natives and Polynesian-introduced plants such as pōhuehue, naupaka, nanea, pōhinahina, nehe, pa'u-o-Hi'iaka, 'aki'aki grass, milo, hala and kou. Not only would they provide improved and more authentic vegetation but they could also be used to help reduce coastal erosion if carefully planted. Restoration of the dune system would also improve habitat for common native shorebirds, including kōlea, 'ūlili, 'akekeke or ruddy turnstone, kioea or bristle-thighed curlew, hunakai or sanderling, and sandpiper (Geometrician Associates 2009).

Also, because the beach is one of the primary recreational resources at the park, visitors should clearly be instructed to be careful as they walk along the coast, especially east of the proposed lifeguard station since shoreline erosion is unearthing iwi and other cultural resources. The formal picnic areas that were shown on the dunes with tables in the 2001 Draft Park Plan have been removed and a new picnic area will be located at the end of the existing highway pavement at Kē'ē. Visitors, however, will still be permitted to picnic on the beach, but not on the dunes, and all trash will be encouraged to be carried out with them. Recreational activities that negatively impact the beach and dunes should be prohibited.

3.1.11 LIFEGUARD TOWER

A new permanent location for the lifeguard tower has been identified with input from the MPAC and the Kē'ē lifeguards. As shown in Figure 27, it is roughly 50 feet north of the highway pavement and 50 feet mauka of the 2009 certified shoreline to allow views from the end of the path to open up to the ocean and improve visibility for the lifeguards. The site is located outside any known flood hazard zone or wetland. To avoid potential impact to subsurface resources, the foundation should be built up rather than excavating down into the dunes, if possible. Also, some of the existing ironwood trees may have to be cut. When asked, the lifeguards agreed the proposed site will improve their ability to see key areas of the lagoon and Kē'ē Channel compared to their current temporary location at the end of the highway pavement.

3.1.12 PICNIC AREA AT KĒ'Ē

Picnicking is permitted at Kē'ē Beach. However, a formal picnic area with picnic tables will be located at the end of the former highway pavement at the entrance to Kē'ē Beach. The area is shaded by trees and overlooks the beach and lagoon. The tables can be placed on the old highway pavement to provide ADA accessibility.

3.1.13 LOKO AND WETLAND RESTORATION

Some members of the MPAC expressed a desire to restore the loko and wetland areas for endangered native birds and possible agricultural uses. Loko Naia is believed to have been a loko kalo and Loko Kē'ē either a fishpond or loko kalo. However, Geometrician Associates do not recommend modifying these areas specifically to attract endangered birds for practical and legal reasons. There are several binding agreements and permits that must be obtained with the U.S. Fish and Wildlife Service in order to do so, such as a Safe Harbor Agreement and associated enhancement of survival permit as well as increased responsibility to protect the native birds once they are established at the park. They also caution its location near the main public corridor would also increase the potential for endangered birds to be harassed, injured or killed directly or indirectly by people or their pets and may be difficult to manage.

They do, however, recommend restoring the native flora which would increase native plant conservation and opportunities to educate the public. This may also indirectly support native birds including endangered and threatened species without a formal effort to create an endangered species habitat. The State could also consider a third party agreement with a local organization that may want to take on the responsibility of creating and maintaining such a habitat if a formal endangered species habitat is desired. If pursued, the wetlands should be

protected through fringing vegetation that encourages viewing but discourages direct entry and possibly fencing shielded by the landscaping to help minimize access by predators.

3.1.14 LIMAHULI STREAM RESTORATION

Based on recommendations from Geometrician Associates, another natural area with potential for beneficial impact is restoration of the riparian areas around Limahuli Stream. The alien tree species that form a dense, closed canopy around the stream are especially problematic since they effectively prevent sunlight from reaching the ground and prevent the mid-canopy and ground cover layers in the forest from developing. This in turn increases sediment loading in the stream due to erosion and tree litter. Reduced sunlight also limits the growth of benthic algae in streams. The algae are a major food source for many rare and federally endangered native fish and invertebrates. A reduction in this important food source, coupled with increased sediment loading, could ultimately result in decreased habitat quality of streams.

Careful clearing of the alien trees along Limahuli Stream and the planting of appropriate native and Polynesian-introduced plants to stabilize slopes are recommended. In order to prevent impacts to 'ōpe'ape'a, the Hawaiian hoary bats, State Parks should restrict any cutting of large shrubs or trees taller than fifteen feet in height to periods outside the June 1 through September 15 breeding season for the 'ōpe'ape'a. State Parks should continue to cooperate with the Division of Aquatic Resources to keep new alien fish out of the 'auwai and stream and in ridding the stream of periodic invasions of swordtails, guppies, and other alien fish (Geometricians Associates 2009). Additional consideration should also be given to working with neighboring landowners as well as ma uka up Limahuli Valley if pursued.

3.1.15 AGRICULTURAL COMPLEX

In order to create a living cultural agricultural complex, it is recommended to continue community gardening practices restoring the lo'i as recommended in restoration plans already in place. One request of the MPAC was to allow for other cultural crops to be planted in addition to kalo. Historically, the complex was known to be flexible, allowing dryland cultivation to be done by simply redirecting water through different paths. 'Uala, or sweet potatoes, were known to be grown in sandy areas and mai'a, bananas, kō, sugar cane, and 'awa (*Piper methysticum*) were grown in the valleys.

Restoration of the 'auwai is also recommended wherever feasible, particularly in actively cultivated areas of the lo'i. Special care, however, needs to be taken not to hydraulically connect the lo'i and 'auwai back to Limahuli Stream to prevent the spread of apple snails. Limahuli Stream is one of the few places in the state that does not have apple snails and the snails are currently in the park's lo'i.

The 2001 Draft Park Plan also included pedestrian and bicycle pathways throughout the lo'i, primarily along and sometimes through the 'auwai. This is no longer recommended since the goal is to reestablish the 'auwai as the primary means of irrigating the lo'i. The plan currently locates the main pedestrian path over the first berm within the lo'i and will provide visitors an up-close view of the lo'i on their way to Kē'ē. There may also be opportunities for interactive educational activities within the first row of lo'i for visitors, away from the Hui's restoration work, which will continue makai and east.

Access to and/or through certain areas of the lo‘i is required for both people and equipment as a part of ongoing maintenance and harvesting. For safety reasons, access within the working lo‘i should therefore be managed and primarily reserved for those restoring the lo‘i as well as for educational and work groups tending to the lo‘i.

3.1.16 MONTGOMERY HOUSE

The historic Montgomery House situated within the Agricultural Complex is recommended for rehabilitation to support park uses. The facility could be used to support the agricultural activities or other park uses and operations. Similar to the Allerton Caretaker’s Cottage, if restroom facilities are provided, potable water and an individual wastewater treatment system will be needed. Sustainable design elements should be considered to make it as self-sufficient as possible including high efficiency fixtures, renewable energy, rainwater catchment, and wastewater treatment and reuse.

3.1.17 CULTURAL GATHERING PLACE AND HĀLAU WA‘A

Tucked between the lo‘i, Loko Naia and former coastal road, and up on higher ground, the Cultural Gathering Place (CGP) is envisioned as an outdoor gathering place to support community and educational groups and where overnight stays would be permitted. The CGP is in an area of recent 20th century modification and encompasses the site of the historic poi mill.

An open hālau-type structure and Hālau Wa‘a, or canoe house, is also proposed on the makai side of the CGP. Approximate locations of these structures are shown in the master plan. However, because this area is located near potentially sensitive cultural sites, the exact extent of the area and location of the structures should be determined with input from State Parks archaeologists and staff, the community and cultural advisory groups, and kūpuna. In addition, the Hālau Wa‘a should be located as makai as possible without impacting sensitive sites and the dune system. For infrastructure, potable water will be needed. Composting toilets should be considered as an option for restroom facilities or temporary restrooms could be brought in and removed as necessary to serve the area. Alien plant species should be removed and replaced with native and Polynesian-introduced plants.

3.1.18 POI MILL

Interpretation of the historic poi mill is recommended. Remnants of the concrete foundation still remain and the MPAC discussed whether the poi mill could be rebuilt in order to process harvests from the lo‘i. However, the site is located in an area of potential flood hazard due to wave action, according to the FIRM and if State Parks or another entity wishes to reestablish a poi mill on site or within the park, additional studies are recommended to determine the most suitable location, design, and size for such a facility. The site itself, however, can be interpreted with signage or displays and could be included on guided tours.

3.1.19 CEMETERY AREAS

The two modern cemeteries that are just north of the loko are currently maintained by family members. In the 1996 Burial Treatment Plan, there are recommendations to install signage and fence or wall off and gate the cemetery areas, with access provided to lineal descendants and

State personnel. However, during the MPAC meetings a request was made to eliminate the fencing and gates. Rather than using fences or walls, landscaping and the use of native and Polynesian-introduced plants should be considered as more natural buffers for the area. Any signage that is installed should be designed with input from the families of those buried there.

3.1.20 HAZARD MITIGATION MEASURES

Due to the potential for rockfalls along the highway, all of the major facilities including the pedestrian path to Kē‘ē should be located outside of the high rockfall hazard zones and the projected zero percent chance of rockfalls boundary as described by AECOM in their Rockfall Hazard Assessment report (Appendix H). The new pedestrian path and parking lot improvements should be considered part of the rockfall mitigation and prioritized in capital improvement project funding. In addition, warning signs should be installed at appropriate locations along the highway and safety instructions should be made available online and at the Welcome Hale.

Ocean safety signs should also be posted at both the main entry points by the Welcome Pavilion/Education and Cultural Center as well as along the major pathways leading to shoreline areas such as at Kē‘ē Beach, near the Hālau Wa‘a, and at the Cultural Gathering Place. Additional safety signage should be installed as necessary throughout the park in appropriate areas.

Emergency evacuation routes should also be planned and indicated on visitor brochures and materials and park signage. They can also be described and shown on maps posted at the park and online. If people need to be airlifted out of the park, the helipads shown on the plan can be accessed from multiple locations.

3.2 INFRASTRUCTURE IMPROVEMENTS

The following recommendations for infrastructure improvements were developed by Kennedy Jenks to support the goals of the proposed master plan and preferences of the MPAC.

3.2.1 INTEGRATED WATER/WASTEWATER/DRAINAGE SYSTEM

Design considerations for integrated water/wastewater systems include:

1. Using treated wastewater effluent and collected rainwater for irrigating the landscaping around the facilities such as the Welcome Hale and new restrooms. If effluent water quality is R-2, irrigation systems must be subsurface with no overground sprays. If treated to R-1, overground spray and drip systems can be installed.
2. Using treated wastewater effluent and collected rainwater for toilet flushing at the new restrooms, Allerton Caretaker’s Cottage, and Montgomery House to conserve potable water.
3. Reducing erosion by redirecting drainage flows, restoring the ‘auwai, and collecting, storing, and reusing rainwater onsite.
4. Directing rainwater runoff from the main parking to landscaped areas and rain gardens for biofiltration. Where possible, collecting and storing rainwater for reuse such as irrigation and possibly toilet flushing.
5. Redesigning Kūhiō Highway culverts so that rainwater that passes beneath it flows more naturally and can be filtered and used in the ‘auwai system.

Control measures to prevent the spread of apple snails from the park's lo'i to Limahuli Stream should be included in any design or implementation of the 'auwai and irrigation systems for the agricultural complex. Some suggestions include but are not limited to:

1. Elevating and extending the outfall pipes from the Limahuli Stream diversions above the receiving 'auwai so the snails cannot crawl directly into the stream. The snails are known to not like cold, fast-moving water which is what flows from Limahuli Stream so the risk is minimized.
2. Grading the 'auwai to flow makai and away from Limahuli Stream so water does not flow back to Limahuli Stream.

For items specific to wastewater treatment:

1. Treatment for wastewater should be to a minimum R-2 water quality, with aeration and non-chlorine treatment such as ultraviolet (UV) disinfection to improve effluent quality. Consider using renewable energy sources to provide power.
2. Locate effluent absorption beds under parking lots and driveways.
3. Provide aeration to the existing constructed wetlands primary treatment tanks, powered by a photovoltaic system.
4. For remote, low use facilities, consider composting toilets or temporary/portable facilities as needed.
5. Use non-chemical disinfectants and cleaning products for maintenance, particularly in composting toilets, to minimize impacts to wastewater treatment processes and effluent quality.
6. Include maintenance manuals and provide instruction to ensure proper upkeep of all wastewater systems at the park.

3.2.2 ELECTRICAL POWER

Many of the proposed facilities will require electrical power. KIUC service stops at the entrance to the park and should only be extended as necessary. The facilities requiring power should be designed to be as energy efficient as possible and use renewable energy wherever and as much as possible. Potential renewable energy resources include but may not be limited to solar, wind and hydro power.

3.2.2.1 Potential Renewable Energy Resources

A cursory review of the potential renewable energy resources that may be available at Hā'ena State Park was done based on readily available information. Because of the park's limited access to infrastructure and the dispersed locations of some of the proposed facilities, all sources of renewable energy should be investigated and pursued whenever feasible.

Solar hot water heaters and photovoltaic (PV) electric systems are well-established technologies that have been installed widely throughout the islands. According to State data from the Hawai'i Sugar Planters Association collected in 1985, an estimated 350 solar calories per square centimeter fall on the area per day. The higher the intensity, the better the resource is. The average for the island is 350 cal/cm²/day, with ranges from 0 to 500 cal/cm²/day. A solar hot water heater can be installed at the facilities that may require hot water such as the Montgomery House and Allerton Caretaker's Cottage, once they are renovated. PV panels could also be installed as a shade structure at the shuttle stop and entrance turnaround. PV could also be

installed at the comfort station at Kēʻē to power any new equipment needed for an upgraded wastewater treatment system.

Micro wind and micro hydro are other sources of renewable energy that should be considered in addition to solar. There are smaller wind turbines that can be installed on rooftops at the park or those that rotate on a vertical instead of horizontal axis to minimize any impact to birds. There are also evolving wind technologies that do not have rotating airfoils but capture energy from aeroelastic flutter. As technology continues to evolve, State Parks and DLNR should continue to look into viable alternatives as improvements are phased in and developed.

A micro hydro system does not require much to power a small facility. It needs a consistently running source of water (as little as two gallons per minute) and a relatively small elevation change (as little as two to three feet of head) to turn a turbine to create power. However, more of each will increase output. Micro hydro systems are more efficient the closer they are to the energy source and therefore Limahuli Stream, the only perennial stream at the park, could be investigated to provide a source for micro hydro. Neighboring Limahuli Gardens uses a micro hydro system to power their entire visitor center which runs on a 24V system and includes lights, a computer and cash register (Winter, personal communication 2011). Care must be taken, however, to size and locate the micro hydro to minimize impacts to the stream ecosystem and to account for periods of low stream flow.

3.2.3 COMMUNICATIONS

In order to maintain communications and provide for public safety during emergencies, the existing hardline pay phone at Kēʻē Beach should be maintained.

3.2.4 ARTIFICIAL LIGHTING

In order to minimize impacts to Hāʻena's wildlife which can become disoriented at night by artificial lighting, the following recommendations will be followed for any lights designed for the Park's facilities.

- If installed, all exterior lights will be fully-shielded (completely opaque) and downward facing full-cut off fixtures with the lowest light level (lumens) possible to minimize distraction and disorientation of wildlife flying overhead. They can also be installed lower to the ground to minimize light pollution and motion sensors and/or timers can be utilized to activate the lights only when absolutely necessary.
- Lighting plans and management plans will be carefully designed and implemented so that no light from the park is visible from the beach to minimize impacts to nesting sea turtles or their hatchlings seeking the ocean.
- The use of artificial lights should be minimized or reduced as much as possible during the fledging season of September to December. Night time construction should be avoided during this period.

3.3 OUTDOOR RECREATION AND ACTIVITY AREAS

This section focuses on the outdoor recreational opportunities and activity areas within the park. Figure 29 highlights the different activity nodes and recreational opportunities. So as to not

disturb the park's resources, no new entrances or transportation routes are proposed through the park. However, the interpretive and recreational experiences of traversing this area can be enhanced by installing interpretive displays and wayside exhibits at key locations along the visitor paths throughout the park. The Welcome Hale and pedestrian path are locations where interpretive opportunities can be developed. The path through the lo'i and through the hau tunnel to Kē'ē will enhance the pedestrian experience by providing scenic views of Ka Pali 'Ōahi o Makana (the fire throwing cliff of Makana), the lo'i, wetlands, and Wai a Kanaloa. This path will also link the two primary nodes of activity/outdoor recreation at the park.

The first node is the park entrance. These facilities serve to welcome and orient visitors and also create opportunities for interpretation and education and gathering for educational and work groups. The second node of activity is at Kē'ē Beach and includes the trailhead to the Kalalau Trail. Opportunities for passive beach related recreation, such as walking, fishing, sightseeing, picnicking, and whale watching also exist along the park's coastline.

No changes to ocean recreational activities are included as part of this master plan except to discourage kayak launches and landings and to educate and encourage non-experienced swimmers and snorkelers and those unfamiliar with the offshore waters to an area to stay within direct visibility of the lifeguard tower. MPAC and community members recommend placing flags or buoys as appropriate to provide a visual reference of where this boundary is. This boundary should be delineated at the time the lifeguard tower is relocated and installed with input from the Kē'ē lifeguards.

Other areas of the park, particularly areas internal to the park, are less suited to conventional outdoor recreation, but offer opportunities to reconnect to and care for the land through outdoor activities such as natural resource restoration and traditional food production. Additionally, these areas offer unique opportunities for volunteer work days for visitors and residents alike. These areas include the agricultural complex, Loko Naia and Loko Kē'ē, and the proposed Cultural Gathering Area, Hālau Wa'a, and Poi Mill. See Figure 29.

Because the park is rich in archaeological and cultural resources, there are other sensitive areas where access should be managed. These areas are: the Hula Complex, the Cemetery, and the dunes. Because it would be difficult and inappropriate to overdesign physical barriers or post warning signs, more natural buffers such as native and Polynesian-introduced plants for landscaping and low rock walls, as appropriate, are recommended as well as proper education and orientation online and at the Welcome Hale prior to entering the park.

Certain areas such as Wai a Kanaloa and Waiakapala'e caves also pose a potential hazard from rockfalls. Thus, in order to both preserve the resource and to protect the public, interpretive devices will be located a respectful distance from these features with native and Polynesian-introduced plants for landscaping planted to discourage people from entering the caves or congregating directly under cliff faces should they choose to traverse the highway despite the rockfall warnings.

3.3.1 RECREATION OPPORTUNITY SPECTRUM

Hā'ena State Park's rich natural, cultural and archaeological resources lend themselves to many opportunities for outdoor recreation. However, the fragility of these resources also necessitates a level of protection. Thus certain recreational uses are not suited for the park.

Table 6 identifies the spectrum of outdoor recreational activities that currently occur at the park as well as outdoor recreational activities that this plan anticipates to be added, discontinued or modified within the park. Under the proposed plan, the number and type of outdoor recreational activities are proposed to remain relatively unchanged. However, what is proposed in the plan is enhanced management and delivery of recreational opportunities through enriched pedestrian access to Kēʻē Beach; the addition of gathering spaces and short-term overnight camping experiences; picnicking opportunities in scenic locales that are away from sensitive areas; and enhanced interpretation of the park’s natural, cultural and archaeological resources.

3.3.2 VIEW CORRIDORS AND SCENIC LOOKOUTS

Potential view corridors and other scenic views are provided at key locations throughout the park and along the shoreline as shown in Figure 30. They help heighten awareness and appreciation of the rich cultural history and active restoration of this wahi pana, as well as the natural beauty of Hāʻena as the native ecosystems are restored.

Table 6 – Recreation Opportunity Spectrum

	Activity	Existing	Proposed	Modifications
Ocean-Based Recreation	Kayak	x		Discourage kayak launching and landing
	Paddling/Canoe		x	Launching only permitted near Hālau Wa`a
	SCUBA	x	x	
	Snorkeling	x	x	
	Surfing/Bodyboarding	x	x	Outside lagoon
	Stand Up Paddleboarding	x	x	
	Windsurfing/Kiteboarding	x	x	Outside lagoon
	Swimming	x	x	
	Fishing (shore)	x	x	As permitted under the HCBSF Rules
	Fishing (boat)	x	x	As permitted under the HCBSF Rules
	Beach Activities	x	x	
	Land-Based Recreation	Kalalau Trailhead Access	x	x
Camping			x	Scheduled cultural or educational events only at the Cultural Gathering Area
Wilderness Camping Access		x	x	Require check-in/out
Developed Land Setting	Bicycling		x	Interpretive Path
	Picnicking	x	x	
	Pavilion/Hale		x	Add Hālau Wa'a and a traditional hale at Cultural Gathering Place and a traditional hale at Phase I lo'i
	Walking/Jogging	x	x	
	Comfort Station	x	x	Additional facilities at the Welcome Pavilion/ECC, Allerton House, and Montgomery House.
	Concessions		x	To be permitted under an approved management entity
	Interpretive Opportunities	Nature Viewing	x	x
Botanical Gardens			x	Demonstration Gardens at ECC, flora restoration along dunes, lo'i and wetland restoration
Scenic Lookout			x	Sites along Interpretive Path, trails, shoreline, entry complex, picnic areas
Historical/Cultural Interpretive Display		x	x	Include appropriate interpretation of archaeological, cultural and historic resources

LEGEND

- A** Welcome Hale
- B** Bicycle Racks
- C** Restrooms
- D** Rehabilitate Allerton's Cottage for Hula/Park Use
- E** Gate
- F** Hula Complex
- G** Pedestrian Path to Kē'e
- H** Relocated Lifeguard Tower
- I** Restored 'Auwai
- J** Rehabilitate Montgomery House for Lo'i / Park Use
- K** Picnic Areas w/ Tables
- L** Parking Area
- M** Alternate Helicopter Landing Zones
- N** Restore Agricultural Complex
- O** Turnaround & Shuttle Stop
- P** Hālau Wa'a
- Q** Cultural Gathering Area & Traditional Hale
- R** Rockfall Mitigation Measures
- S** Staging Areas
- T** Reconstructed Hale and Lo'i Interpretive Site
- ▲ Rockfall Hazard Warning Signs
- * Interpretive Displays
- Ocean Safety Signage
- Estimated Makai Boundary for Simulated Rockfall Hazard (AECOM 2013)

LEGEND

- Nodes of Activity / Outdoor Recreation
- Stream Restoration Area
- Hiking / Pedestrian Paths
- Wetlands Area
- Passive, Non-Active Recreation / Dune Restoration
- ▲ Overnight Camping Sites
- ⌘ Picnic Areas
- 🚲 Bicycle Racks
- Agricultural Activity Areas
- Cultural Activity Areas
- Rockfall Hazard Zone
- Limited Bicycle Access

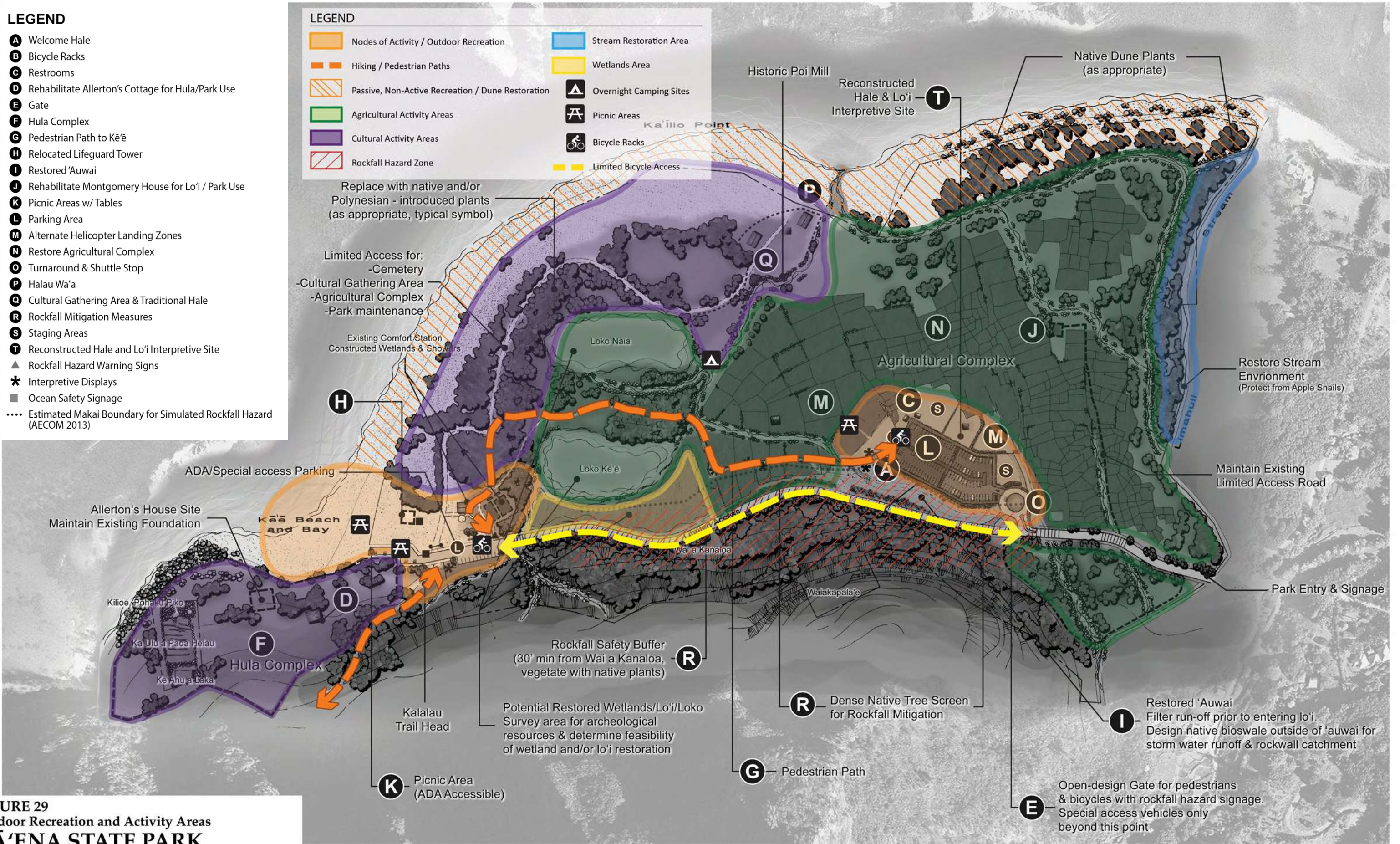
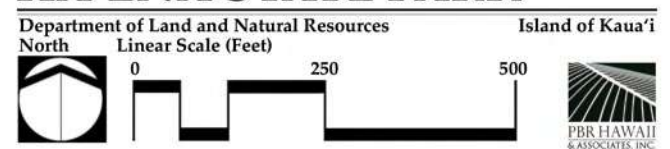


FIGURE 29
Outdoor Recreation and Activity Areas
HĀ'ENA STATE PARK



Source: Based on 2001 Community Preferred Master Plan Prepared by The Keith Companies
 Disclaimer: This Graphic has been prepared for general Planning purposes only and should not be used for boundary Interpretations or other spatial analysis beyond the limitations of the data.

LEGEND

- Other Scenic Views and Lookouts:**
- 1 Lo'i
 - 2 'Auwai
 - 3 Wetlands, Loko, Makana and Wai a Kanaloa
 - 4 Lo'i
 - 5 Lo'i
 - 6 Hau Tunnel
 - 7 Kē'ē Beach & Lagoon
 - 8 Makana and Ocean
 - 9 Ocean
 - 10 Lo'i and Entry Complex
 - 11 Makana
- Ocean Views**

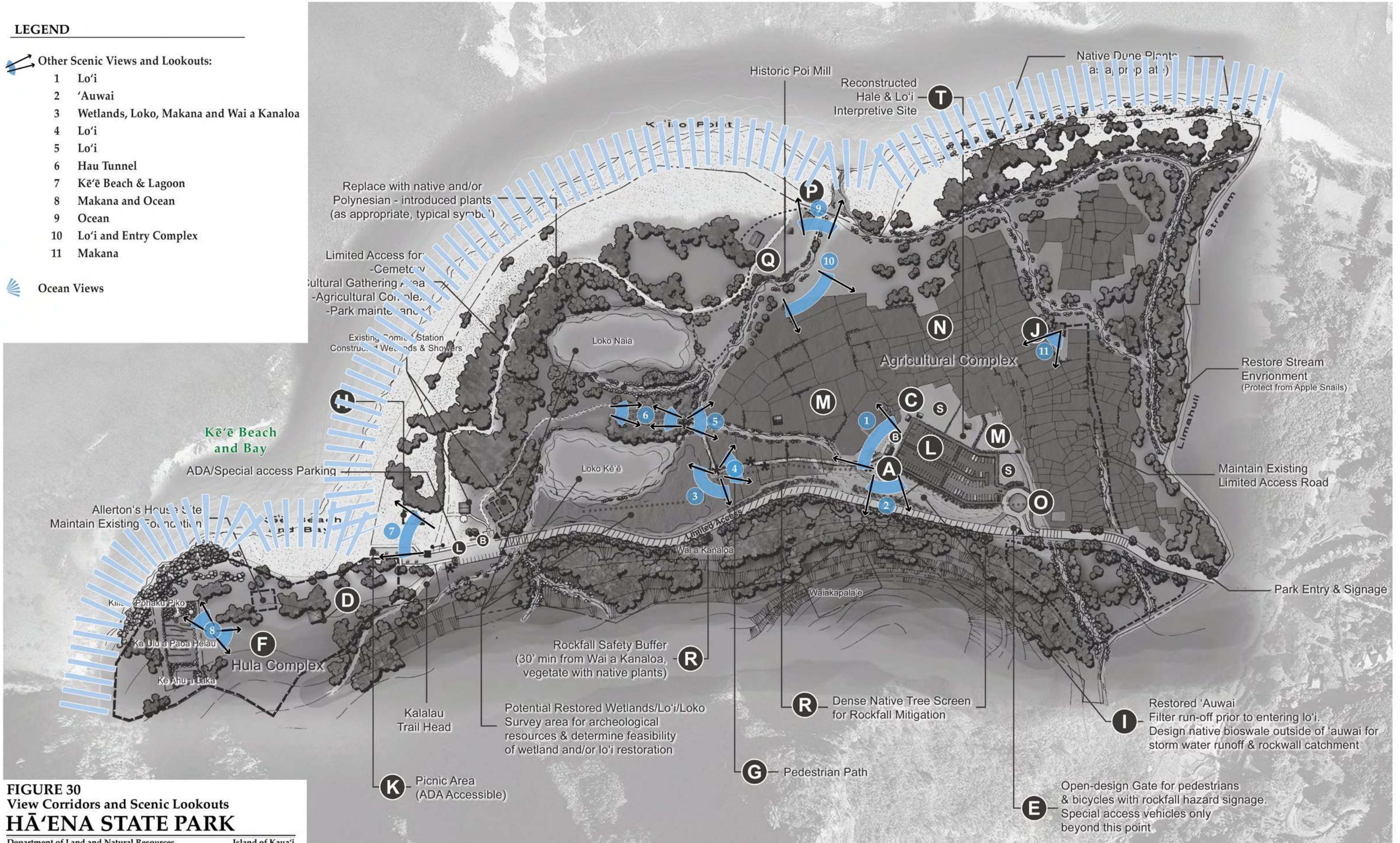
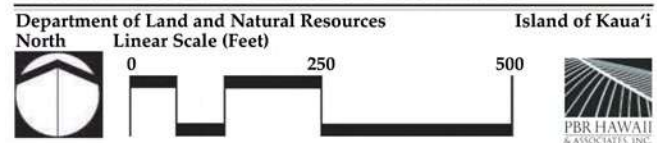


FIGURE 30
View Corridors and Scenic Lookouts
HĀ'ENA STATE PARK



Source: Based on 2001 Community Preferred Master Plan prepared by The Keith Companies
Disclaimer: This graphic has been prepared for general Planning purposes only and should not be used for boundary interpretations or other spatial analysis beyond the limitations of the data.

4.0 Key Management Concepts

Given the complexity and sensitivity of park management, the following section highlights only those key concepts that will drive ongoing management of the park moving forward. Several of the management issues and concerns that are highlighted earlier in this report such as parking, park access, and fees were discussed at length with the two advisory groups, key stakeholders, and the larger community. However, no consensus could be reached and all agreed that an ideal solution will likely only arise after initiation of a change in operations, which could then be adjusted as needed based on community feedback. Therefore many of the potential solutions and alternatives that were raised and considered are recorded in Appendix L for future reference. They are documented to provide State Parks with a variety of management options that could be implemented and adjusted to meet the park's goals as well as refined to reach broad community satisfaction while staying within operational budgets. Different management policies will be tried and tested over time and adjusted as necessary based on community feedback. Different concepts could also be changed and/or phased in over time. Please note that some of the concepts are unconventional and will require further study and community input, and will require extensive public outreach and education if implemented.

4.1 KEY RECOMMENDATIONS

The following key recommendations are overarching with regards to park management and are recommended to be implemented regardless of the subsequent detailed management actions implemented and refined over time.

4.1.1 ADAPTIVE MANAGEMENT

The primary management concept that will be implemented at the park is adaptive management. The Department of the Interior describes adaptive management as "an iterative learning process producing improved understanding and improved management over time. ...It is not a 'trial and error' process, ...but rather a means to more effective decisions and enhanced benefits. Its true measure is in how well it helps meet environmental, social and economic goals, increases scientific knowledge, and reduces tensions among stakeholders." (Williams et al, 2009)

Due to the complexity of the park environment, uncertainty of outcomes given potential changes in management strategies, and the active community, adaptive management provides a methodology State Parks can follow in order to improve resource management decisions while addressing community concerns. As noted by Williams et al, "Often the uncertainty about management impacts is expressed as disagreements among stakeholders who have differing views about the direction and magnitude of resource change in response to management. An adaptive approach explicitly articulates these viewpoints, incorporates them into the decision making process, and uses management itself to help identify the most appropriate view about resource dynamics. In this way, understanding of the resource can be enhanced over time, and management can improve. ... Management of problems like these increasingly involves a systems approach with explicit and agreed-upon objectives, management alternatives, and analytical approaches that can identify the most appropriate management strategies." (Williams et al, 2009)

Williams et al provide the following list of activities that can assist with adaptive management strategies if performed in a structured approach:

- Engaging the relevant stakeholders in the decision making process
- Identifying the problem to be addressed
- Specifying objectives and tradeoffs that capture the values of the stakeholders
- Identifying the range of decision alternatives from which actions are to be selected
- Specifying assumptions about resource structures and functions
- Projecting the consequences of alternative actions
- Identifying key uncertainties
- Measuring risk tolerance for potential consequences of decisions
- Accounting for future impacts of present decisions
- Accounting for legal guidelines and constraints

4.1.2 CULTURAL AND COMMUNITY ADVISORY GROUPS

A Cultural Advisory Group (CAG) should be established to advise State Parks on ongoing improvements, educational and interpretive materials, and cultural matters regarding the park. State Parks may also consult the CAG as needed for proposed management actions and proposed construction projects as well as interpretive programs and devices. The CAG may be composed of representatives from the original Hā'ena families, as well as those persons who specifically lived in, worked, or cared for the lands within park boundaries, and those who have relatives buried within the park. It should also include cultural practitioners with knowledge specific to hula, Ke Ahu a Laka and Ka Ulu a Paoa, fishing, and other cultural practices specific to Hā'ena. A draft set of recommendations for the establishment and responsibilities of the CAG is provided in Appendix J. However, they should be viewed as a starting point for developing the CAG and revised as needed.

Separate from the CAG, the broader community advisory group, the Hā'ena State Park Community Advisory Committee, or HSPCAC, has been established and will provide ongoing support and consultation on general park issues including the implementation of the master plan. The group has adopted a charter and plans to meet regularly, particularly when State Parks or the future management entity undertake any improvement projects or changes in park policy.

4.1.3 VISITOR LIMITS

Currently, there are no visitor limits at the park. Recent counts show that during the summer, the number of people who visit the park can reach almost 2,000 people a day and in the winter, roughly 1,000-1,200 people visit daily. Many on the MPAC and in the community felt this was far too many people for the park and that a limit should be set on the number of visitors to reduce impacts to the natural, cultural and scenic resources and to improve the overall visitor experience. Their initial recommendation was to limit it to 300-500 people daily in the park. In 2003, the Hawai'i Tourism Authority (HTA) also recommended restricting the number of visitors allowed at the site at any one time as a possible solution to the parking problem as part of the strategic plan for Kaua'i County in its *Natural Resource Assessment (PBR Hawaii 2003)*.

In addition to these recommendations, because of the extensive archaeological, natural and cultural resources at the park and the proximity of the existing and proposed wastewater facilities

to these resources, State Parks is proposing to limit the number of people in the park to 900 people per day on average during the peak hours of park use. The initial hours over which this limit would be applied are 7:30 AM to 5:30 PM, but are subject to change. This number is an initial visitor limit which State Parks may adjust over time depending on future improvements, improved/increased maintenance, and/or other studies such as impact studies, particularly if harmful impacts to the natural, cultural, and archaeological resources arise. The daily visitor counts will be averaged over the course of a month so adjustments can be made for park closure days and is therefore a soft limit that can be adjusted as needed on a daily basis.

This initial visitor limit is higher than that recommended by the MPAC because it includes day hikers on the Kalalau Trail who numbered well over 500 in 2009. Because the trailhead is located within the park, visitors venturing on the trail are anticipated to use the park's restroom facilities and often go swimming and use the showers when they return from hiking on the trail, but are not anticipated to impact the park while on the trail. The visitor limit does not, however, include the 60 hikers with valid camping permits or the 30 hunters with valid hunting permits for the Nāpali Coast State Wilderness Park Hunting Unit G since they are not expected to be in the park using the facilities for very long and additional facilities are available at Hanakoa and Kalalau. The daily visitor limit also would not include cultural practitioners, or special user groups such as hālau, lo'i workgroups, cemetery caretakers, or school groups.

By instituting a daily visitor limit, park managers are able to better manage park operation and resource impacts. In addition, they are able to anticipate how busy the park will be on any given day and post notices online or distribute updates to the visitor industry early in the day whether tickets will be available. This would encourage visitors to plan ahead and could help reduce drop-ins and potentially general traffic along the highway through neighboring North Shore communities to the park. Prior to instituting the visitor limits, a public information campaign must be made far in advance so people are able to plan their visit to the park.

4.1.4 REQUIRED STAFF/VOLUNTEER EDUCATION

As representatives for the park, all park staff as well as volunteers should be trained and be knowledgeable on the cultural, historic, scenic and natural resources at the park. They should also be well-versed on park rules, cultural protocols, potential hazards, safety training and emergency evacuation processes, and proper protocol at cultural sites.

4.1.5 VISITOR ORIENTATION PRIOR TO PARK ENTRY

All visitors will be provided with park rules and information prior to entering the park. The orientation information could be made available on the State Parks website or tied to ticket purchase, particularly if advanced reservations become a requirement in the future. Information would include appropriate recreational activities and behavior, safety precautions as well as sensitivity to natural and cultural resources and to cultural activities that may be occurring in the park. In addition, emails could be distributed to park visitors prior to entry to inform them of safety precautions and updates on any special events or weather conditions. Additional information should be posted online or at the Welcome Hale. The Cultural Advisory Group should be consulted on appropriate cultural information to be included in the orientation information.

Table 7 – Park Management Options

Options	Description
State Parks Only	State Parks operates, maintains and manages the park with no assistance or services from other organizations. Subject to available State funding and staffing. Ideally, improved funding sources via users or parking fees will be used for better care of the resources and management of park visitors. At a minimum, a Park Ranger will be employed to oversee natural and cultural resource protection and daily park operations.
Adopt-A-Park	Agreement with a group who volunteers to help clean up a park over a relatively short period of time. Assists State Parks with maintenance on a sporadic basis.
Revocable Permit	Permit issued to a group for a special use of a specific area over a relatively short period of time. Granted on a month-to-month basis, they may continue for up to one year, depending on the activity. The permit may be allowed to continue for additional one-year periods. Fees may be charged to the group for the permit and the permit may be revoked at any time.
Concession Agreement	Contract with a group to provide discrete services over a specified period of time. Services could include tours, retail sales, food service, shuttle service, parking management, etc. DLNR has several concession agreements at Wailua River State Park and Kōke'e State Park.
Curatorship	Under a curatorship, nonprofits help maintain a specific cultural or natural resource (usually a special habitat or cultural/archaeological site) under State Parks guidance. Allows volunteer groups to assist with special park projects and provide interpretive/ educational services. The current curatorship agreement with the Hui is an example.
Partnership	Partners assist with operation, management, and maintenance of the recreation areas and facilities. Overall park management would likely remain with State Parks, but certain staffing and/or park maintenance, management or operational needs could be contracted with another group. Depending on the nature of the land disposition (this would be a Revocable Permit or Concession), the partner organization may have the ability to build improvements. The National Park Service has a partnership with Hawai'i Pacific Parks, a nonprofit organization which operates bookstores, tours and other services at national parks in Hawai'i and Samoa. Over \$12 million in proceeds and support have been generated since 1933.
Management Lease	Greatest level of control by a group with minimal oversight from State Parks. A Request for Proposals (RFP) will be issued to find an entity with appropriate knowledge of the place who is able to implement the master plan (which may be in phases) with the hope that management of those facilities will enable them to generate income to be self-sustaining. A fee based access strategy may serve to entice private sector involvement. The group assumes full responsibility for park operations, management, and maintenance. State Parks main role is as landowner. The 'Iolani Palace State Monument is operated by The Friends of 'Iolani Palace under a lease agreement.

4.2 OVERALL PARK MANAGEMENT

A wide range of options for park management was explored by the project team and the MPAC. Table 7 illustrates the potential range of options, starting from the simplest to the most complex with the associated levels of responsibility between parties.

State Parks recognizes the value of having community groups and other organizations participate in the ongoing care of State parks. The current curatorship agreement with the Hui has been highly successful and was renewed with expanded areas of responsibility including the Montgomery House and Allerton Caretaker's Cottage. The hope voiced by MPAC and HSPCAC members is to continue to grow the relationship between State Parks and the community and to have the opportunity for a registered community-based group to help operate and manage the park either through a partnership or lease agreement.

The MPAC is aware that they need to develop the capacity within the community to qualify in an open bid process as State Parks would release park management opportunities to the public pursuant to existing procurement requirements. The current curatorship agreement involves services provided by the community in the ongoing care of the park and these services will give them more experience. Possible options include a management lease such as the one issued to The Friends of 'Iolani Palace for the operations and maintenance of the 'Iolani Palace State Monument. However, it should be noted that while a lease may provide a long-term agreement with the State, the management entity has to be financially solvent and able to prepare and execute a solid business plan. The Friends of 'Iolani Palace receives grant-in-aid funds from the Legislature to help them with operations and maintenance costs. They also manage all of the money they collect from fees and donations. Another option may be a partnership between a community-based entity and State Parks that will clarify the responsibilities of both parties similar to a Memorandum of Agreement.

4.3 PARK ACCESS, TRANSPORTATION, AND PARKING MANAGEMENT

During the meetings with the project team, advisory committees, and community members, a wide variety of management concepts were discussed regarding park access and transportation modes to the park, parking management, and fee options. Because they all relate to some of the biggest problems at the park, including the sense of overcrowding, traffic congestion and parking problems within the park and on the highway, the management strategies for these issues are discussed together here. The initial concept proposed by the HSPCAC is highlighted below with the knowledge that it will need to be adaptively managed as implementation occurs and community feedback is received. Additional options are detailed in Appendix L including case studies from other parks in Hawai'i and the U.S.

**SUMMARY OF COMMUNITY ADVISORY COMMITTEE'S DRAFT OF
PREFERRED ACCESS, PARKING, AND TRANSPORTATION PLAN
FOR HĀ'ENA STATE PARK**

ACCESS SUMMARY

1. Controlled Access Hours (CAH) will be established as a way to manage overuse of the park by the public and to help restore a balance to this culturally significant area.
2. CAH are proposed to be 7:30 am - 5:30 pm, but are subject to change if park use before 7:30 am or after 5:30 pm is excessive.
3. The park will be adaptively managed by the community and the Division of State Parks to achieve the goal of reducing use to approximately 900 persons per day during CAH. This will be averaged over a month so adjustments can be made for park closure days and is therefore a "soft" limit.
4. DLNR rules allow State Parks to charge or exempt park entry fees. 1) Fee-Paying Park Users (FPPU) and 2) Fee-Exempt Park Users (FEPU).
5. Entry fees are established by Hawai'i Administrative Rules (HAR) 13-146-6 at the rate of \$5/car or \$1/person. HAR 13-146-6 also states that Hawai'i residents are exempt from paying park entry fees if they can show a valid Hawai'i ID. Other categories of FEPU may be established such as registered volunteers.
6. Access to the park will be limited to a single entry point near the present parking lot/helipad site. This entry point will be used to control access during CAH.
7. Vehicles will be allowed into one of two designated parking areas – one for Fee-Paying Park Users and one for Fee-Exempt Park Users.
8. Outside of CAH, anyone may enter the park, by vehicle, on foot, or by bicycle; but they must leave the park before the start of CAH unless they meet the requirements for park access during CAH. (See two items immediately below.)

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9. During CAH, fee payers will be allowed to enter the park only if they possess a pre-paid entry receipt. This applies to all fee payers, regardless of whether they arrive by car, by shuttle, by bicycle, or on foot.
 10. During CAH, adaptive management of the size of the parking areas and the number of park entries allowed and will be used to meet the typical access needs of FEPUs, enabling them to enter the park by car (using the FEPU parking area), by shuttle, by bicycle or on foot.
 11. Native Hawaiian cultural practitioners visiting the park to undertake their traditional and customary cultural practices will be exempt from park visitor limits.

PARKING SUMMARY

1. The approximately 100 space parking area shown in the Master Plan will be adaptively managed to accommodate both FPPUs and FEPUs.
2. The area shown in the Master Plan as a "Staging Area" (just north of the primary parking area) can be used for volunteer and cultural groups that access the park via a special use permit.
3. A special access parking area near the existing restroom at Kē'ē will be strictly managed only for handicapped park visitors, lifeguards and emergency rescue personnel, park staff, and cultural practitioners who have an authentic need to use that parking area.
4. Overnight campers at Nāpali Coast SWP will not be allowed to use the parking areas. (This will also be a specific condition of their camping permits.)
5. Unauthorized parking anywhere in the park will be subject to tow-away. It is intended that parking restrictions and tow-away zones will be strictly enforced.
6. State Parks and the Hā'ena State Park Community Advisory Committee (HSPCAC) will advocate for DOT to establish tow-away zones between Limahuli Stream and the eastern boundary of Hā'ena ahupua'a (close to the Hā'ena Place cul de sac). We propose that parking will be allowed only for residents who obtain residential parking stickers for their vehicles.
7. State Parks and the HSPCAC will work with the State DOT and the County of Kaua'i to implement and enforce this plan so that parking along Kūhiō Highway does not negatively impact the larger community.

SHUTTLE/TRANSPORTATION SUMMARY

1. The HSPCAC is working with county, federal and state agencies to promote the creation of a north shore shuttle system that will enable park and Nāpali visitors to park in Princeville and/or other locations and take a shuttle to and from the park. The shuttle would be capable of accommodating day-use gear by Kē'ē Beach users and camping gear by Nāpali overnight campers.
2. Until such a shuttle exists, the park's fee-based parking area will be managed to maximize the capability of the parking area to accommodate park visitors and minimize traffic impacts.

4.4 INFRASTRUCTURE AND UTILITIES

The following section describes the anticipated management requirements for the park's infrastructure and utilities, all of which should be developed with deference to Hā'ena's rich cultural, natural and scenic resources.

4.4.1 ROADS

Management Strategy: Coordinate with the State Department of Transportation to determine whether ownership of the highway should be transferred to State Parks and if so, to what extent.

- Discuss whether the highway should be transferred to State Parks from the property boundary to Kē'ē, or just the portion from the turnaround to Kē'ē. Preliminary discussions with the Kaua'i District Engineer, State DOT Highways, indicate support of an ownership transfer to State Parks.
- If ownership remains with State DOT, coordinate ongoing maintenance, operations, capital improvements including but not limited to the installation of gates, turnaround, and kiosk, and management of limited access.

Management Strategy: Coordinate with SHPD and KHPRC on requirements for the proposed improvements that may impact the highway.

- Prior to detailed design and construction, meet with both agencies to determine to what extent the historic roadway needs to be preserved and what would be required for the proposed improvements. Determine if preservation only requires maintenance of alignment or if it requires the surface pavement as well.
- Improve drainage and runoff issues related to the highway. Consider replacing existing surface with a permeable surface (if permitted by SHPD/KHPRC) and/or installing improved drainage facilities.

4.4.2 WASTEWATER

Management Strategy: Improve effluent water quality for the individual wastewater system at Kē'ē to minimize impact at outfall.

- The proposed restroom facilities at the Welcome Pavilion/Education and Cultural Center will help reduce the use of the Kē'ē comfort station where there are sensitive cultural sites.
- Consider addition of an aeration component to the wastewater treatment at the constructed wetlands to achieve an even higher level of effluent water quality.
- Reuse effluent for irrigation rather than disposal. If effluent water quality is R-2, irrigation systems must be subsurface with no over-ground sprays. If treated to R-1, overground spray and drip systems can be installed.

4.4.3 WATER

Management Strategy: Implement the integrated water management plan for the park's stormwater, wastewater and potable and nonpotable water. In conjunction with the items listed in Section 3.2.1:

- Treat wastewater to a quality level that can be re-used within the park.
- Utilize nonpotable water for irrigation needs and supplement water system with catchment systems.
- Ensure park development does not preclude the opportunity for restoration of the historic 'auwai.
- Work with CWRM to establish a dedicated stream diversion for State Parks to feed the lo'i within the park.
- Evaluate low-impact wastewater treatment options for potential comfort station at the cultural gathering area.
- Implement Low-Impact Development (LID) techniques for stormwater management.

4.4.4 MAINTENANCE

Management Strategy: Provide ongoing and regular maintenance to improve environmental quality of the park's resources and provide a pleasant experience for everyone.

- Provide training to staff and copies of the maintenance manual for all infrastructure facilities – water, wastewater (including special treatment facilities like the constructed wetlands), energy, etc.
- Conduct regular inspection and maintenance of all infrastructure systems. Verify the constructed wetlands systems meets water quality targets for effluent at least annually.
- Refresh constructed wetlands at Kē'ē and consider upgrading wastewater treatment with additional aeration component.

Management Strategy: Improve maintenance of existing water, wastewater and stormwater infrastructure.

- Replace deteriorating water pipes.
- Restore a more natural appearance to existing drainage facilities (drainage culverts, outlets and inlets).

4.4.5 ENERGY AND LIGHTING

Management Strategy: Design facilities to be as energy self-sufficient (net-zero) as possible.

- Design facilities to be as energy efficient as possible.
- Use renewable energy to maximum use. This includes but is not limited to solar, microhydro, and microwind energy.
- Extend electrical lines as needed to the Welcome Hale, new restrooms, Montgomery House and Allerton Caretaker's Cottage.
- To minimize impacts to nesting honu, lighting plans and management plans will be carefully designed and implemented so that no light from the Park is visible from the beach to minimize impacts to nesting sea turtles or their hatchlings seeking the ocean. All

exterior lights will be fully-shielded (completely opaque), full-cut off fixtures with the lowest light level (lumens) possible. Motion detectors and/or timers can also minimize the time the lights are lit at night to further mitigate impacts to wildlife.

4.5 RESOURCE MANAGEMENT

The following section describes the various management strategies related to the cultural, natural, and scenic resources of Hā'ena State Park.

4.5.1 CULTURAL RESOURCES

4.5.1.1 Hula Complex

Management Strategy: Prioritize appropriate management and maintenance of the Hula Complex.

- Because of the extreme significance of this site to hula practitioners statewide, the MPAC identified the Hula Complex as the number one priority for park management and restoration.
- Coordinate with County Department of Parks and Recreation and the Hui (with whom the County has a Stewardship Agreement for the heiau) on the ongoing maintenance of and access to the heiau.
- Consult with the Cultural Advisory Group and implement appropriate outreach to the hula community on Kaua'i and statewide in the development of any management plan and ongoing operation and maintenance of the complex.

Management Strategy: Preserve and restore existing historic sites within the Hula Complex to support cultural activities.

- Restore Ka Ulu a Paoa and Ke Ahu a Laka based on Kekahuna's map and other available maps. Since they are located on County of Kaua'i land, it requires agreement and coordination with the County of Kaua'i as well as review and input from SHPD.
- Work with the County to maintain the site for active hula and cultural use.
- Maintain the platform of the former Allerton house for hula use.
- Rehabilitate the Allerton Caretaker's Cottage for long-term preservation and reuse to support the area's management and operations.

Management Strategy: Educate the public and enforce appropriate cultural protocols relating to the access and use of the Hula Complex.

- Work with the County to coordinate interpretation, scheduling, access, and enforcement responsibilities associated with the Hula Complex. Hire a person knowledgeable and appropriately trained in hula protocols for this position.
- Train all staff in appropriate cultural practices to educate visitors and enforce protocols.

Management Strategy: Develop a maintenance program for the physical upkeep of the Hula Complex.

- Coordinate with the County on all aspects of the maintenance program. The County has established a Stewardship Agreement with the Hui for the heiau maintenance, which should be coordinated with the maintenance of the greater Hula Complex. Work with the County to set guidelines for the care of the Hula Complex, including invasive plant/tree

removal, site restoration and repairs, and native and Polynesian introduced plant and forest restoration as well as a system of reporting damage or incidents of vandalism.

- Organize a regular maintenance schedule, including organization of manpower consisting of work groups and/or park staff.
- Invite hālau hula to participate in the maintenance of the complex.
- Institute Ho‘omaha, public closure days that can be used for special educational groups, groups associated with cultural practices, and community work groups participating in restoration activities.

4.5.1.2 Agricultural Complex

Management Strategy: Revitalize the cultural landscape and restore the archaeological sites as a living system.

- Continue to rehabilitate the ‘auwai (ditches), lo‘i (irrigated fields), and kuāuna (banks that separate the fields) as described in the Major and Carpenter Lo‘i Restoration Plan (2000).
- Continue archaeological inventory surveys as necessary to fully document the site.
- Plant kalo and other culturally-appropriate crops.
- Remove alien vegetation, derelict vehicles and rubbish.
- Design the water diversion and transmission system with consideration of sustaining a healthy Limahuli Stream ecosystem and protecting Limahuli Stream from apple snails which are currently in the park’s lo‘i.
- Investigate whether the ‘auwai that used to run from mauka of the highway and between the main parking lot and shuttle stop can be restored. If possible, use it to irrigate the lo‘i instead of the enclosed HDPE pipe.
- Rehabilitate the Montgomery House as a support facility for the agricultural complex or other park activities.
- Institute Ho‘omaha, public closure days that can be used for special educational groups, groups associated with cultural practices, and community work groups participating in restoration activities.

Photo 23 – Lo‘i Kalo

Management Strategy: Continue and expand community participation in the restoration of the agricultural complex.

- Continue existing Hui curatorship or similar arrangement, allowing a community group to manage the restoration, planting, operation and maintenance of the complex.
- Provide managed access to the agricultural complex by making work days and tours available to the general public.
- Develop and implement educational programs related to the lo‘i which can serve as interpretive resources where school children, local residents and visitors can learn about the culture of Kē‘ē and Hā‘ena.



4.5.1.3 Burials

Management Strategy: Support the ongoing care of the cemeteries by lineal descendants.

- Consult with representatives of the lineal descendants and the Cultural Advisory Group regarding the maintenance of the cemeteries and the preferred design and landscaping around the cemeteries.

Management Strategy: Restore dune system thereby stabilizing and protecting the existing burials.

- Study and implement best methods of dune restoration and natural sand replacement to protect burials and dune ecology.
- Consult with the Cultural Advisory Group as well as coastal erosion experts on all aspects of dune restoration.
- Remove alien plant species and replace with native and Polynesian-introduced plants as appropriate.

4.5.1.4 Loko

Management Strategy: Study the potential to restore Loko Kē‘ē and Loko Naia.

- Perform an analysis of the public’s benefits, costs and liabilities associated with restoring one or both of the loko. There may be potential for restoration for agricultural uses, fishponds and/or wildlife habitat. Additional discussion is provided in Section 4.5.2.

4.5.1.5 Poi Mill

Management Strategy: Determine appropriate treatment for the poi mill remnants.

- If warranted, create and implement a preservation plan for the site.

4.5.1.6 Caves

Management Strategy: Provide interpretation about these unique geological and cultural resources.

- Ensure that interpretive devices are sited in safe and culturally sensitive locations.
- Discourage swimming or entering caves.
- Educate visitors of rockfall hazards.

4.5.1.7 Other Archaeological Features

Management Strategy: For all other archaeological features not specifically described above or those yet undocumented, follow these general guidelines.

- Involve State Parks archaeologists and staff whenever siting, designing or installing any new park facility, especially when ground disturbance is required. Perform additional surveys and tests as necessary.
- Conduct appropriate archaeological testing or investigations prior to undertaking projects requiring ground alteration or excavation. (This is covered by State law and the historic preservation process.)
- Identify and prioritize historic properties (including archaeological resources) in need of maintenance, restoration, and monitoring.
- Remove alien plants and trees that undermine the archaeological sites, as appropriate.

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- Conduct archaeological monitoring during any earth moving or ground disturbing activities in case there are inadvertent discoveries.

4.5.1.8 Kūhiō Highway

Management Strategy: In coordination with the State Department of Transportation (DOT), manage historic Kūhiō Highway corridor within the park to preserve its historic aspects while improving public safety and drainage/stormwater runoff problems.

- Follow guidelines provided in the *Kūhiō Highway Historic Road Corridor Plan* prepared by Belt Collins and adopted by the State DOT in 2005.
- Limit vehicular access beyond the parking lot to special access for ADA, emergency and rescue personnel, lifeguards, park maintenance, lawai‘a, hunters, and cultural practitioners.
- Consider resurfacing the former highway pavement with historically appropriate materials. However, implement creative design solutions that can improve drainage and minimize erosion in the surrounding areas.

4.5.2 NATURAL RESOURCES

The following section provides management strategies for Hā‘ena’s natural resources. They are organized by topic and type of resource.

4.5.2.1 General

Management Strategy: Depending on the resources that need to be managed, consideration of seasonal variations may ensure management actions are successful. Examples include but are not limited to:

- Surf and weather conditions (i.e. different activities permitted based on winter versus summer surf)
- Migratory and nesting patterns of birds
- Migratory and breeding seasons of marine life
- Spawning seasons of fish, coral, and other marine and riparian life
- Kalo planting and harvesting cycles

Management Strategy: Limit or closely manage park development and activities within/near the park’s most sensitive natural resource areas to restore and preserve the water resources and habitat.

- Avoid new development and limit activities along Limahuli Stream.
- Minimize disturbance to Waiakapala‘e and Wai a Kanaloa. Plant native and Polynesian-introduced plantings for landscape buffers in front of the cave entrances to discourage visitors from entering the caves. Provide a minimum 30’ buffer from the cave entrances; a larger buffer would be ideal for rockfall safety.
- Avoid new park development and activities within the coastal dunes except to restore the dunes as described in Section 4.5.1.3 and to protect the natural movement inherent to coastal dune systems.
- Maintain restrictions (as implemented through the Division of Boating and Ocean Recreation) on motorized watercraft in Kē‘ē lagoon.

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- Institute Ho‘omaha, public closure days that can be used for special educational groups, groups associated with cultural practices, and community work groups participating in restoration activities.

4.5.2.2 Flora/Fauna

Management Strategy: Prioritize natural resource restoration projects within the park and develop a plan for funding implementation, monitoring and maintenance.

- Initiate restoration activities first in the coastal areas occupied by the strand, ironwood and false kamani forest as these areas are presently the most important opportunity for restoration of a native dune ecosystem. Use native and Polynesian-introduced plants such as pōhuehue, naupaka, nanea, pōhinahina, nehe, pa‘u-o-Hi‘iaka, ‘aki‘aki grass, milo, hala and kou. Removing the alien species and replacing them with native dune plants would likely not increase and might in fact reduce coastal erosion if carefully conducted as many of these native species are well adapted to coastal environments. Restoration of these dunes would also improve habitat for common native shorebirds, including kōlea, ‘ūlili, ‘akekeke, kioea, hunakai, and other sandpipers (Geometrician Associates 2009).
- Restore riparian areas associated with Limahuli Stream to remove the closed canopy of alien tree species to allow more sunlight to the stream and its riparian zone (Geometrician Associates 2009). Care should be taken to monitor changes to the stream including temperature, water flow quantities and quality, as they may impact wildlife inhabiting the stream and water feeding the lo‘i.
- Consider restoration of native plants on the talus slopes and cliff faces where the ecology is most pristine and plant diversity is greatest. This is a lower priority given the lack of access and potential safety issues (Geometrician Associates 2009).

Management Strategy: Forest and ecosystem restoration practices should seek to control the encroachment of invasive plants and encourage the regrowth and regeneration of native plant species. Remove invasive alien plants and vegetate with native plants and where appropriate, non-invasive Polynesian introductions, to restore the natural and cultural landscape as well as prevent/mitigate erosion and encourage stabilization where appropriate. Landscaping with native and Polynesian-introduced plants could substantially improve the existing botanical environment and bird habitat.

- Develop a long-range plan to remove all invasive and potentially invasive species within the park over time. Reference the University of Hawai‘i’s list of “Pest Plants of Hawaiian Native Ecosystems” and DLNR’s list of “Hawaii’s Most Invasive Horticultural Plants” at their respective websites:
 - <http://www.botany.hawaii.edu/faculty/carr/aliens.htm>
 - <http://www.hear.org/hortweeds/>
 - Additional information on other species can be found at the Hawai‘i-Pacific Weed Risk Assessment:
<http://www.botany.hawaii.edu/faculty/daehler/wra/>
- Revegetation efforts should prioritize native plants and ideally species native to Hā‘ena and Kaua‘i to the greatest degree possible. Polynesian-introduced plants should be considered where appropriate. All invasive species and potentially invasive species should be prohibited.
- When restoring threatened and endangered plant species, obtain all plant material from licensed nurseries and maintain records to document their authenticity.

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- Park personnel, DLNR experts, and volunteers should monitor the park regularly for encroachment of new invasive species and limit expansion of alien species.
 - If possible, study historic pollen samples and archaeologically collected charcoal assemblages to investigate which native and Polynesian-introduced plants inhabited the park area historically and propagate as appropriate.

Management Strategy: Park development and management should prevent impacts to native and Polynesian-introduced species, particularly those listed as threatened or endangered and include measures to control and limit invasive animal species.

- In order to prevent impacts to the ‘ōpe‘ape‘a or Hawaiian hoary bat, State Parks should restrict any cutting of large shrubs or trees over fifteen feet in height to periods outside the June 1 through September 15 breeding season.
- To reduce the potential for interactions between nocturnally flying threatened or endangered seabirds, any external lighting used during construction or installed at the park must be fully-shielded (completely opaque) and downward facing full-cut off fixtures with the lowest light level (lumens) possible. Nighttime activities that require artificial lights should be avoided during the fledging season between September and December as much as possible. Lighting plans and management plans will be carefully designed and implemented so that no light from the Park is visible from the beach to minimize impacts to nesting sea turtles or their hatchlings seeking the ocean. External lights can also be installed lower to the ground to minimize light pollution and motion sensors and/or timers can be utilized to activate the lights only when absolutely necessary.
- State Parks should continue cooperation with federal, State and nonprofit organizations that help protect threatened and endangered animals such as ‘Īlio-holo-i-ka-uaua, honu, honu ‘ea, humpback whales and native birds from natural and human threats.
- State Parks should continue to cooperate with the DLNR Division of Aquatic Resources to keep new alien fish out of the ‘auwai and Limahuli Stream and in ridding the stream of periodic invasions of swordtails, guppies, and other alien fish.
- Signage and other educational material should be developed and distributed to advise the visiting public about the value of native species and not to drop off pests or unwanted pets at the park.
- Encourage visitors to carry out all materials and trash brought in to the park. If trash or recycling receptacles are provided within the park, they should have fitted lids to prevent foraging by invasive animals such as cats, rats and dogs.
- With regards to minimizing impacts to native birds which may use irrigated lo‘i and have application to the lo‘i and wetland areas within Hā‘ena State Park, the following recommendations were provided to Mr. Ben Welborn of Limahuli Garden by the USFWS (Fujita 2002, Appendix A). They are repeated verbatim here.
 - If possible, the taro fields should be left wet after harvesting for at least one month. This provides critical feeding areas for the endangered Hawaiian waterbirds (especially the ae‘o, Hawaiian stilt).
 - Ae‘o prefer to build their nests on exposed mud flats or in the dirt on banks that have short or no vegetation. Tilled, dry fallow fields are also used for nesting. Stilts nest between March and August. If a field is left fallow during this period, the cooperators should check for any potential nests before tilling the paddies or filling the paddies with water. Several distinctive behaviors by adult birds can be observed when nests or young are in the area. Adult birds react to human

disturbance or when nests or chicks are threatened by predators. Birds with nests and eggs typically move away from the nest and exhibit “broken wing” behavior as an attempt to distract a potential predator from the nest. Birds with young are more aggressive and will swoop down and sometimes come into physical contact with the person or predator. These behaviors are accompanied by continuous warning vocalizations by the adults.

- Koloa maoli, Hawaiian ducks nest on the ground in grasses or other vegetation near water. They nest most frequently between December and May. Mowing the berm should be done prior to this period to prevent the accidental harassment of nesting birds.
- The ‘alae ke‘oke‘o, Hawaiian coot, and the ‘alae‘ula, Hawaiian moorhen, usually build floating nests of weeds and grasses in densely covered taro patches. Most of these birds nest between March and September. If a waterbird nest is found while harvesting taro, the plants supporting the nest should not be disturbed and a buffer of plants should be left around the nest. The buffer should be at least six feet in diameter.
- Household pets and feral animals such as cats and dogs prey on waterbird eggs and young hatchlings. These animals should not be allowed in taro patches. Dogs especially, should be banned because they chase and harass birds to the point at which the birds will not return to the taro lo‘i. Therefore, dogs should be prevented from entering the lo‘i at any time through the use of fences and other restraints.

Management Strategy: Restore the loko and wetland areas to encourage native birds such as nēnē, koloa (which already utilize the loko), or ae‘o to use the ponds as a potential habitat. Geometrician Associates does not recommend modifying the loko and wetland areas specifically to attract endangered animals for practical and legal reasons. However, if this is pursued, there are several management requirements to be considered, some of which are outlined below.

- Consult and coordinate with state and federal agencies to determine best course of action for improvements and ongoing management of the park for endangered animal species.
- State Parks must enter into a “Safe Harbor Agreement” prior to undertaking the habitat improvement. This is a voluntary arrangement between the U.S. Fish and Wildlife Service and a cooperating non-federal landowner under the authority of Section 10(a)(1) of the Endangered Species Act of 1973, 16 U.S.C. 1536(b)(4), 1539(a)(1). Under the Safe Harbor Agreement (SHA) and an associated enhancement of survival permit, the non-federal property owner implements actions that will result in a net conservation benefit for species listed under the Act without the risk of further restrictions pursuant to section 9 of the Act, which prohibits take of listed species. The property owner also receives assurances related to modifications of the SHA or termination of the permit. Such agreements allow a landowner to promote threatened and endangered species on their property without liability for incidental takes that may occur (Geometrician Associates 2009).

4.5.2.3 Marine and Shoreline Resources

Management Strategy: Maintain Class AA coastal water quality standards.

- For new park development, consider Low-Impact Development (LID) techniques and alternative storm drainage features to minimize or slow runoff into the ocean.

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- Consider effluent water quality in the design and maintenance of wastewater treatment systems. Conduct regular inspection and maintenance of wastewater systems at the public restrooms to prevent sewage seepage or spillage into the ocean or groundwater.
 - Limit parking areas within the park to those proposed in the master plan in order to 1) reduce the input of brake dust and oil into the environment, and 2) limit the amount of impervious surfaces within the park.
 - Carefully design parking areas and apply best management practices to prevent the runoff of contaminants to streams and coastal waters. Include bioswales to help filter runoff from parking areas.
 - Conduct regular maintenance and apply best management practices to the Kalalau trailhead to prevent unnecessary soil erosion, siltation, high turbidity, and possible coral mortality within the Kē'ē Lagoon and reef.
 - Encourage visitors to carry out all materials carried into the park. Provide and regularly maintain an appropriate number of trash and recycling receptacles to reduce the amount of plastic and other solid waste that is blown or washed into the ocean.
 - Utilize non-chemical maintenance techniques and minimize the use of chemical fertilizers and pesticides wherever feasible.
 - Encourage visitors to shower prior to entering the ocean as is often done at public swimming pools. Sunscreens can be reapplied once out of the water.

Management Strategy: Prevent shoreline erosion by allowing natural tidal, current and wind processes to shape Hā'ena's shoreline.

- Study Hā'ena' specific natural dune building processes and restore or remove vegetation as appropriate to support dune restoration through natural processes.
- Design of future park facilities should employ the recent data and maps developed by the University of Hawai'i Coastal Geology Group (<http://www.soest.hawaii.edu/coasts/>).
- Comply with County of Kaua'i shoreline setback standards to calculate appropriate setbacks along the coastline.
- Prohibit shore protection structures.

Management Strategy: Protect and sustain the long-term viability of Hā'ena State Park's nearshore resources.

- Refer to the management rules and protocols for the Community-Based Subsistence Fishery Area established for Hā'ena by Hawai'i state law.
- Establish a program of long-term scientific monitoring of fish and invertebrate populations trends within park marine waters.
- Allow sufficient flexibility and insure long-term monitoring to employ the principal of adaptive management and allow changes to be made to permitting processes and management actions, as deemed appropriate, based upon the results of long-term monitoring and catch statistics.

4.5.3 SCENIC RESOURCES

Management Strategy: Control and/or remove non-native, invasive trees that obscure views of scenic resources.

- Remove, as appropriate, high canopy alien trees that obscure views of Makana, particularly from key vantage points.

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- Remove alien trees located on the backslope of the dunes between Kē‘ē Beach and Loko Kē‘ē to aid visual access to Kē‘ē Beach. Tree removal at this location should be done in conjunction with dune restoration efforts. Consult with the Cultural Advisory Group, coastal erosion experts, and Hā‘ena community members who are familiar with the area.
 - Remove alien trees around the lo‘i, as appropriate, to open up views of the Agricultural Complex as different phases are restored.
 - Monitor vegetation at the park entrance, particularly in the riparian zone associated with Limahuli Stream. Restore with native and Polynesian-introduced plants and trees to create a more authentic landscape as well as maintain the integrity of Limahuli Stream.

Management Strategy: Offer opportunities to access and view scenic resources that are safe and sensitive to cultural and natural resources.

- Maintain ADA accessibility to Kē‘ē and provide safe beach access as appropriate via temporary paths and special wheelchairs.
- Design areas fronting Wai a Kanaloa and Waiakapala‘e to prevent visitors from standing or driving beneath the cliff face or entering the caves.

4.6 RECREATIONAL RESOURCES

4.6.1 OUTDOOR RECREATIONAL USES

Management Strategy: Make the park a more pedestrian and bicycle-friendly environment but with deference to cultural and natural sensitivities and safety concerns.

- Provide alternate ADA, pedestrian and possibly bicycle access to Kē‘ē with limited or no motorized vehicles except for special access, park staff, and emergency and rescue personnel.
- No motorized vehicles should be allowed on the beach or dunes except for emergencies.
- If public access to more sensitive areas of the park is deemed desirable and appropriate by State Parks and the Cultural Advisory Group, it should be limited to pedestrian activity only and consider providing guided tours with education and/or site management and restoration as the main purposes for public access.

Management Strategy: Continue low-impact ocean recreational activities such as sunbathing, beach walking, swimming, snorkeling and SCUBA. However, educate visitors and manage those activities to reduce impact to the natural and cultural resources.

- Provide visitor education and guidance as to safe and conscientious conduct when enjoying the park’s beaches and waters.
- Designate safe areas to swim within view of lifeguards. Consider using flags or buoys to indicate safe zones. Locate limits with input from lifeguards and in coordination with the relocation of the lifeguard tower.
- Encourage only passive outdoor activities such as walking, sunbathing and sightseeing/wildlife viewing along the shoreline outside of the lagoon area and outside of the view of lifeguards.
- Discourage or eliminate kayak launches and landings within the park except for emergencies.
- Provide ADA accessibility to Kē‘ē and beach access via temporary paths and beach accessible equipment as appropriate.

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- Recommend that showers be taken prior to entering the ocean similar to recommendations at public swimming pools. Sunscreen can be reapplied after exiting the ocean.
 - Continue lifeguard service and relocate the lifeguard stand to improve the lifeguards' ability to view the entire lagoon.

Management Strategy: Provide opportunities for picnicking in the park.

- Locate formal picnic areas with improvements such as picnic tables in areas of previous ground disturbance and avoid sensitive areas such as the dunes.
- Locate formal picnic areas with picnic tables in accessible and scenic areas such as at Kē'ē at the end of the highway pavement for ADA accessibility.
- Allow picnicking in the beach areas, especially at Kē'ē Beach.
- Encourage visitors to carry out everything they bring into the park to reduce litter, maintenance, and pests.
- Provide appropriate garbage and recycling receptacles throughout the park. Ensure they are fitted with lids that discourage foraging animals, are able to withstand wind, and are located in convenient proximity to visitor areas without infringing on the cultural, natural and scenic resources.

Management Strategy: Facilitate low-impact recreational uses such as hiking/walking, birding and whale watching as well as activities that support park restoration and educational opportunities.

- Utilize the Welcome Hale for educational programs and a staging area for tours and workgroups.
- Consider nature viewing opportunities when developing natural resource restoration projects within the park.

Management Strategy: Develop appropriate management plans for permitted activities based on the natural cycles and seasons of the native environment and around cultural activities.

- Consider limiting or expanding certain recreational activities based on seasons. For example, during winter high surf conditions, limit ocean recreational activity to within the reef.
- Constrain relevant recreational activities during certain times of the year or in sensitive areas of the park if they interfere with important natural processes such as breeding seasons.
- Consider limiting certain activities temporarily as needed when special cultural ceremonies or activities occur at the park.
- Consult with appropriate experts in developing these management plans.

4.6.2 RECREATIONAL FACILITY PLANNING

Management Strategy: When recreational facilities are planned such as new trail alignments, picnic areas or camping grounds, consider public safety issues and protect sensitive cultural, archaeological, and natural sites to minimize negative impacts from the activity.

- Consult with the Cultural Advisory Group and natural resource experts, as appropriate, early in the design stage.

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- Provide opportunities for observation of natural resources at locations that are safe and do not negatively impact cultural and natural resources.
 - Use landscape design including plantings, signage and trails to not only access, beautify, and interpret places within the park, but also to protect and to provide aesthetic buffers and to facilitate drainage for sensitive environments. If the park undertakes restoration of the strand, for example, trails should be designed to direct foot traffic along paths that are convenient yet minimize trampling of vegetation and avoid culturally sensitive areas. Appropriate instruction during orientation and signage can educate visitors and help protect these areas.
 - Create buffer zones around sensitive areas and use native and Polynesian-introduced landscaping whenever possible.

Management Strategy: Consider alternative trail and pathway designs and surfaces as well as temporary and movable mats to provide access where excavation and hardened surfaces are not appropriate or desirable.

- Minimize or eliminate excavation in archaeologically sensitive areas to the greatest extent possible.
- Alternatives to standard pavements such as biodegradable soil hardeners should be considered for trail surfaces.
- Consider using temporary mats or special wheelchairs to provide ADA access along the beach.

4.6.3 NĀPALI TRAILHEAD MANAGEMENT

Management Strategy: Develop a program for hiker, hunter, and overnight camping permit check-in and education.

- Consider instituting a check-in and check-out system for hikers, hunters, and overnight campers.
- Include hiking safety information as part of park entry orientation and informational emails. Consider more detailed education session for overnight campers and separate sessions for hunters.
- Consider check-in/check-out for day hikers as well. At a minimum, include hiking safety information as part of ticket purchase.

Management Strategy: Manage unpermitted third-party operators that charge for tours on the trail.

- Require permits for third-party tours on the trail or enforce restriction.
- If permitted, require and ensure that guided tours include interpretive curriculum reviewed and approved by State Parks and the Cultural Advisory Group.

Mapu ka Hanu o Ka Laua'e

Mapu ka hanu o ka laua'e
Mapu no i ka poli o Waialoha
Aloha i ke kapa ehukai
Huki palai, huki lole no ka huna
Noe maila ka lehua makanoe
Noe kalehua makanoe
Noe wiwo'ole i ke anu
Anu i ke ala kīpapa a Ola e
Alai kui lima kānaka o Maunahina e
E hina no paha, o au wale no
E hina no paha kāua i ka aha nui e
Alia la e, he anu
He anu wale no e

*Wafted is the breath of the laua'e fern.
The essence of the beloved waters alights like mist.
Beloved is the covering of the sea spray,
Drawing concealment listening, inquiring intently.
The lehua of the misty face brings mist.
The lehua of the misty face brings mist.
The mist unafraid of the cold,
The cold of the pathway of life.
Mauna Hina is a pathway directing mankind.
Perhaps it is just I who will succumb.
Perhaps you and I, or the large assembly, will succumb.
Wait!
Cold, just cold!*

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5.0 Implementation Plan

The proposed implementation plan provides a list of administrative tasks as well as the capital improvement projects that are required to execute the master plan. State Parks should review the proposed implementation plan on a regular basis and should adjust it and update it accordingly, based on evolving park developments, resources and priorities.

5.1 ADMINISTRATIVE TASKS

The following is a list of the recommended administrative tasks to be implemented by State Parks to support the master plan.

5.1.1 ESTABLISH THE CULTURAL AND COMMUNITY ADVISORY GROUPS

Appendix J contains draft recommendations for the establishment and proposed responsibilities of the Cultural Advisory Group. The following is a list of basic administrative tasks required for the establishment and ongoing management of the group.

- Establish Selection Committee
- Elect Cultural Advisory Group members
- Train Cultural Advisory Group members on duties/responsibilities
- Hold regular meetings as necessary to coordinate with Cultural Advisory Group

In addition, the larger Community Advisory Group should be established with the Cultural Advisory Group forming the core of the larger group. Protocols for holding meetings, meeting schedules, level of commitment, and participation should be determined by State Parks prior to formation.

5.1.2 UPDATE THE INTERPRETIVE PLAN

- See Appendix M for the initial interpretive plan.

5.1.3 CHANGES TO PARK ENTRANCE AND PARKING POLICIES

- Hold stakeholder and public meetings several months prior to rollout of visitor limits and any other changes in entry policies.
- Provide adequate public notice of any changes several months in advance, including time frame for implementation.
- Inform visitor industry of new entry and parking policies similarly well in advance of implementation.
- Secure necessary permits, lease agreements, and construct any required facilities.
- Consider third-party agreement to help manage entry ticket and parking administration.

5.1.4 ESTABLISHMENT OF MANAGEMENT ENTITY

- Evaluate whether State Parks has the capacity to implement all or a portion of the management strategies or if an agreement and/or lease/concession to third party(ies) for park management can assist with the implementation.
- Prepare proposals for park management from third-party groups following State procurement requirements and put them out to bid.
- Enter into agreement/lease with third party, upon award.
- Develop a process for the evaluation of management effectiveness, address difficulties, capitalize on opportunities and adapt management techniques on a regular basis.

5.1.5 ESTABLISHMENT OF PARK STAFF

- Prepare budget for park needs including staffing.
- Develop a training manual.
- Commence hiring process.
- Implement staff training.

5.2 TASKS RELATED TO CAPITAL IMPROVEMENTS

The following is a list of tasks that should be done prior to capital improvements, particularly those that involve ground disturbance. It is not meant to be comprehensive as there may be different requirements for different types of projects. However, the list provides a checklist of tasks that should be completed prior to or very early in the planning and design stages of any improvement project.

- Consult with NPS as required for compliance with LWCF rules
- Detailed archaeological survey
- Ground survey (include assessment of native flora)
- Consultation with Cultural and Community Advisory Groups
- Shoreline certification (for projects along the coast)
- Review of flood hazards
- Wetland determination
- Review of rockfall hazards
- Review of potential impacts to surface waters (stream and 'auwai)
- Review of potential impacts to scenic views, as well as opportunities to enhance them
- Implementation of green design, minimizing ground disturbance, energy consumption and waste
- Chapter 6E review and compliance

5.3 REGULATORY COORDINATION

There are several components of the master plan that will require federal, state, and local agency review and approval. They include, but are not limited, to the following.

5.3.1 FEDERAL AGENCIES

5.3.1.1 National Park Service

The NPS has reviewed a draft master plan and provided comment (Drodge 2014). If any project amendments are needed under LWCF, the amendment will be submitted by the State.

5.3.1.2 US Fish and Wildlife Service

Coordinate and consult with the US Fish and Wildlife Service regarding natural resource restoration activities. Restoration of loko or 'auwai may attract endangered waterbirds, thus coordination and consultation is essential to insure that restoration activities do not unintentionally incur a take (fatality) of any listed species under the Endangered Species Act.

5.3.1.3 US Army Corps of Engineers

Delineate any onsite wetlands or jurisdictional waters prior to development activities. Coordinate with Corps staff through appropriate regulatory process to determine presence of wetlands or jurisdictional waters and to mitigate any effects to regulated resources.

5.3.2 STATE OF HAWAI'I AGENCIES

5.3.2.1 State Environmental Review Law

The State Environmental Review Law (Chapter 343, HRS), requires an environmental assessment for any action that proposes the use of State or County lands and funds. Compliance with Chapter 343, HRS, is necessary for any new development in Hā'ena State Park. An Environmental Impact Statement (EIS) has been prepared for the improvements proposed in this Master Plan.

5.3.2.2 State Department of Land and Natural Resources

The following section is organized by division, office or commission within DLNR.

- Division of Boating and Ocean Recreation (DOBOR) – Administrative rules restricting access to reef by commercial operators.
- Commission on Water Resource Management (CWRM) – Responsible to issue stream diversion permits.
- Division of Aquatic Resources (DAR) – Administrative rules pertaining to Hā'ena Community-Based Subsistence Fishing Area (CBSFA) are implemented through DAR.
- Division of Conservation and Resource Enforcement (DOCARE) – Enforcement responsibilities from DOCARE to assume compliance with State Parks rules. DOCARE officers have full police powers and responsibilities cannot be transferred to another entity.

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- Division of Forestry and Wildlife (DOFAW) – Coordination of improvements or potential impacts to wildlife, similar to coordination with USFWS.
 - Office of Conservation and Coastal Lands (OCCL) – Because the park is located within the Conservation District, various permits may be required for certain improvements or actions proposed in the master plan depending upon which Conservation District Subzone they are located and the nature of the improvement/action. Major permits require BLNR or departmental approval. Minor permits may be decided upon by the Board chairperson or OCCL.
 - State Historic Preservation Division (SHPD) – Review of the master plan through the state historic preservation project review process and EIS process. OHA has been consulted through these processes. Consultation and coordination with the Kaua‘i/Ni‘ihau Islands Burial Council, which is administratively attached to SHPD, should also be done as needed in accordance with Chapter 13-300, HAR, to address concerns relating to Native Hawaiian burial sites. Relocation or preservation in place of previously identified Hawaiian burials over 50 years old must obtain the approval of the Kaua‘i/Ni‘ihau Islands Burial Council, which meets on a monthly basis.

5.3.2.3 State Department of Transportation

Ongoing coordination is necessary to implement any changes related to Kūhiō Highway unless the highway ownership is transferred to State Parks.

5.3.2.4 State Civil Defense

State Parks will coordinate the installation of the emergency siren in the main parking lot or upgrade of existing siren as well as annual emergency evacuation drills with State Civil Defense.

5.3.3 COUNTY OF KAUA‘I AGENCIES

5.3.3.1 County Attorney’s Office

- If amenable to both parties, establish and execute a Memorandum of Agreement for management of parcel 25 of TMK: 5-9-01, which is owned by the County.
- Establish and execute an access agreement or easement between State Parks and the County should the management of the parcel remain with the County or be contracted with a third party since the only access to the parcel is through Hā‘ena State Park.

5.3.3.2 Planning Department

- Ensure compliance with County shoreline setback standards.
- Coordinate with the County Transportation Agency and Planning Department on their ongoing North Shore Shuttle effort and see if the Princeville entry facility or a park and shuttle to the park can be set up. Ideally this will happen in the near-term to avoid building out the full parking lot if not needed.

5.3.3.3 Fire Department

- Coordinate lifeguard stand relocation and staffing at Kēʻē.
- Hold annual emergency evacuation drills.

5.3.3.4 Police Department

- Support during emergency situations, evacuations, and criminal activity at the Park.
- Hold annual emergency evacuation drills.

5.3.3.5 Department of Water

- Change water billing as applicable if a third-party management entity is established.

5.3.3.6 Transportation Agency

- Coordinate with the County Transportation Agency and Planning Department on their ongoing North Shore Shuttle effort and see if the Princeville entry facility or a park and shuttle to the park can be set up.

5.3.4 KAUAʻI ISLAND UTILITY COOPERATIVE

- Currently, there are no KIUC electrical lines in the park.
- Coordinate with KIUC as necessary if the installation of renewable energy resources is not sufficient to serve the proposed park improvements.

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5.4 PRELIMINARY PHASING PLAN

The following is a preliminary phasing plan for the major tasks associated with implementing the master plan. The table is not meant to be comprehensive but is intended to identify the major implementation milestones to help guide the improvements at the park. For all improvements, appropriate permits, agency coordination, infrastructure improvements, landscaping, educational programming, and staff management and training will be required. Consultation with the Cultural and Community Advisory Group should also be done on a regular basis throughout implementation.

Table 8 – Preliminary Phasing Plan

SHORT TERM (IMMEDIATE - 5 YEARS)		
Capital Improvements	Cultural Environment	Natural Environment
<ol style="list-style-type: none"> 1. Rehabilitate Montgomery House. 2. Improve main parking lot, sized appropriately based on shuttle/transit service. Include new turnaround. Make provisions for subgrade leach field. 3. Construct Welcome Hale. Ensure exit gate allows pedestrian and bicycle access even when locked for vehicles. 4. Install Pedestrian Path through the lo'i from Welcome Hale to Kē'ē Beach. 5. Install safety signage (as appropriate). 6. Plan for and make accommodations for future required infrastructure. 7. Transfer ownership and management of this portion of the highway to State Parks. 8. Initiate public education and roll out of visitor limits and develop adaptive management plan to manage access and parking. 	<ol style="list-style-type: none"> 1. Establish Cultural Advisory Group early, prior to any design and construction contract awards. 2. Complete rehabilitation of the Allerton Caretaker's Cottage. 3. Coordinate with County and Hui on management and access at the Hula Complex. 4. Prior to any improvements within the main parking lot, survey the extent of the traditional house site (Feature 1600-8). 5. Continue lo'i restoration, kalo cultivation. 6. Update Interpretive Plan. Implement as appropriate. 7. Coordinate with Hui on relocation of staging areas prior to construction of new entry facilities. 8. Provide visitor education information online and via emails, including appropriate behavioral conduct and cultural/historic/ archaeological resource protection. 	<ol style="list-style-type: none"> 1. Relocate Lifeguard Tower. Establish safe swim zones and set up markers. 2. Restore and maintain Dune System, starting from Kē'ē. 3. Plant dense native tree screen for rockfall mitigation along the highway and new parking lot. 4. Initiate and distribute visitor orientation and park safety information including natural resource protection, access, and behavioral protocols. 5. Start clearing invasive species in/around the loko. Review loko restoration requirements including water. If different for the two loko, consider phasing restoration work starting with Loko Kē'ē. Consider whether native bird habitat is feasible to establish at loko and provide ongoing maintenance. Restore with native and Polynesian-introduced plants and maintain.

MID RANGE (5 - 10 YEARS)		
Capital Improvements	Cultural Environment	Natural Environment
<ol style="list-style-type: none"> 1. Improve drainage flows and install vegetated bioswales to mitigate erosion/runoff problem areas. 2. Work with County and other agencies as appropriate to establish shuttle/transit services. 3. Install interpretive displays/wayside exhibits. 	<ol style="list-style-type: none"> 1. Continue restoration and maintenance of Hula Complex. 2. Continue restoration and maintenance of lo'i. Design and implement restoration of 'auwai in conjunction with entry complex. 3. Establish the Cultural Gathering Area. 4. Build Hālau Wa'a. 5. Evaluate feasibility of/research potential restoration and development of Hale Interpretive Site (Feature 1600-8) located within entry complex. 6. Restore and maintain other cultural sites such as Lohi'au's House Platform. 	<ol style="list-style-type: none"> 1. Continue work on the Dune System, continuing eastward. 2. Continue loko restoration. 3. Initiate stream restoration work along Limahuli Stream and maintain. 4. Maintain work above.
LONG RANGE (10 - 20 YEARS)		
Capital Improvements	Cultural Environment	Natural Environment
<ol style="list-style-type: none"> 1. Refresh functionality of constructed wetland system at Kē'ē and install additional aeration component. 	<ol style="list-style-type: none"> 1. Continue restoration and maintenance of Hula Complex and other cultural sites. 2. Continue restoration and maintenance of lo'i and loko. 3. Continue expansion of cultural programs. 	<ol style="list-style-type: none"> 1. Clear remaining invasive species. Restore and maintain with natives and Polynesian-introduced species. 2. Continue and maintain work above. 3. Continue expansion of educational programs.

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6.0 References

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