

**Environmental Assessment  
Assessment of Effect**

**Reestablishment of the Historic Scene at  
Pu'ukohola Heiau National Historic Site  
Hawai'i County, Hawai'i**



**The National Park Service**

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**1. PURPOSE OF AND NEED FOR THE PROPOSED ACTION**

# SECTION 1

## PURPOSE OF AND NEED FOR THE PROPOSED ACTION

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### 1.1 INTRODUCTION

This environmental assessment (EA) evaluates the environmental effects of reestablishing the historic scene at the Pu'ukohola Heiau National Historic Site in the town of Kawaihae in the South Kohala region on the island of Hawai'i. This EA has been prepared pursuant to the following regulations and guidelines:

- The National Environmental Policy Act (NEPA) of 1969 (42 USC §4322 et seq.);
- Council on Environmental Quality (CEQ) regulations for implementing NEPA (40 CFR, Parts 1500-1508);
- National Park Service (NPS) Director's Order 12 Conservation Planning, environmental Impact Analysis and Decision Making (NPS/USDOI 2001a); and
- Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, and implementing regulations (36 CFR Part 800).

The NEPA process for the EA is being used to comply with Section 106 of the NHPA. Information in this document is derived from previous studies conducted over the years by the National Park Service in preparation for this project.

### 1.2 PURPOSE AND NEED FOR THE PROPOSED ACTION

The purpose of the proposed action is to reestablish the historic scene on the "Hill of the Whale," by removing to the greatest extent possible structures and facilities that intrude on the historic scene and viewscape of the Heiau. The proposed action would provide for new visitor services in a non-intrusive location and allow for use of the continued use "Hill of



the Whale” for environmental and educational programs with large school and community groups in addition to cultural activities by Native Hawaiian organizations.

Existing temporary NPS visitor contact and administrative facilities intrude on the park’s historic scene, and do not provide adequate facilities for the growing number of educational programs and Native Hawaiian cultural uses.

### 1.3 SIGNIFICANCE OF THE PARK

All heiau and the John Young Homestead have always been of primary importance and significance in the Hawaiian culture. This site was chosen for the construction of the heiau because of its visual alignment with the Kona coast and Maui and because of its elevated position on Pu’ukohola (NPS 2002). The Pu’ukohola Heiau is closely associated with Kamehameha I, who ordered that it be built close to two older heiau, Mailekini Heiau and Hale o Kapuni Heiau. Building this heiau would fulfill the prophecy made by the kahuna, Kapoukahi, who predicted that Kamehameha would gain control of the archipelago without a scratch on his skin if he built a great house for the war god Kuka’ilimoku. Kamehameha himself worked alongside his people and carried rocks to build this heiau (Kirch 1996). Some believe that rocks from as far away as Pololu Valley were brought in for the construction. The Pu’ukohola Heiau was a luakini, which is a human sacrifice heiau, and was dedicated to the war god, Kuka’ilimoku. Kamehameha offered his cousin and archrival Keoua as his principal sacrifice, which established Kamehameha as the sole ruler of Hawai’i island and initiated his campaign to establish a unified Hawaiian Kingdom and nation.

The founding of the Hawaiian kingdom can be directly associated with one structure in the Hawaiian Islands: Pu’ukohola Heiau. Pu’ukohola Heiau is nationally significant for its association with the life of King Kamehameha I and the political unification of the Hawaiian Islands. Pu’ukohola Heiau is designated a National Historic Landmark and is listed in the National Register of Historic Places. In 1972, Pu’ukohola Heiau was established as a unit of the National Park Service (86 Stat. 562) to preserve “in public ownership the historically significant temple associated with Kamehameha the Great and the property of John Young who fought for Kamehameha the Great during the period of his ascendancy to power.

The Mailekini Heiau predated the Pu’ukohola Heiau. Its use was unclear and may have been a luakini and a temple of state where human sacrifices were offered and dedicated to Kuka’ilimoku or an agricultural heiau (NPS 2002). It later became a fortress that was lined with cannons when Kamehameha used western style military tactics to extend his control over the Hawaiian Islands (NPS 2004).

The Hale o Kapuni Heiau is believed to be dedicated to sharks. Chief Alapa’ikupalupalumano was known to sit for hours at a special sitting rock and observe the sharks swimming near the heiau (NPS 2002). Today, the bay area where the temple was once prevalent is known for black-tipped reef shark sightings (NPS 2002).

Near the water’s edge below the temples is the royal courtyard area known as Pelekane. It was the favored site of many ruling chiefs to hold their court (NPS 2002). The John Young

Homestead is northeast of the temples, where remnants of what is probably the first western-styled house constructed in Hawai'i can still be found. This homestead was given to John Young, a favorite council to Kamehameha, for his loyalty to Kamehameha the Great during his ascendancy to power (NPS 2004). Congress authorized the park in August 1972 (86 Stat. 562) "to restore and preserve in public ownership the historically significant temple associated with Kamehameha the Great ... and the property of John Young..."

#### **1.4 PARK PURPOSE AND NEED**

The purpose of the Pu'ukohola Heiau National Historic site is to conserve and protect the three heiau, Pu'ukohola, Mailekini, and Hale o Kapuni, and the surrounding cultural resources, such as the John Young Homestead. While carrying out its mission to conserve and protect the historic integrity of the park, the NPS is required to provide historic interpretation of the park resources to its visitor's at the most effective sites. The park also provides regular access for cultural practitioners to conduct cultural practices and ceremonies at the heiau.

#### **1.5 PROJECT BACKGROUND**

Planning for new visitor use facilities at Pu'ukohola Heiau National Historic Site has been underway for several years. A *Development Concept Plan* (DCP), completed by the National Park Service in 1989, called for the restoration and preservation of the site with the removal of visitor facilities from the "Hill of the Whale" and the construction of a new visitor use facility outside of the heiau viewshed. Recommendations made in the DCP are still valid, and some progress has been made, including constructing a new maintenance facility and a new road to Spencer Beach County Park.

In June of 2001, a planning workshop at the park further defined the project and provided guidance for subsequent actions. During this workshop it was agreed that while the years 1790 to 1835 were originally identified as the period of significance for the heiau, secondary periods of significance might be considered. Continuum of use is typically a consideration in cultural landscapes. Even though a set date was established as the period of significance for the park, the landscape does not have to be static, as evidenced on the "Hill of the Whale," where traditional cultural ceremonial use continues today. There is general agreement that although existing temporary structures located on the "Hill of the Whale" have no significance, the current use of the "Hill of the Whale" for Hawaiian cultural activities is considered significant and something that the community desires to continue.

##### **1.5.1 Planning Process**

Throughout the planning process, the NPS has worked closely with individuals, groups, and agencies that have shown interest in the development of the National Historic Site. Plans for the park have been developed with input from interested parties through planning workshops.

##### **1.5.2 Scoping**

Reestablishing the historic scene of the park to times of Kamehameha the Great has been the goal of NPS. NPS conducted external scoping to involve the public with the planning

process for the development of the National Historic Site. Internal and external scoping has been ongoing process since the master plan was developed in 1970. External scoping included input from local agencies and Native Hawaiian groups and in 2002 a Value Analysis was conducted by the NPS. In 2003 an interdisciplinary team completed an environmental screening form to determine potential effects of the proposed action.

In February 2003, a press release was issued to the media and a letter of notification was sent to the State Historic Preservation Officer and the Hawai'i Department of Transportation (HDOT), Harbors Division, informing them of the proposed project. Scoping letters were also sent to members of the community. Section 7 contains a list of different agencies and individuals that were consulted for this EA. There was no response made to the press release.

## 1.6 ISSUES

Impact issues associated with this proposed action included the excessive intrusion of current NPS facilities onto the "Hill of the Whale" and subsequent impact to the cultural landscape and visitor experience. Additionally, the cultural practice of Native Hawaiians was being impacted by inadequate facilities on the "Hill of the Whale" and removal of all facilities would have impact on the cultural practices.

## 1.7 IMPACT TOPICS

Specific impact topics were identified through internal and external scoping efforts. Impact topics also were identified based on federal laws, regulations, and executive orders; 2001 NPS Management Policies; and NPS knowledge of limited or easily impacted resources. For the purpose of analysis the project area is defined generally as the land around the maintenance facilities, all park lands on the coastal side of Kawaihae Road, Highway 270, which is between the Spencer Beach Park access road and the Hale o Kapuni Heiau. A brief rationale for the selection of each impact topic is provided below, as is the rationale for dismissing specific topics from further consideration.

### 1.7.1 Impact Topics Identified for Further Analysis

Those resources on which the proposed project would have a moderate or greater effect are included in the EA for further analysis. These resources include geology and soils, vegetation, water resources, vegetation, wildlife, visitor experience and enjoyment, and cultural resources, visual resources, Hazardous Materials and Public Health and Safety (lead and asbestos) and traffic and circulation. Cultural resources are further subcategorized as archaeological resources, cultural landscape resources, historic resources, and ethnographic resources.

**Geology and Soils.** Geological resources include topography, stratigraphy, soils and sediments, seismic hazards, slope stability, earthworks, mineral resources, unique landforms, and geological conditions that may limit development or that influence contaminant distribution and migration or that influence groundwater occurrence. Impact analysis and conclusions are based on the possible effects to geological resources on the on-site inspection of known and potential geological resources within the park. Map locations or

sensitive soils were compared with locations of proposed effects were based on previous projects with similar soils and recent studies.

**Water Resources.** Water Resources include surface water and ground water. Surface water resources include streams and watersheds, springs, ponds, lakes, reservoirs, dams, estuaries, bays, and oceans. Ground water resources include basin flow, sustainable yield, beneficial uses, domestic and industrial wells, and water quality

**Vegetation.** Vegetation is a biological resource that includes terrestrial plant species. Concerns for this resource include rare or unusual vegetation, unique or important wildlife or wildlife habitat, and introduction or promotion of nonnative species. All information on vegetation and vegetative communities potentially impacted in the area of potential effect was compiled.

**Wildlife.** Wildlife is a biological resource that includes all land animals. Concerns for this resource include unique or important wildlife or wildlife habitat and introducing or promoting nonnative species. The NPS Organic Directs NPS to conserve wildlife unimpaired for future generations. According to NPS Management Policies 2001, the restoration of native species is a high priority (Sec. 4.1). Information on wildlife at Pu'ukohola Heiau National Historic Site was taken from park documents and records. Information was also provided by NPS staff, the U.S. Fish & Wildlife service and the Hawai'i Department of Natural Resources.

**Visitor Experience and Enjoyment.** Under the National Park Service Organic Act (16 USC 1), the purpose of NPS is to conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such a manner and by such means as will leave them unimpaired for the enjoyment of future generations. It is a goal of NPS to ensure that visitors safely enjoy and are satisfied with the availability, accessibility, diversity and quality of park facilities, services, and appropriate recreational activities. Public scoping input and observation of visitation patterns combined with assessment of what is available to visitors under current management were used to estimate the effects of the actions in the various alternatives in this document. The potential for change in visitor use and experience proposed by the alternatives was evaluated by identifying projected increases or decreases in recreational activity and other visitor uses, and determining whether or how these projected changes would affect the desired visitor experience and to what degree and for how long. Public services, such as fire protection, police protection, and emergency medical services are considered under this resource topic.

**Cultural Resources.** As defined by the National Park Service, a cultural resource is an aspect of a cultural system that is valued by or significantly representative of a culture or that contains significant information about a culture. A cultural resource may be a tangible entity or a cultural practice. Tangible cultural resources are categorized as districts, sites, buildings, structures, museum objects, and ethnographic resources for NPS management purposes (DO-28, 1998). Archaeological resources, cultural landscapes, historic structures, and ethnographic resources have been identified within the area of potential effect for this

undertaking and are included in this environmental assessment. These resources are further defined below.

**Archaeological Resources.** An archaeological resource is defined by the National Park Service as any material remains or physical evidence of past human life or activities that are of archaeological interest, including the record of the effects of human activities on the environment. Archaeological resources are capable of revealing scientific or humanistic information through archaeological research (DO-28, 1998). An intensive archaeological survey of the area of potential effect for the proposed project was conducted by the National Park Service in the summer of 2003. Prehistoric and historic archaeological resources that may meet eligibility criteria for listing in the National Register of Historic Places were identified within the area encompassed by the proposed project area locations. Therefore, archaeological resources are included for analysis in this environmental assessment.

**Cultural Landscape.** Cultural landscapes are defined by the NPS as a geographic area, including both cultural and natural resources and the wildlife or domestic animals therein, associated with a historic event, activity, or person or exhibiting other cultural or aesthetic values (DO-28, 1998). The National Park Service conducted a cultural landscape inventory at Pu'ukohola Heiau in 2001. Preliminary information from this inventory indicates that Pu'ukohola Heiau is one cultural landscape composed of three major features; therefore, cultural landscapes are included in this environmental assessment.

**Historic Structures.** Historic structures are defined by the NPS as a constructed work, usually immovable by nature or design, consciously created to serve some human activity (DO-28, 1998). Pu'ukohola Heiau is a cultural landscape composed of three features or historic structures. There are three heiau, the area around the bay that was the residence of Kamehameha I and the Royal Court known as Pelekane, and the John Young Homestead. In 1973 a National Landmark District Nomination was prepared for Pu'ukohola Heiau; therefore, historic structures are included in this environmental assessment.

**Ethnographic Resources.** The NPS defines an ethnographic resource as a site, structure, object, landscape, or natural resource feature assigned traditional legendary, religious, subsistence, or other significance in the cultural system of a group traditionally associated with it (DO-28, 1998, p. 181). Ethnographic resources that are eligible for listing on the National Register of Historic Places are known as Traditional Cultural Properties (TCP). It was determined through the consultation process that no traditional cultural properties were identified by Native Hawaiian groups as existing within the proposed project area at the current time. To date, no ethnographic overview and assessment has been conducted at the national historic site, however, anecdotal and documented information about current use (NPS, 1972) does state that the site is currently used by the Hawaiian community for ceremonial, recreation (fishing), and cultural events. Planning for visitor use facilities at Pu'ukohola Heiau has been underway for several years and has involved representatives from native Hawaiian organizations. During these consultations, it was agreed that the current use the "Hill of the Whale" for Hawaiian cultural activities was important and

something that the local community desires to continue in the future. The National Park Service is continuing to consult with native Hawaiian organizations in the exchange of information regarding the proposal to reestablish the historic scene at the “Hill of the Whale.” Because cultural traditions, contributing to the nation’s cultural vitality, continue to be practiced at the “Hill of the Whale,” ethnographic resources are included in this environmental assessment.

**Visual Resources.** Visual and aesthetic resources include cultural modifications, land forms, water surfaces, and vegetation. These features make up the aspects of an area or project that determine its visual character and the manner in which it is viewed by people. The analysis inventories existing visual resources, assesses any changes from existing conditions that could result from the project, and determined the sensitivity of public view points, the effect of light and glare on the visual environment should also be considered.

**Hazardous Materials and Public Health and Safety (Lead and Asbestos).** Hazardous materials resources include hazardous materials management, hazardous waste management, clean up of hazardous waste sites, solid or hazardous waste generation, storage, transportation, or disposal, asbestos, polychlorinated biphenyl, storage tanks and oil/water separators, lead-based paint, ordnance, radon, pesticides, and biohazards.

**Traffic and Circulation.** Traffic and circulation refers to the movement of vehicles and pedestrians along and adjacent to roads. Freeways and major roads are under the jurisdiction of the state through the HDOT; other streets and roads are under the jurisdiction of the counties. Roadways range from multilane road networks with asphalt surfaces to unpaved plantation roads. Traffic conditions in Hawai‘i vary depending on location but are typically over capacity during peak hours, resulting in significant traffic delays. These traffic delays occur in urban areas with multilane roads as well as in less developed areas with only two-lane roads. There are several congested areas in Kailua-Kona, but the periods of congestion are short. Because of the park’s remote location, traffic congestion on this portion of State Highway 270 and Spencer Road is uncommon.

#### 1.7.2 Impact Topics Dismissed from Further Analysis

Those physical, natural, or cultural resources that are exposed to negligible or minor effects are not included in the analysis.

**Geohazards.** Because Hawai‘i still has active volcanoes, the island experiences the most earthquake activity on record, both in number and in magnitude, in the Hawaiian Islands (Yuen & Associates 1990). In fact, the island experiences thousands of earthquakes each year, many too small to be detected except by instruments. Most Hawaiian earthquakes are directly related to volcanic activity, either during an eruption or from near surface magma that does not erupt (USGS 1997c). A magnitude 7.2 earthquake in 1975, which originated beneath Kilauea, was the largest earthquake to originate in Hawai‘i during the past century. Hazards associated with earthquakes include ground shaking, liquefaction, landslides, and tsunamis. Hawai‘i is in an area in which there is a 10 percent probability that an earthquake

will cause a ground acceleration of more than 40 to 60 percent of gravity in the next 50 years (USGS 2001).

The USGS has divided the island of Hawai'i into Lava Hazard Zones, based on the probability of coverage by lava flows. Zone 1 has the highest risk and Zone 9 has the lowest. The park is within a Zone 8 classification (USGS 1997b). There will be no direct adverse effects as a result of geologic hazards and effects would be less than significant. The Kawaihae shoreline is subject to tsunamis originating from earthquakes in Japan, the Aleutian Islands, and the South American coast and within the Hawaiian Islands. Approximately 90 percent of the park lies within the tsunami lowland zone. Civil Defense alerts are issued several hours prior to the estimated arrival of a tsunami specifying evaluation routes and procedures for these tsunami zone areas. For tsunamis originating locally, there are no effective evacuation procedures or warning systems (USDOJ 1994). Because the proposed action would not increase or decrease the risk from geological hazards in the park, the topic was dismissed from analysis.

**Air Quality.** Air quality in Hawai'i is generally one of the highest in the nation. One reason for this has been attributed to the fact that there are no influences from pollutants generated in neighboring states (HDOH 2001). The closest air monitoring station to the Pu'ukohola Heiau National Historic Site is located approximately 38 miles south in Kona. Levels of each criteria pollutant monitored at all monitoring stations throughout Hawai'i, including the Kona station, were below national and state ambient air quality standards and are therefore in attainment.

The primary sources of air quality effects would be construction, demolition, renovation, and relocation efforts and vehicle emissions associated with constructing the facility. Each of these sources would be short-term and negligible. The proposed project would result in negligible adverse, short-term effects on air quality. The emissions generated during the operation of the facilities would be quickly dissipated by prevailing winds and would not appreciably exceed the existing emissions associated with the facilities, or exceed any air quality standards either locally or in the region. Because the impact to air quality would be negligible, the impact topic was dismissed from consideration.

**Soundscapes.** The proposed project would have minor adverse, short-term effects due to construction activities and negligible adverse, long-term effects due to operational activities at the park. The primary sources of noise under the proposed action would be from construction activities and bus and private vehicle traffic to and from the parking lot. Since noise receptors are from 250 feet to 800 feet away and noise dissipates quite rapidly with distance, no appreciable impact from noise is expected. Because the effects of noise are anticipated to be minor short term, and negligible long-term the impact topic was dismissed from analysis.

**Stream flow characteristics.** A perennial stream is one in which water is carried, no matter how little the volume, at all times of the year (Yuen & Associates 1990). The one borderline perennial stream on the inland region of the West Mauna Kea sector is the Waikoloa Stream,

which becomes an intermittent stream closer to the coastline. Because of lack of precipitation in the project area, only intermittent streams are found. During periods of little to no rainfall, which is common in the project area, the low flow characteristic of a stream primarily depends on base flow from groundwater influence (Oki 2003). The gulches carry storm runoff, but most of the time they remain dry (Yuen & Associates 1990). Because little or no impact on water resources are predicted from this project the topic was dismissed from analysis.

**Marine or Estuarine Resources and Unique or Important Marine Species or Marine Habitat.** The coastal portion of the project area is in close proximity to the Hawaiian Islands Humpback Whale National Marine Sanctuary waters (composed of five separate areas abutting six of the major islands). Designated Hawaiian Island Humpback Whale National Marine Sanctuary waters encompass the entire western portion of the island of Hawai'i and include waters just outside and surrounding Kawaihae Harbor. Any adjacent coastline areas in the region of influence (ROI) may provide shore habitat for some marine wildlife, such as sea turtles and monk seals.

There is a coral reef area of management concern (known as a "hot spot") in the project area. Located at Kawaihae Harbor, this reef is identified as at risk both from extensive development at the commercial harbor and from recent and continued development at the small boat harbor. While the main issue is harbor construction, other causes of decline for this reef system include interruption of long-shore transport due to harbor development, consequent siltation of Pelekane Bay, and close proximity to important cultural sites that causes increased recreational use and human presence (CRAMP 2003). In addition to this reef identified as a management concern, there are other coral reefs in the coastal waters. One that is well known is Puako reef, approximately 3 to 4 miles from Kawaihae Harbor.

Marine wildlife occurs in both the near shore and offshore regions of Pacific waters. The harbor areas and adjacent coastline areas also provide habitat for marine wildlife. Kawaihae Harbor is on the leeward side of the island where waters are calmer and more protected. These waters provide good habitat for humpback mother and calf pods and for resting dolphin pods. Distribution and abundance of marine mammals and sea turtles in Pacific waters vary seasonally and spatially; that is, numbers and types of animals may vary in the near shore versus offshore regions, as well as by the time of year (Calambokidis et al. 1997; Leatherwood et al. 1982). Many marine mammal species occur year-round in Pacific waters. All marine mammal species are protected under the Marine Mammal Protection Act, regardless of whether they have additional protection under the Endangered Species Act (ESA).

Because the project is not close enough to marine or estuarine resources to have more than a negligible impact, the topic was dismissed from analysis.

**Floodplains or Wetlands.** Though developers have drained most of the once numerous brackish pools along the leeward coasts, the ones that remain are often havens for rare and diverse biota (NPS/USDOJ undated). There is one such pool in the project area, which is



located in the northern end of the park, but it has not been thoroughly surveyed for sensitive species (NPS/USDOJ undated). This brackish water pond would continue its eutrophication with or without any action taken by the NPS.

Porous lava flows and absence of streams minimize the flood hazard from upland areas. Near the sea there is an extreme hazard from high wave flooding during the winter and from all major tropical storms coinciding with high tides (USDOJ 1994). The Pu'ukohola Heiau Park is sited within a hazardous flood zone, but due to scarce rain, flooding is only a concern in heavy rain events. Because the project would not impact wetlands or alter the floodplain, the impact topic was dismissed.

**Land Use.** The entire Pu'ukohola Heiau National Historic Site encompasses approximately 82 acres, 60 of which are federal lands and 22 of which are state-owned lands. The NPS manages all of these lands under cooperative agreements. The lands would continue to be used for conservation and preservation of the heiau and cultural artifacts and sites that are located on the lands, as well as for educational and recreational purposes.

On the southern edge, the park is bordered by an access road that is currently used for the adjacent Spencer County Beach Park and will also be the primary point of access for this proposed project. The state of Hawai'i owns the Spencer Beach parklands. To the east and northeast of the park are lands held in trust by the Queen Emma Foundation for the Queen's Medical Center; these are mostly barren and undeveloped lands. The western perimeter of the park is bordered by the Pacific Ocean. Park boundaries extend six acres out into the water. The state of Hawai'i owns Kawaihae Harbor, just north of the northern tip of the park boundaries (NPS/USDOJ 1989).

Declared as a National Historic Landmark in 1962 and listed on the National Register of Historic Places in 1966. Because land use of the project area will not change, and the lands will remain as park lands the topic was dismissed from analysis.

**Socioeconomics and Environmental Justice.** Socioeconomic analysis investigates changes in employment, income, business volume, population characteristics, and housing. It also includes other types of economic indicators, such as schools, government services, government finances, environmental justice, health care, community services, and social character.

At the time of the 1990 census, the population of the Kohala district was approximately 41,333. The city's population increased to approximately 53,200 in 1998 but declined between 1998 and 2000 to 44,712 (US Census 2000). South Kohala has a diverse ethnic population, and most inhabitants are minority (US Census 2000).

The per capita income (PCI) of households in the county of Hawai'i in 1999 averaged \$18,791, with no additional supplemental earnings. This was lower than the state of Hawai'i's PCI of \$27,851 and lower than the national PCI of \$29,469 (DBEDT 2000).

In 2000, the Hawai'i County civilian labor force totaled about 70,000 (DBEDT 2002). The island's unemployment rate averaged 6.7 percent in 2000, higher than the state of Hawai'i's average unemployment rate of 4.3 percent and higher than the national unemployment rate of 4.0 percent.

With a budget of \$543,195 in 1999, the park provides work for a small permanent staff of 9 people, 1.5 FTE of seasonal staff, and 2 cooperating association employees who work 40 hours per week combined (NPS/USDOJ undated). This figure is not expected to change as a result of the proposed project.

Because the construction associated with the proposed action would only have negligible beneficial, short-term effects on employment, income, and business volume in South Kohala the topic was dismissed from analysis.

**Indian Trust Resources.** Secretarial Order 3175 requires that any anticipated effects to Indian trust resources from a proposed project or action by Department of Interior agencies be explicitly addressed in environmental documents. The federal Indian trust responsibility is a legally enforceable fiduciary obligation on the part of the United States to protect tribal lands, assets, resources, and treaty rights, and it represents a duty to carry out the mandates of federal law with respect to American Indian and Alaska Native tribes.

There are no Indian trust resources in Pu'ukohola Heiau National Historic Site. The lands comprising Pu'ukohola Heiau National Historic Site are not held in trust by the Secretary of the Interior for the benefit of Indians due to their status as Indians. Therefore Indian trust resources was dismissed as an impact topic in this environmental assessment.

**Museum Objects.** The National Park Service defines a museum object as a material thing possessing functional, aesthetic, cultural, symbolic, and/or scientific value, usually moveable by nature or design (NPS Director's Order – 28: Cultural Resource Management 1998). Because there are no museum collections in the proposed project areas, museum objects was dismissed as an impact topic in this environmental assessment.

**Rare or Unusual Vegetation, Species of Special Concern.** Section 7 of the Endangered Species Act requires a federal agency to ensure that its actions would not jeopardize the continued existence of an endangered or threatened species or destroy or adversely modify critical habitat. Consultation with the US Fish and Wildlife Service is required if a project proponent believes that terrestrial endangered or threatened species may be present in the area affected by a proposed project and that implementing that project would likely affect the species.

The USFWS was contacted to identify potential special status species likely to be present in the area; the USFWS response is provided in Appendix A. Other reference material was obtained from the NPS and the University of Hawai'i at Manoa. A resource used to develop the sections was "Vegetation Management Strategies for Three National Parks on Hawai'i Island", by Linda W. Pratt, 1999.

There are no special status plants or critical habitat for such in the project area (USFWS 2003). The topic was dismissed from analysis.

**Unique or Important Wildlife Habitat.** No threatened or endangered wildlife species or critical habitat exists in the project area (USFWS 2003). There is one Migratory Bird Treaty Act-protected species, pacific golden plover, also known as the kolea (*Pluvialis dominica*), in the project area (Draft RMP, undated). Because the proposed action was not anticipated to impact any unique or important wildlife habitat, the topic was dismissed.

**Introduce or promote nonnative species.** Development, heightened human activities, fire, and the introduction of nonnative species have been the main causes of habitat degradation and loss and the subsequent loss and endangerment of native species. During the last century, intentional and incidental introduction of nonnative species has increased exponentially. Nonnative introductions are estimated to occur now at a million times the natural rate (Juvik 1998). Nonnative species disrupt ecosystems by consuming or destroying native species and habitats, spreading diseases, and out-competing native species for local resources. There have been human-induced flora and fauna extinctions dating back thousands of years to the beginning of human use of the Hawaiian Islands, but the extinction rate in Hawai'i has accelerated over the past century. The hardest hit terrestrial species are birds, snails, and plants. Of the known Hawaiian species, approximately 70 percent of the land snails are extinct, 40 percent of the birds are extinct, with another 45 percent the species listed by the US as endangered, and roughly 10 percent of the vascular plants are extinct, with an additional 20 percent considered at risk of becoming extinct in the near future (USGS 1999). The area of potential effect is already highly disturbed and vegetation in the area is composed of mostly alien species. Because the proposed action is not anticipated to introduce invasive species the topic was dismissed from analysis.

**Energy Resources.** The Hawai'i Electric Light Company provides electrical power to the project site. As part of the Department of Interior and Department of Energy's sustainable design initiative and the "Green Energy Parks Program," building designs for the Visitor Center will make optimal use of the natural environment by using designs that will optimize temperature control by using natural sun control and natural ventilation (NPS/USDOJ 2002). Because demand for energy will not increase, and designs will make more efficient use of energy used, the topic was dismissed from analysis.

**2. DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES**

## SECTION 2

# DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

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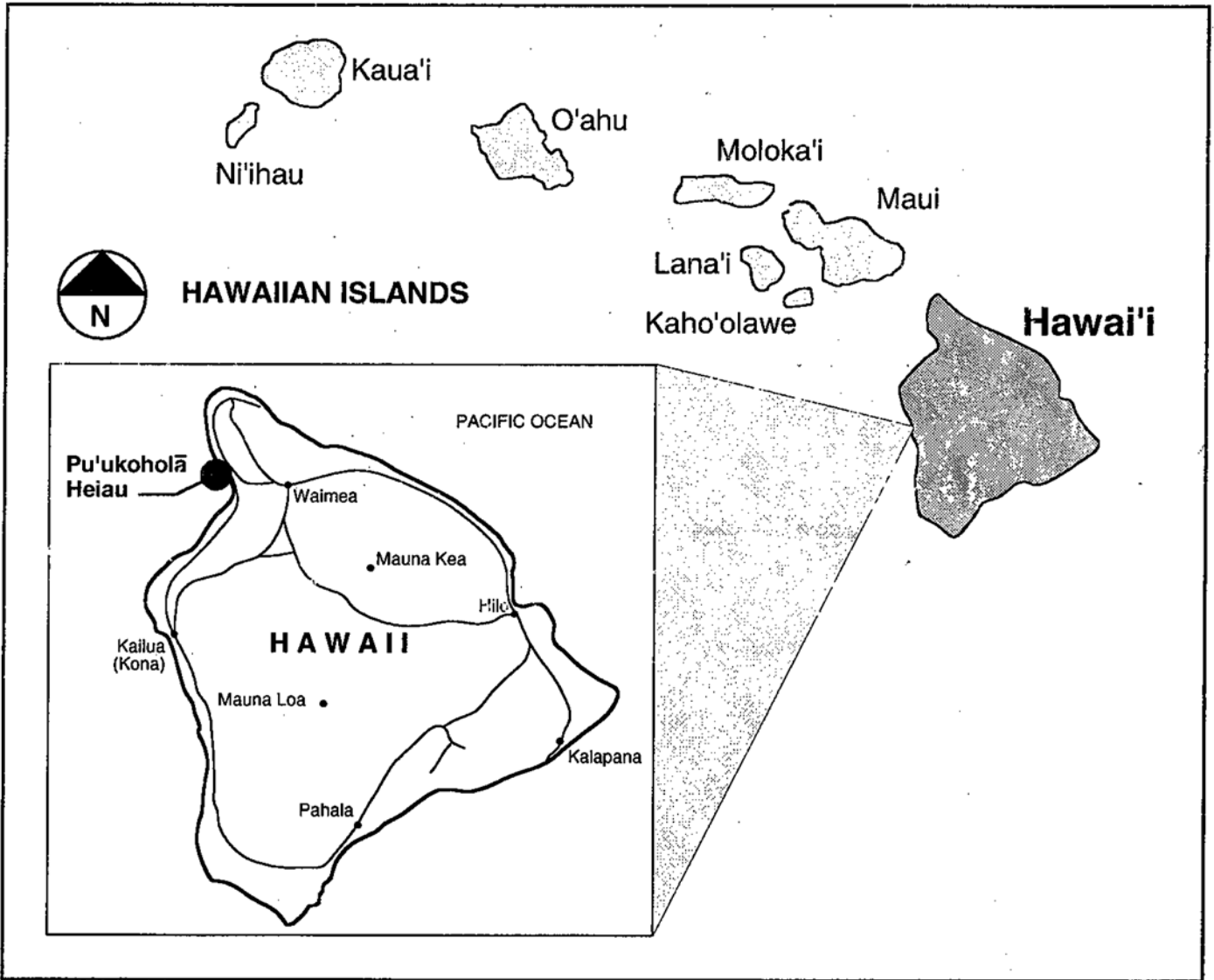
### 2.1 INTRODUCTION

Alternatives were developed through internal NPS scoping and through public involvement. This EA evaluates three alternatives, the No Action Alternative, the Preferred Alternative, and the Removal from the “Hill of the Whale” Alternative. Pu‘ukohola Heiau National Historic Site is near Kawaihae, on the South Kohala Coast of the island of Hawai‘i. The national historic landmark is surrounded by 82 acres of land. On these lands are Pu‘ukohola Heiau (temple), Mailekini Heiau, the John Young Homestead, Pelekane, the remnants of the Hale o Kapuni Heiau, and other structures and features. The Pu‘ukohola Heiau has been associated with Kamehameha I and his conquering and unification of all of the Hawaiian Islands under one rule and the establishment of the Hawaiian Kingdom (figures 2-1 and 2-2).

In order for the action alternatives to meet the purpose of and need for the proposed action, they would need to include the following requirements. These requirements were developed through internal scoping with NPS staff.

- New Visitor Center, access road, and parking lot would be developed at a location north of the new Spencer Beach Road.
- New interpretive trails would be linked to the coastal trail and existing heiau trail.
- The existing trail from current administrative buildings to the heiau would be removed and revegetated, and replace with another trail further to the south reconnecting the new Visitor Center and the site of the old visitor center.
- Utilities (water pipes, power lines, telephone lines) would be buried.

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Pu'ukoholā Heiau National Historic Site is located on the island of Hawaii.

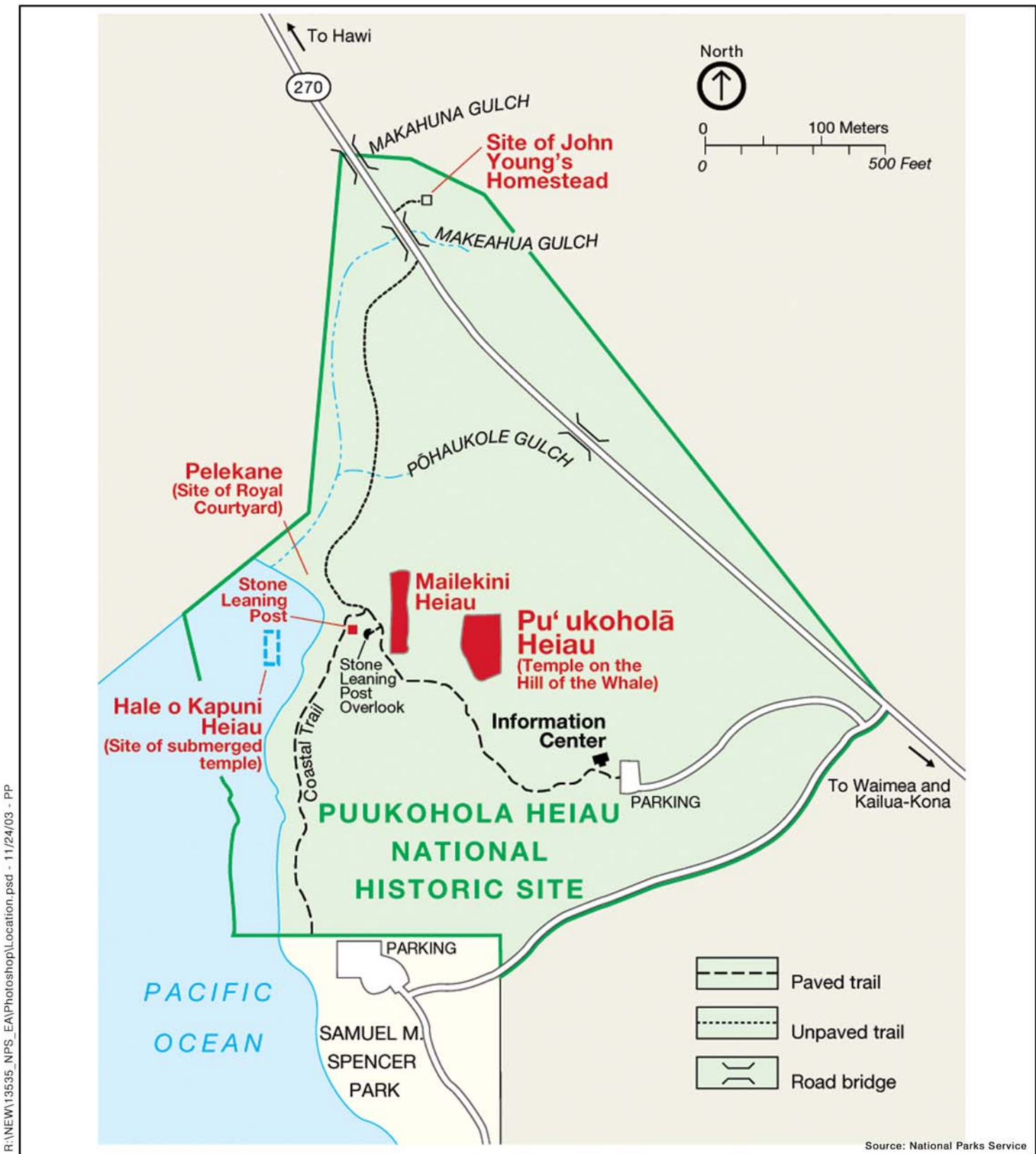
## Project Vicinity

Hawai'i, Hawai'i

### Figure 2-1



Tetra Tech, Inc.



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Source: National Parks Service

Boundaries of Pu'ukoholā Heiau National Historic Site.

## Project Location

Hawaii, Hawaii

## 2.2 ALTERNATIVE A (NO ACTION ALTERNATIVE)

CEQ regulations prescribe that the No Action Alternative be evaluated because it serves as a benchmark against which project alternatives can be measured. Under the No Action Alternative, the current visitor center, administrative buildings, and surrounding trails would remain in use and would continue to be the main means of access to cultural sites. The NPS would continue to implement current management practices and maintenance.

## 2.3 ALTERNATIVE B (PREFERRED ALTERNATIVE)

### 2.3.1 Proposed Construction

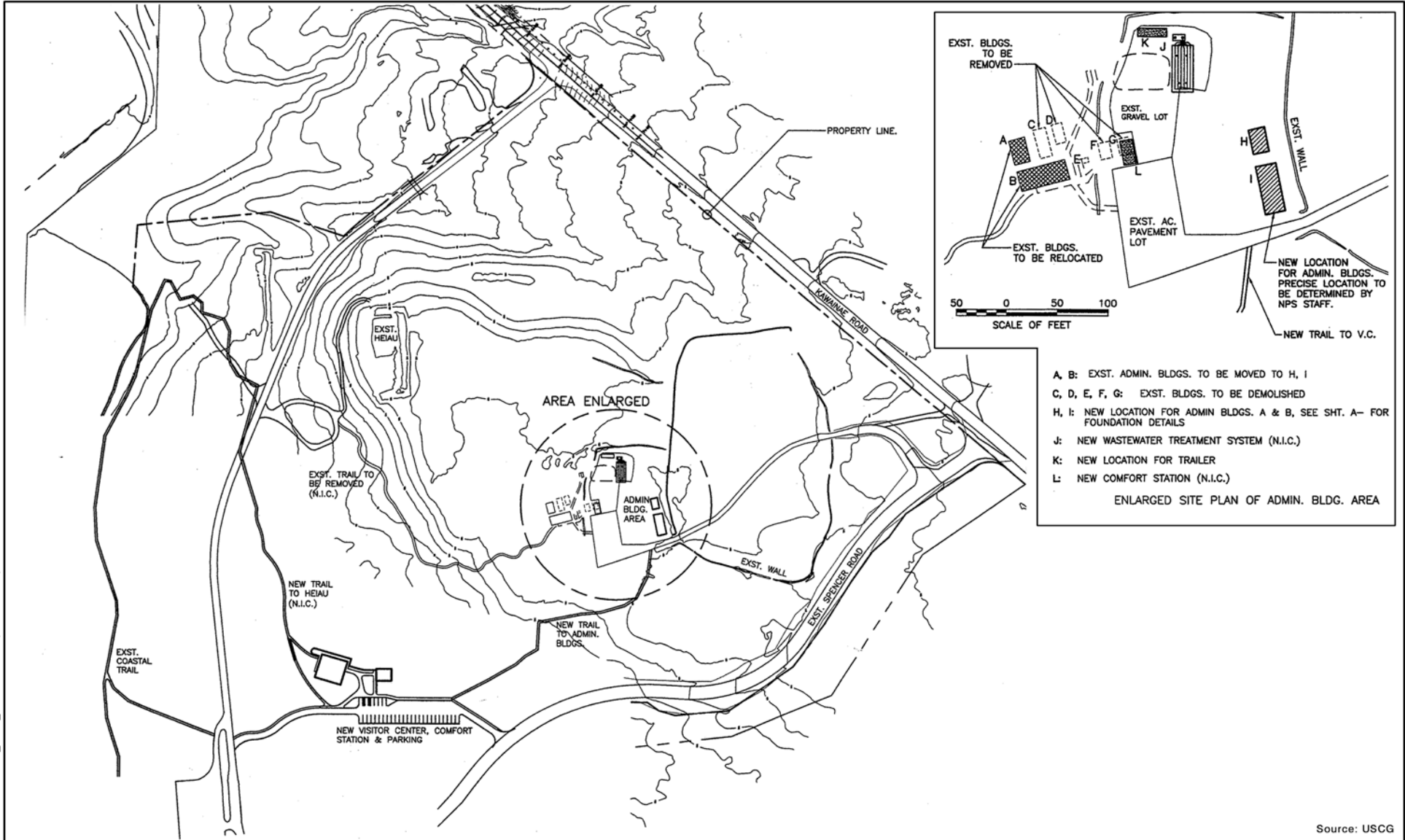
This alternative to reestablish the historic scene at the Pu'ukohola Heiau would consist of constructing a new Visitor Center and connecting trails, relocating two administrative buildings and landscaping, removing four of the existing administrative buildings and constructing a new comfort station and septic system adjacent to the existing administrative building.

The new Visitor Center would be constructed just north of the new Spencer Beach Road and off of the "Hill of the Whale" (Figure 2-3). The Visitor Center would include an information kiosk, exhibit area, storage rooms, covered orientation/viewing area, cooperating association sales area, auditorium, lighting, drinking fountains, benches, restrooms, landscaping, air conditioning, secondary library, and signage. The Visitor Center will cover an area of approximately 10,000 square feet, 19.5 feet high. A new thirty-one stall parking lot (accommodating tour buses and cars) and access road would be located adjacent to the new Visitor Center. The parking lot will cover an area of approximately 13,300 square feet. This site is not subject to flooding and is above the tsunami inundation zone.

The structure of the Visitor Center would be built into the hill using metal and concrete framing. The outside walls would be covered with stone veneer on the sides and would have a front wall made of glass that would allow for full view of the Pacific Ocean. The roof would be contoured to blend in with the current landscape form. Three new interpretive trails would be constructed and linked to the new facility (Figure 2-3). One trail would run parallel to Spencer Road, from the proposed site for the relocated administrative buildings, and would connect to the eastern end of the parking lot for the proposed Visitor Center. The second trail would be built from the northwestern end of the Visitor Center, would run to the area used for cultural practices and ceremonies, and would connect to the existing trail that fronts Pu'ukohola Heiau itself. The third trail would be built to connect the coastal trail back to the proposed Visitor Center and the western edge of its new parking lot creating a nice interpretive / hiking loop trail.

A sewage lift station and lines for water, power, information technology, and telephones would be installed and buried. Waste from the new restrooms would be pumped up to the new septic tank and leach field, which would be located northeast of the proposed location of the relocated administrative buildings.





Enlarged site map.

# Project Site Map

Hawaii, Hawaii

Figure 2-3

The buildings slated for relocation are the two western-most buildings. The current visitor center/administration building itself and the northwestern-most building directly behind it would be retained as administrative, law enforcement, and general management offices. These two buildings would be relocated just west of the existing rock wall that lies east of the facilities. A new comfort station, septic system, and leach field would be installed near the relocated administration buildings. The comfort station will be approximately 400 square feet, 13.5 feet high, and located on the site of the buildings to be demolished (Figure 2-3). The building will likely include a lava rock veneer and corrugated metal roof to match adjacent structures. A concrete pad of approximately 214 square feet will be constructed in front of the comfort station. A septic system serving the comfort station and the new Visitor Center will be constructed near the comfort station. The system requires approximately 840 square feet for the leach field, a lift station, and trenching from the new Visitor Center and comfort station. Staging will occur on disturbed areas near the administrative buildings.

The remaining storage structures to the northeast of the current Visitor Center would be demolished and/or removed from the premises, and the existing trail that leads from the old visitor center site to the base of the Pu'ukohola Heiau would be removed and revegetated.

The landscaping surrounding the current visitor center includes native flora, a number of reintroduced threatened and endangered species, and trees and plants that have been dedicated over the years through cultural practices and ceremonies. Some of the plants would be transplanted and used in the landscaping for the proposed Visitor Center; others would be protected in place. Some of the trees north of the current parking lot would be removed or transplanted. None of these trees slated for transplant or removal have special status or are sensitive in nature.

#### **2.4 ALTERNATIVE C**

Under Alternative C all existing park headquarters development, including the visitor center, the administrative buildings, surrounding landscape, parking lot, portable toilets, outbuildings, access road, and trails would be removed to the base of the "Hill of the Whale." The "Hill of the Whale" would be restored to the historic time of Kamehameha I and its period of significance.

A new visitor center facility similar to that described under Alternative B, including the parking lot, would be constructed at a location just north of the new Spencer Beach Road. Two new interpretive trails would be constructed. One trail would be built from the northwestern end of the new visitor center to the existing trail that fronts Pu'ukohola Heiau itself. The second trail would be built to connect the existing coastal trail back to the proposed visitor center and the western edge of its new parking lot creating an interpretive / hiking loop trail. A new septic system would be installed similar to Alternative B but in a location near the new visitor center which will be within 250 yards of the ocean.

After the buildings and other structures are removed from their current location, disturbed areas would be restored through grading and the area abandoned from future use. Alien

vegetation similar to majority of the park area will be allowed to naturally return. The trail from the existing administrative area to the wooden altar fronting Pu'ukohola heiau would be obliterated.

## **2.5 MITIGATION FOR THE ACTION ALTERNATIVES**

Mitigation measures are specific actions designed to minimize, reduce, or eliminate effects of alternatives and to protect National Park resources and visitors. Monitoring activities are actions to be implemented during or following construction. Unless otherwise noted, actions required as a result of permitting will be implemented under the action alternatives and not considered a mitigation measure. These measures are assumed in the analysis of environmental consequences for the resource to which they apply (Section 4).

### **2.5.1 Geological Resources**

Mitigation measures include the use of water trucks for spraying down loose soils to minimize the loss of soil by limiting erosion.

### **2.5.2 Biological Resources**

With the construction of the new facilities, added stress would be placed on the environment. To mitigate the added stress on biological resources, NPS staff would practice and enforce best management practices, including not smoking in and around grassy areas so as to prevent wildfires, posting additional signs around the Visitor Center reminding visitors to pick up refuse along trails, and replanting native plants in areas that are appropriate and consistent with the historical and cultural uses of the area. Nonnative plants will be controlled around important archaeological sites and invasive or noxious plants will be eradicated over time. Because the ultimate goal is for the vegetation to be consistent with the historical landscape of the park, native plants will be planted either to augment their current populations in the park or to reintroduce a species formerly present. Visitors should also be alerted to the sensitivity of the brackish pond area during park orientation talks and informational displays.

### **2.5.3 Cultural Resources**

Re-establishing the historic scene at Pu'ukohola Heiau in the action alternatives would be in accordance with *The Secretary of the Interior's Standards for the Treatment of Historic Properties*. The National Park Service would, to the maximum extent possible, design and construct project elements to avoid effects and minimize harm to cultural resources. Cultural features would be monitored during the construction of the proposed facilities, including trails and buildings. If during construction, previously undiscovered archeological resources are discovered, all work in the immediate vicinity of the discovery would be halted until the resources could be identified and documented and an appropriate mitigation strategy developed, if necessary. In the unlikely event that human remains, funerary objects, sacred objects or objects of cultural patrimony are discovered during construction, provisions outlined in the Native American Graves Protection and Repatriation Act of 1990 would be followed.

## 2.6 PERMIT REQUIREMENTS

- No permits would be required for the No Action Alternative. The following approvals and permits from jurisdictional agencies will be required before Alternative B or Alternative C could be implemented. Hawai'i Department of Health, Environmental Management Division, Clean Water Branch-Water Quality Certification, pursuant to Section 410 of the Clean Water Act.
- Hawai'i Department of Health, Environmental Management Division, Clean Water Branch-General Construction Storm water Permit for authorization to discharge storm water associated with construction activity, under the National Pollutant Discharge Elimination System.

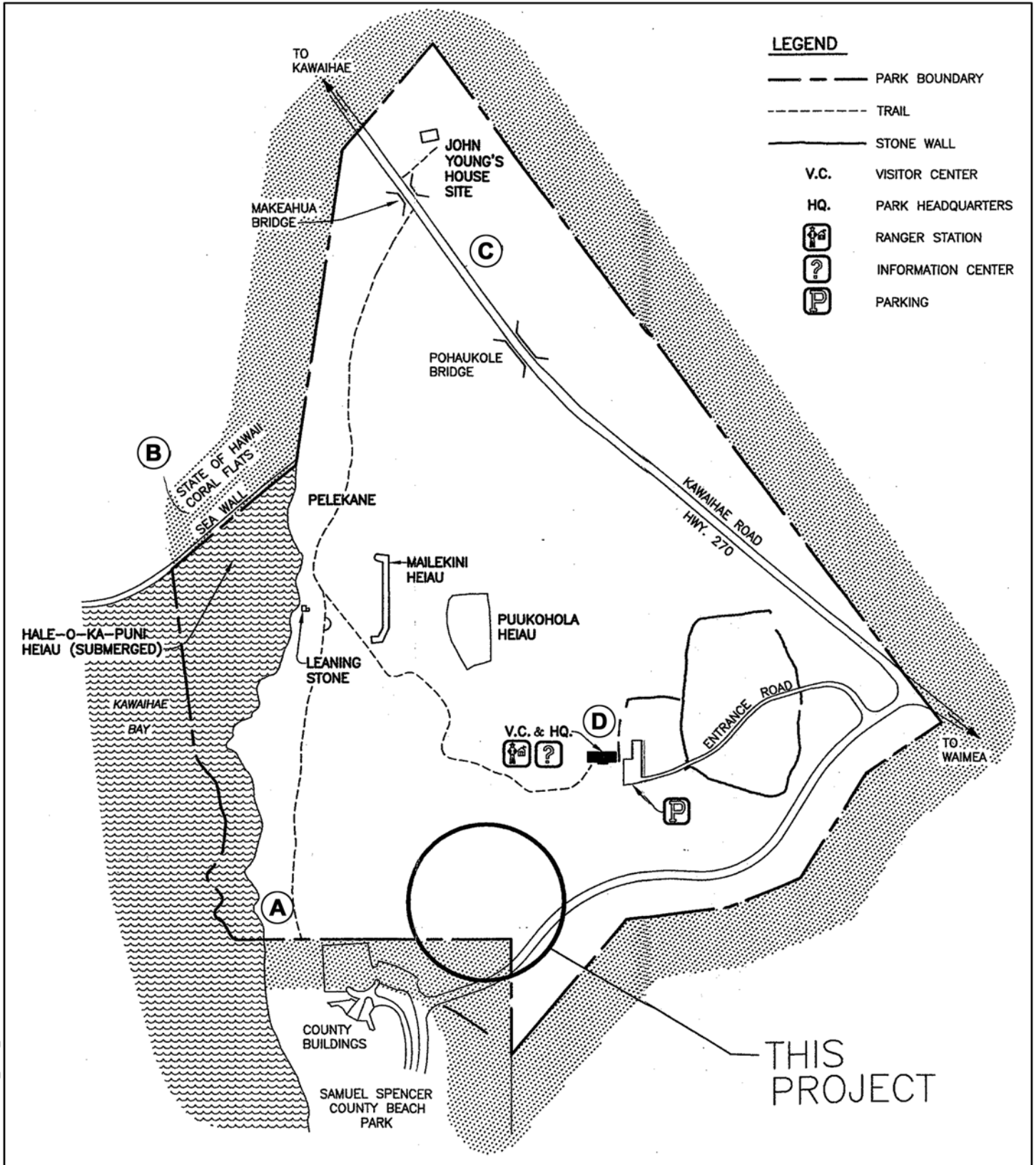
## 2.7 ALTERNATIVES DEVELOPMENT

In developing the alternatives, both internal and public scoping were conducted. Before the NPS preferred method for meeting the purpose of and need for the proposed action was developed, the state, the county, landowners, developers, and residents of the community agreed that certain lands should be given to the NPS for permanent protection, and the process for developing a concept plan ensued. The first concept plan for the park was completed in 1970, and work to bring this project to fruition has continued since. The last planning workshop took place from June 26 to 28, 2001, in which the attendants established criteria the park should meet for reestablishing the historic scene at Pu'ukohola Heiau. Feasibility was evaluated based on the following criteria:

- View of the primary resource providing the greatest understanding;
- ADA requirements and pedestrian links;
- Land availability;
- Infrastructure and utilities;
- Minimal impact on natural and cultural resources;
- Environmental sustainability;
- Visitor experience;
- Distance from Spencer Beach Park activities;
- Visitor knowledge of entering a special place;
- Safety; and
- Efficiency of park operations.

## 2.8 ALTERNATIVES CONSIDERED BUT ELIMINATED

Figure 2-4 shows the locations of the sites that were alternatives considered but eliminated.



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Site locations A through D were eliminated based on not meeting project objectives and goals or technical infeasibility.

## **Alternatives Considered but Eliminated**

Hawai'i, Hawai'i

### **2.8.1 Site A**

The first site suggested for the proposed project is just west of the former Spencer Beach Park access road and northwest of the park. While this location is on grounds that are nearly level and outside of the tsunami inundation road and in a location that is partially disturbed and contains no archaeological features, its close proximity to Spencer Beach Park would call for additional security and would put a strain on park staff. Spencer Beach Park users seeking a recreational experience rather than the contemplative experience offered by the park could detract from the quality of the visitor experience. This site was in conflict with the purpose and significance of Pu'ukohola Heiau National Historic Site and did not provide visitors with a contemplative visitor experience.

### **2.8.2 Site B**

The second site suggested is outside the proposed boundary of the park, on the coral landfill portion of Kawaihae Harbor, northwest of the Hale o Kapuni Heiau on state lands. This location would offer the view of the heiau as if one were approaching on a canoe and the Kawaihae Harbor would be to the backs of people viewing the heiau. This location is partially in the tsunami inundation zone and is on state-owned lands. The state is unwilling to give up title to the land, and a cooperative agreement with the state would not provide the necessary interest to support and protect the federal investment required. With the state's future harbor developments, there was no room for the park to be expanded. This site was eliminated due to infeasibility, in which the NPS would not be able to acquire the rights to use the lands.

### **2.8.3 Site C**

The third site suggested is south of the John Young Homestead and north of the highway, where the maintenance and storage facilities are located. This site is also outside the tsunami inundation zones in an area that is already disturbed and outside the viewshed of the heiau. However, the distance between the heiau and the highway that separates the site from the heiau make this site impractical. It is also the site of the maintenance facilities, and maintenance activities are disruptive to visitor experience. This site was in conflict with an up-to-date and valid park plan.

### **2.8.4 2.8.4 Site D**

Permanently expanding the present administrative buildings was determined not meet project objectives or needs. The presence of the administrative buildings would continue to affect cultural activities in the heiau, would not allow for growth of park visitation, would limit parking, and would not allow people with special needs to easily access the site.

## **2.9 ENVIRONMENTALLY PREFERRED ALTERNATIVE**

The environmentally preferred alternative is the alternative that will promote NEPA, as expressed in Section 101 of NEPA. This alternative will satisfy the following requirements:

- 1) Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;

- 2) Assure for all generations safe, healthful, productive, and esthetically and culturally pleasing surroundings;
- 3) Attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable or unintended consequences;
- 4) Preserve important historic, cultural, and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice;
- 5) Achieve a balance between population and resource use that will permit high standards of living and a wide sharing of life's amenities; and
- 6) Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

Alternative B is the environmentally preferable alternative because overall it would best fulfill the criteria from Section 101 of NEPA. Alternative B best meets criteria 1 and 2 by assuring for all generations a safe, healthful, productive and esthetically and culturally pleasing surroundings on the "Hill of the Whale" and by preserving the cultural resources for succeeding generations. The historic landscape on the "Hill of the Whale" would be rehabilitated while some features (e.g. shaded grassy area) would be retained, Sanitary facilities would be improved and relocated away from the heiau viewshed. Alternative B would particularly exceed all of the other alternatives in fulfilling criterion 3 (Attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable or unintended consequences). The historic landscape of the "Hill of the Whale" would be mostly restored through the removal of four temporary NPS structures. Two structures would be retained for administrative purposes. The "Hill of the Whale" would continue to be used sustainably for traditional Hawaiian cultural activities and some NPS facilities would either be left in place or removed.

Alternative B best meets criterion 4 (Preserve important historic, cultural, and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice) by allowing for the continued use of the "Hill of the Whale" for cultural purposes by Native Hawaiian organizations. Alternative C would fulfill criteria 1, 2, 5, and 6, but would not completely fulfill criterion 4 because it would not preserve that portion of the cultural landscape that included the more recent use of the "Hill of the Whale" for cultural purposes, and would not fulfill criteria 3 in providing the widest range of use of the resource.

The No action Alternative (A) would fulfill only criterion 1 (Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations) and would only partially fulfill the other 5 criteria.

**2.10 SUMMARY OF THE ENVIRONMENTAL CONSEQUENCES OF THE ALTERNATIVES**

The environmental effects of the proposed action and the No Action Alternative are presented in Table 2-1.

**Table 2-1**  
**Summary of Environmental Effects**

<b>Impact Topic</b>	<b>Alternative A (No Action)</b>	<b>Alternative B (Preferred)</b>	<b>Alternative C (Removal from the “Hill of the Whale”)</b>
<b>Geology and Soils</b>	Negligible adverse, long-term effects	Minor adverse, short-term effects and Negligible adverse, long-term effects	Minor adverse, short-term effects and Negligible adverse, long-term effects
<b>Water Resources</b>	Negligible adverse, long-term effects	Negligible beneficial, long-term effects	Negligible adverse, long-term effects
<b>Vegetation</b>	Negligible adverse, long-term effects	Minor adverse, short-term and long-term effects	Moderate adverse, short-term and long-term effects
<b>Wildlife</b>	No adverse effects	Minor adverse, short-term and long-term effects	Minor adverse, short-term and long-term effects
<b>Visitor Experience and Enjoyment</b>	Negligible adverse, long-term effects	Moderate adverse, short-term effects and Moderate beneficial, long-term effects	Moderate adverse, short-term and long-term effects
<b>Archeological Resources</b>	Negligible adverse, long-term effects	Negligible impacts neither adverse nor beneficial	Negligible impacts neither adverse nor beneficial
<b>Cultural Landscapes</b>	Minor adverse, long-term effect	Minor adverse short-term effects and Negligible to minor adverse, long-term effects	Minor adverse short-term effects and Minor to moderate adverse, long-term effects
<b>Historic Structures</b>	Negligible impacts neither adverse nor beneficial	Minor beneficial, long-term effects	Minor beneficial, long-term effects
<b>Ethnographic Resources</b>	Negligible impacts neither adverse nor beneficial	Moderate beneficial long-term effect	Moderate adverse, long-term effect
<b>Visual Resources</b>	Minor adverse, long-term effect	Minor adverse, short-term effects and Moderate beneficial, long-term effects	Minor adverse, short-term effects and Minor beneficial, long-term effects
<b>Hazardous Materials and Public Health and Safety (Lead and Asbestos)</b>	Negligible impacts neither adverse nor beneficial	Moderate adverse, short-term effect	Moderate adverse, short-term effect
<b>Traffic</b>	Negligible adverse, long-term effects	Negligible adverse, long-term effects	Negligible adverse, long-term effects

Notes:

Unless otherwise noted, effects are considered long-term.

Impact intensity, context, and duration are defined in Section 4.2.1, Impact Terminology.



### 3. AFFECTED ENVIRONMENT

# SECTION 3

## AFFECTED ENVIRONMENT

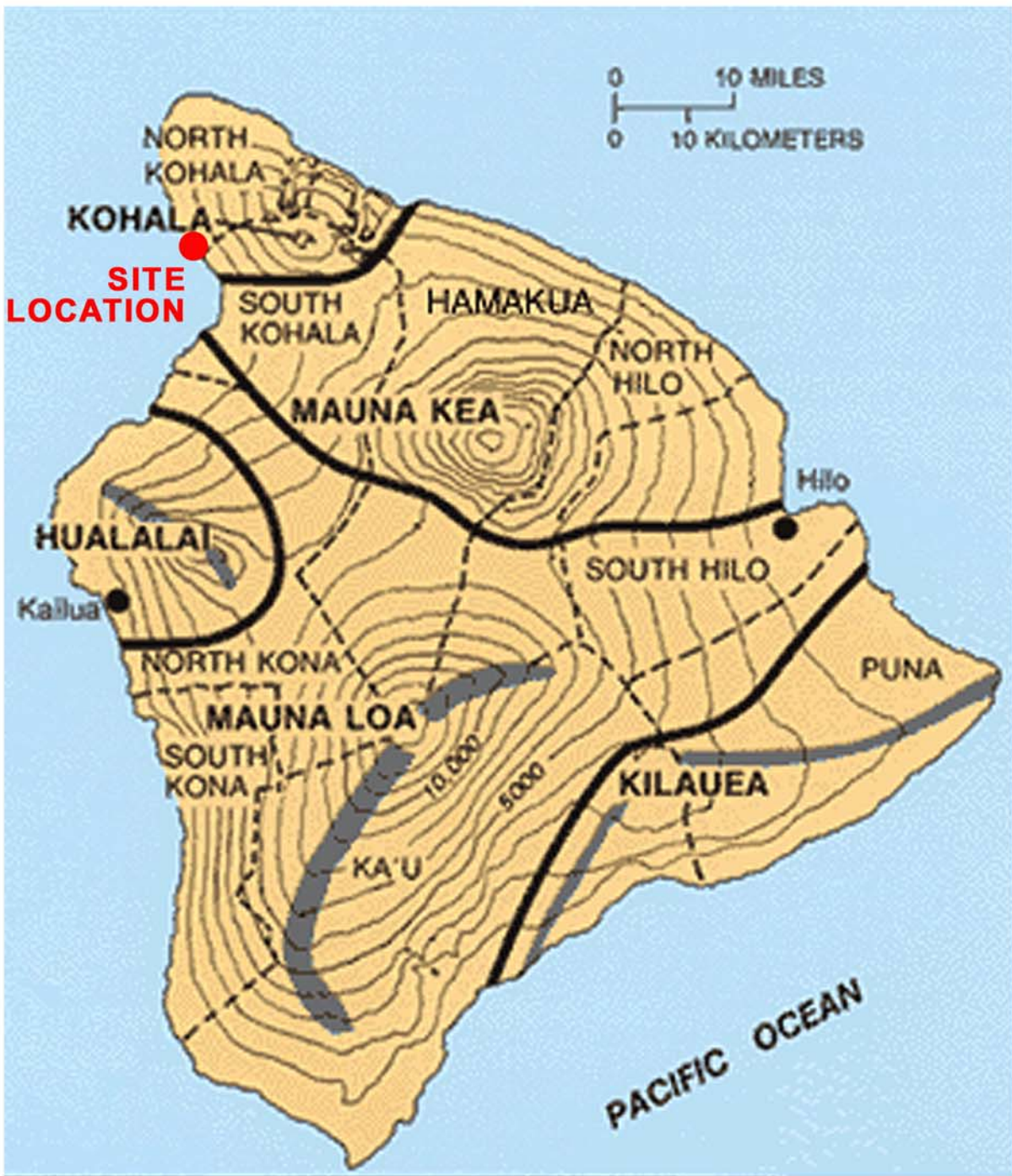
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### 3.1 GEOLOGY AND SOILS

#### 3.1.1 Physiography & Geology

The Big Island is the youngest island in the Hawai'i chain and was formed by five large volcanoes (see Figure 3-1). Two of these volcanoes, Kilauea and Mauna Loa, plus several smaller ones along the Chain of Craters, are still active today. The highest point on the Big Island is Mauna Kea at 13,796 feet (Yuen & Associates 1990). The park is on the western slopes of the Mauna Kea Volcano, at approximately 128 feet above mean sea level (PSOMAS 2000). The Mauna Kea Volcano primarily consists of the shield- and postshield-stage Hamakua Volcanics, which is overlain by the post shield stage Laupahoehoe Volcanics. Mauna Kea's Laupahoehoe Volcanics last erupted about 3,600 years ago (Yuen & Associates 1990) during the Holocene Era. Rift zones, marked by cones and fissures, contain numerous volcanic dikes, and are found in the upper layer of the Hamakua Volcanic Series, which is covered by a layer of up to three feet of Pahala ash deposited about 39,000 years ago. The site is divided approximately in half by a rise of approximately 50 feet and is relatively level above and below the rise, with an average slope of seven degrees from the volcanic decline (USGS 2003).

Repeated submergences and rising of the volcanic land during island creation have left sedimentary deposits throughout the area. Brackish and freshwater springs along the shoreline have historically deterred the growth of coral. The white sand beaches on the adjacent Spencer Beach Park and neighboring beaches are products of earlier corals that grew along the early coastline. Between these coral and sandy beaches, the shoreline is usually weathered pahoehoe lava, with narrow mud flats at the seaward end of gulches (NPS/USDOJ 1988).



Source: USGS

The Island of Hawaii and its five volcanoes. The rift zones of the historically active volcanoes are indicated by the stippled gray pattern. Dashed lines indicate the boundaries of districts on the island.

## Physiography

Hawai'i, Hawai'i

Figure 3-1



Tetra Tech, Inc.

### 3.1.2 Soils

The soils from the Pu'ukohola Heiau National Historic Site are from prehistoric lava flows associated with Hamakua and Laupahoehoe Volcanics capped by Pahala ash, resulting from the later stage venting of the Mauna Kea eruptions. The ash was thrown in the air by the volcanic eruptions and carried by the winds (PSOMAS 2000). Soils generally appear reddish-brown, typical of arid desert regions and commonly termed Kawaihae Series. Many of the soils from these lava flows are alkalic basalt to hawaiite in composition. The more differentiated flows tend to be massive and not conducive to recharge by rainfall. Thick ash deposits associated with the Pahala Ash and numerous cinder eruptions are ubiquitous throughout the region. With limited precipitation and irrigation, the soils preserve high mineral content but low levels of organic material. With these characteristics, the soil provides minor support for grasses, hardy shrubs, and a few long-rooted trees. One nonnative tree that was introduced to the area is the kiawe tree, which compounds the aridity problem in the soils by pulling any existing moisture out of the soils (USDOI 1994).

## 3.2 WATER RESOURCES

### 3.2.1 Regulatory Setting

The State Department of Health (HDOH) is responsible for water quality control and has delegated county water quality regulatory authority to the Department of Water Supply of the County of Hawai'i (Yuen & Associates 1990).

### 3.2.2 Ground Water

Aquifers range from being quite limited in size to being very extensive, and from being isolated to being connected with other aquifers. Aquifers throughout the state are classified based on aquifer and groundwater parameters using both nomenclature and a title designation. The Pu'ukohola Heiau Park is located above the Waimea (80301) Aquifer. This aquifer is located in the West Mauna Kea aquifer system and has unique characteristics. A basal aquifer in the Hamakua formation contains brackish groundwater over a distance of four to five miles inland of the coast (Yuen & Associates 1990). Further inland the basal groundwater continues but with a head sufficiently high to allow withdrawal of potable water. Wells at about 1,200 feet elevation extend to the basal freshwater aquifer to extract potable water on the inland regions. At the coast, close to the project site, water levels vary from 1.4 to 4.5 feet above mean sea level. And discharge brackish water (Yuen & Associates 1990) These wells are not suitable for potable water.

In the Hawaiian Islands, volcanic rocks and the accompanying overburden are an efficient infiltration medium that permits a large fraction of rainfall to percolate to deep groundwater bodies. Once in the zone of saturation, groundwater moves seaward unless it is interrupted by a stream channel acting as a drain (Yuen & Associates 1990). In the case of the Pu'ukohola Park area, there are only intermittent streams most of the year in the area due to minimal rain. Groundwater flows west, toward the nearby ocean.

There are two primary threats to groundwater quality in Hawai'i, human activity on land surface and saltwater intrusion. These issues are discussed more in Section 3.2.4, Potable Water Supply due to the significant concern for available potable water in the state.

### 3.2.3 Surface Water

Surface water resources in Hawai'i have significant importance to the economy, ecology, culture, and aesthetics of the region. Streams provide more than fifty percent of water used for irrigation in Hawai'i and surface water is the main source of drinking water in many areas (Oki 2003).

The primary hydrologic unit for describing stream flow is the drainage basin, as compared to the aquifer system used to characterize groundwater divisions. Boundaries of drainage basins and aquifer systems do not necessarily coincide as groundwater flow is governed by subsurface geological continuity rather than by topographic controls. A perennial stream is one in which water is carried, no matter how little, at all times of the year (Yuen & Associates 1990). There is one borderline perennial stream located on the inland region of the West Mauna Kea sector. This is the Waikoloa Stream, which becomes an intermittent stream closer to the coastline. Because of lack of precipitation in the project area only intermittent streams are found. . During periods of little to no rainfall, which is common in the project area, the low flow characteristics of a stream primarily depend on base flow from groundwater influence (Oki 2003). The gulches carry storm runoff, but most of the time remain dry (Yuen & Associates 1990).

Volcanic rocks and soils are a source of numerous inorganic constituents, including calcium, magnesium, sodium, potassium, and some heavy metals, in stream water. Most of the silica in stream water is also derived from volcanic rocks and soil (Oki 2003).

Human activities can also have an adverse affect on surface water quality. For example (Oki 2003),

- Wastewater discharges into streams can lead to increased nutrient concentrations;
- Construction and agricultural activities can increase the suspended sediment load in streams;
- Runoff from agricultural areas may contain pesticides or harmful nutrients; and
- Urban storm water runoff may contain pesticides, harmful nutrients, metals (lead, cadmium, copper, zinc, and others), oil and grease, and polycyclic aromatic hydrocarbons.

### 3.2.4 Potable Water Supply

A major problem in Hawai'i is the lack of potable groundwater. While there is plenty of available water, not all water is potable. Water could be contaminated by dissolved matter generated by surface (human) activities (i.e. agriculture) or contain high concentrations of salts (USGS 2003).

The reality and threat of seawater intrusion is a continuous concern throughout the state given the proximity of seawater to all areas. Natural events, such as tidal movements and seasonal changes, can affect seawater intrusion to some extent, however physical events have a greater influence of mixing saltwater with freshwater. That is, in the extraction process of pumping groundwater out of a freshwater aquifer for potable, irrigation, or other uses, the pressure used for extracting causes the freshwater lens to shrink and allows the underlying saltwater lens to encroach the aquifer. This often happens when high capacity pumps are used on deep wells (Yuen & Associates 1990).

Fertilizers and pesticides applied to crops and landscaped areas can move downward through the unsaturated zone to an aquifer and affect the quality of water in the aquifer. Wastes from septic tank systems, sewers, industry, and storm runoff also can introduce undesirable constituents into the aquifers. Since the early 1980s, organic chemicals contaminants associated with agricultural, industrial, and urban activities have been detected in water samples taken from wells on the island of Hawai'i. The herbicides atrazine and ametryn, which are associated with sugarcane cultivation, have been detected in wells within or down gradient of past or present sugarcane fields on the island. HDOH monitors areas such as these for contamination throughout the state and issues *Groundwater Contamination Maps* (HDOH 1999). According to these maps, most of the wells where contamination has been detected are located along the north and east coasts of the Big Island. Although not necessarily representative of the project site, contamination levels on the island, as reported on the State DOH maps, are below existing federal and state drinking water standards established for the protection of public health and do not pose a significant risk to humans (HDOH 1999).

### 3.3 VEGETATION

The Pu'ukohola Heiau National Historic Site is an 82 -acre park in the South Kohala District of Hawai'i Island, on the leeward coast. It is bordered on the north by Kawaihae Harbor, on the south by Spencer Beach County Park, on the west by the Waimea- Kawaihae Highway (State Highway 270), and on the east by the Pacific Ocean.

The region is the driest in the state, as it sits in the rain shadow of Mauna Kea and the Kohala Mountains. Average annual precipitation of 8.8 inches falls mainly in the winter.

The vegetation of Pu'ukohola Heiau was surveyed in June 1987 and again in 1997 (draft RMP, undated). Of the 104 plant species noted, over 65 percent were alien species (Pratt 1999). Most of the vegetation is either in the bufflegum scrub grassland (xerophytic scrub) community (*Cenchrus ciliaris*) or kiawe forest (*Prosopis pallida*).

Additional community types are characterized as halophytic (adapted to living in a saline environment) scrub and disturbed roadside. There are lawn and landscape plantings adjacent to the headquarters and visitor center. Some of these plants are native to Hawai'i but are not known to occur naturally in the park.

Through the efforts of the NPS, native plants are being restored to certain areas, in keeping with the cultural practices and historical uses of the areas.

### 3.4 WILDLIFE

With the affected environment for wildlife being the same as the affected environment for wildlife, animal life in the terrestrial project area consists almost entirely of nonnative species. The abundant bird species include the common myna (*Acridotheres tristis*), zebra dove (*Geopelia striata*), house sparrow (*Passer domesticus*), and Japanese white-eye (*Zosterops japonicus*). Francolins (*Francolinus erckelii*) also frequent the area, and both the native pueo (*Asio flammeus sandwichensis*) and the barn owl (*Tyto alba*) are seen occasionally.

There are no native terrestrial amphibians or reptiles on the Hawaiian Islands. Nonnative reptiles found in the project area include the green anole (*Anolis carolinensis*), mourning gecko (*Lepidodactylus lugubris*), stump-toed gecko (*Gehyra mutilata*), tree gecko (*Hemiphyllodactylus typus*), Indo-Pacific gecko (*Hemidactylus garnotii*), house gecko (*H. frenatus*), metallic skink (*Lampropholis delicata*), and gold dust day gecko (*Phelsuma laticauda laticauda*). The only known terrestrial snake occurring on the Hawaiian Islands is the island blind snake (*Ramphotyphlops braminus*).

Mammals present in the project area include feral cat (*Felis catus*), feral dog (*Canis familiaris*), Norway rat (*Rattus norvegicus*), black rat (*R. rattus*), mongoose (*Herpestes auropunctatus*), and house mouse (*Mus musculus*). Feral pig (*Sus scrofa scrofa*) and feral goat (*Capra hircus hircus*) have both been seen in the project area. The Polynesian rat (*Rattus exulans hawaiiensis*) may also occur. Bees, wasps, and ants occur as well.

### 3.5 VISITOR EXPERIENCE AND ENJOYMENT

NPS Management Policies 2001 state that the enjoyment of park resources and values by the people of the United State is part of the fundamental purpose of all parks and that the National Park Service is committed to providing appropriate, high-quality opportunities for visitors to enjoy the parks.

For the general public, the park offers a passive recreational experience at the national historic site that is associated with viewing and learning about particular aspects of Hawaiian history (NPS/USDOI 1989). In the visitor center the NPS shows a three-minute video on the park's historic sites that depicts the building of the stone heiau and the historic event in which Kamehameha I established his supremacy in the Hawaiian Islands through the sacrifice of his cousin, Keoua, on the alter of Pu'ukohola Heiau (NPS/USDOI 2002). The visitor center also offers orientation talks, informational displays and pamphlets in a small bookstore and a library that contains historic references and books, some of which are no longer in print. The park provides an area for visiting school and tour groups to meet and engage in educational programs. Cultural practitioners use the platforms of the Pu'ukohola Heiau for traditional religious purposes. The park also maintains a *kahua*, or an open space, that is used by the NPS and community partners each year during the Annual Establishment Day Cultural Festivals, and occasionally by various Native Hawaiian groups for the

perpetuation of traditional cultural activities (e.g., Makahiki games, hula, and warrior demonstrations).

Throughout the Park grounds are hiking trails which connect the current visitor center to the Pu'ukohola and Mailekini heiau, the Pelekane area, and the Na Ala Kahakai trails. Na Ala Kahakai is part of the Ala Kahakai National Historic Trail Act, law S. 700 (Na Ala Hele 2002)

Park facilities are open everyday from 7:30am to 4:00pm. (NPS/USDOJ undated)

### 3.6 CULTURAL RESOURCES

This section is a summary of the cultural resources investigated on and in the vicinity of the project site. Cultural resources would fall into one of four categories identified for further analysis, including archaeological resources, cultural landscape resources, historic resources, and ethnographic resources.

#### 3.6.1 Regulatory Framework

Identification and evaluation of cultural resources was conducted in compliance with the National Historic Preservation Act (NHPA), as amended, regarding the requirements for identifying and treating historic and prehistoric cultural resources. NPS Director's Order 28 (DO-28), and the Advisory Council on Historic Preservation's regulations for the Protection of Historic Properties (36 CFR 800). Section 106 of the NHPA requires that project proponents take into account the effects their project may have on cultural resources and that they provide the Advisory Council for Historic Preservation an opportunity to comment on the project.

As part of the Section 106 process, agencies are required to consult with the State Historic Preservation Officer (SHPO), who has 30 days to respond to the consultation request, although the SHPO may choose not to if it were clear the project would not affect cultural resources. If there is no response it is normally considered a concurrence with agency's findings of potential effect. Included in Appendix B are copies of the letters sent to the SHPO and the Hawai'i Island Burial Council.

#### 3.6.2 Archaeological Resources

In an intensive archaeological survey conducted by NPS in 2003, encompassing the proposed project area locations as well as areas immediately adjacent to the project area to provide a buffer area or possible alternate project locations in the event that project areas are relocated or proposed trail routes are rerouted. A total of 1.42 acres were surveyed. The survey area is located within the southern portion of Pu'ukohola Heiau National Historic Site. The project area was surveyed (100%) coverage) with pedestrian transects spaced at 10-15 meter intervals. These areas and adjacent buffer zones were intensively surveyed with systematic transects either on cardinal axis or along existing slope contours. Proposed trail routes were surveyed using linear transects that paralleled the proposed corridors. In addition to the inventory survey of these areas, a separate testing phase for the proposed septic/leach field location was undertaken to identify the presence or absence of cultural



material and to determine the extent of any subsurface deposits and to test for the presence or absence of human burial remains. A total of 54 features were identified during the survey. The predominant feature type identified during the survey is World War II modifications of this area. Other historic era features include one house enclosure, and one highly disturbed habitation area including both traditional Hawaiian and historic era remains.

The NPS conducted a review of previous archeological investigations and available files which indicate several known archeological and historical sites in the area. The most well known sites include both Pu'ukohola Heiau and Mailekini Heiau, located north of the project area, and the John Young Homestead, located north and east of the project area.

### 3.6.3 Cultural Landscape Resources

The NPS conducted a preliminary Level II cultural landscape inventory in 2001. Based on this inventory, Pu'ukohola Heiau is described as one cultural landscape composed of three major features. The three features are three heiau (Pu'ukohola, Mailekini, and Hale-o-Kapuni); Pelekane; the area around the bay that was the residence of Kamehameha I and the Royal Court; and John Young's Homestead. Pu'ukohola Heiau National Historic Site is a nationally significant cultural landscape for its association with the life of King Kamehameha I and the political unification of the Hawaiian Islands. The park was designated a National Historic Landmark in 1962.

Constructed on the surface of existing slopes, Pu'ukohola and Mailekini Heiau are spatially situated to each other without extensive manipulation of the topography of the coastal lava dome, referred to as the "Hill of the Whale." In times of the kapu system, spatial organization was used to define the concept of sacred space and the separations of space (NPS 2003). Heiau and homesteads were spatially situated to make the best use of the natural resources and the scenic vistas. The vegetation that came to cover land in the area was a mixture of native species such as the pili grass (*Heteropogon contortus*) and introduces species such as the coconut grove in the Pelekane area. Both species are examples of things that were useful in everyday tasks such as weaving (NPS 2003).

During its period of significance, the most common historic view of the heiau was from the bay, on approaching canoes. There are the modern developments of Kawaihae Harbor to the north and Spencer Beach Park to the south. The Pacific Ocean stretches west and barren grassland and Highway 270 stretch east from the heiau.

### 3.6.4 Historic Structures

The NPS conducted a preliminary Level II cultural landscape inventory in 2001. Based on this inventory, Pu'ukohola Heiau is described as one cultural landscape composed of three major features. The three features are three heiau (Pu'ukohola, Mailekini, and Hale-o-Kapuni); Pelekane; the area around the bay that was the residence of Kamehameha I and the Royal Court; and John Young's Homestead. Pu'ukohola Heiau National Historic Site is a nationally significant cultural landscape for its association with the life of King Kamehameha I and the political unification of the Hawaiian Islands. The park was designated a National Historic Landmark in 1962.

Of all of the identified structures, most notable are the Pu'ukohola Heiau and its walls, terraces, and platforms, the Mailekini Heiau, the Leaning Post, various rock walls, and the National Park Service facilities.

It is believed that the Mailekini Heiau was built sometime between 1400 and 1580. In the times of Kamehameha I, this heiau was used as a fortress and lined with cannons and twenty-one guns to protect Kawaihae Bay (NPS/USDOJ 2003). Just east of Mailekini Heiau, Pu'ukohola Heiau was built by Kamehameha in 1790-91 (NPS/USDOJ 2003). This heiau was used as a luakini heiau in which human sacrifices were made to the god Kuka'ilimoku. Reflective of the early Hawaiian stacked stone structures, the walls were stacked with rounded stone and filled with rough stone. Terrace floors were paved with flat stone (NPS/USDOJ 2003).

Rock walls within the historic site were used for different purposes. In prehistoric times, low walls were used to define the sacred area associates with the heiau, the others define historic agricultural areas. Other smaller walls are remnants of the World War II era (NPS/USDOJ 2003).

### 3.6.5 Ethnographic Resources

Planning for visitor use facilities at Pu'ukohola Heiau has been underway for several years. In June of 2001, an Interpretive Planning Workshop was conducted at the park to provide guidance for facility and interpretive media planning and design. The Interpretive Workshop included representatives from native Hawaiian organizations. In the summer of 2002, a Value Analysis (VA) of the proposal to reestablish the historic scene on the "Hill of the Whale" involving NPS staff and local native Hawaiian groups was conducted to further explore the proposal.

During these consultations, it was agreed that secondary periods of significance may be considered in addition to the years 1790 to 1835, which were originally identified as the period of significance in the draft Cultural Landscape Inventory prepared by the NPS in 2003. Continuum of use is typically a consideration in cultural landscapes. Even though a set date was established as the period of significance for the park, the landscape does not have to be static, as evidenced on the "Hill of the Whale," where traditional cultural ceremonial use continues today. Based on information provided by both the park and native Hawaiian organizations, it was agreed that the period of significance for the historic scene on the "Hill of the Whale" extended all the way through 1991, at which time the "Hill of the Whale" site was consecrated. There was general agreement that although existing temporary structures located on the "Hill of the Whale" were not all essential, the current use the "Hill of the Whale" for Hawaiian cultural activities was important and something that the local community desires to continue in the future.

## 3.7 VISUAL RESOURCES

The dominant visual focus in the project area is the stone walls of the Pu'ukohola Heiau, the Mailekini Heiau just west of the Pu'ukohola walls, and the cultural activities area to the southwest of the Pu'ukohola walls. The two heiau are on the lower slopes of the great dome

of Mauna Kea. The landscape of the park is characterized by panoramic views of the Pacific Ocean to the west and gentle rolling pu'u (hills) to the north, east, and southeast, which gradually decrease in elevation, from about 150 feet at the highway to about 30 feet at Spencer Beach Park. Vegetation in the park consists largely of buffleggrass, low shrubs, and random kiawe trees that give the area a coarse texture. The landscape color ranges from the pale yellow of the dry grass to the dark brown of the soils (Figure 3-2).

Sensitive viewing locations are on the trails adjacent to the heiau. Because the heiau are fragile and because they are sacred to native people, they are closed to the public through voluntary compliances. While the view from the heiau platform itself is not experienced by the majority of park visitors, the viewshed from the heiau is important to the Hawaiian people. The existing administration buildings and visitor center are readily visible from the exterior of the main heiau and were built too close to this National Historic Landmark. Parts of the buildings also impact the views of the heiau from prime vantage points along the interpretive trail. All plans for reestablishing the historical site require that all modern human-made structures on the "Hill of the Whale" be removed or relocated so that they do not intrude on the historic scene (NPS/USDOJ 2001).

### **3.8 HAZARDOUS MATERIALS AND PUBLIC HEALTH AND SAFETY (LEAD AND ASBESTOS)**

A hazardous substance, as defined under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), is any substance that, due to its quantity, concentration, or physical and chemical characteristics, poses a potential hazard to human health and safety or to the environment (40CFR §280.12). In accordance with Title X of the Residential Lead-based Paint Hazard Reduction Act, lead-based paint is specified as 0.5 percent lead content by weight (42 U.S.C. 4851). Asbestos-containing material is specified under the Occupational Safety and Health Administration as one percent asbestos by weight (29 CFR 1910.1001). Each of these materials can result in significant adverse health effects if released to the air, which lead to the regulation and eventual ban of most uses beginning in 1978. Buildings constructed prior to 1978 may contain these materials and should be appropriately tested prior to any deconstructive activities that could release lead or asbestos to the environment.

Hazardous materials used to maintain small engines and pesticides used to control alien plants and reduce wildfire fuel are stored in the maintenance building on the mauka side of State Highway 270, outside of the project area. Because the park generates approximately 20 to 25 pounds of hazardous waste per calendar month it is classified as a conditionally exempt small quantity generator (Kawaiaea 2003). Pu'ukohola Heiau National Historic Site commonly generates hazardous waste batteries and light bulbs, which are disposed of in accordance with NPS policies. Pu'ukohola Heiau National Historic Site has implemented a policy of procuring environmentally friendly products to further reduce the amount of hazardous waste generated. These conditions are not expected to change with the proposed project.



Source: Tetra Tech 2003

Site of proposed visitor center in foreground

***Site of Proposed Visitor Center***  
Pu'ukoholā Heiau, Hawai'i

Should previously undetected hazardous materials or wastes be encountered during demolition and construction, the following steps would be taken:

- An emergency response plan would be developed;
- Local environmental regulatory and emergency response agencies would be immediately informed;
- All fill and debris associated with hazardous materials or wastes encountered on-site would be characterized and disposed of according to federal, state, and local regulations.

### **3.9 TRAFFIC**

#### **3.9.1 Traffic and Circulation**

Traffic and circulation refers to the movement of vehicles and pedestrians along and adjacent to roads. Freeways and major roads are under the jurisdiction of the state through the HDOT; other streets and roads are under the jurisdiction of the counties. Roadways range from multilane road networks with asphalt surfaces to unpaved plantation roads. Traffic conditions in Hawai'i vary depending on location but are typically over capacity during peak hours, resulting in significant traffic delays. These traffic delays occur in urban areas with multilane roads as well as in less developed areas with only two-lane roads. However, because of the park's remote location, traffic congestion on this portion of State Highway 270 and Spencer Road is uncommon. The Spencer Road would be used to access both the Spencer Beach Park and the visitor center.

#### 4. ENVIRONMENTAL CONSEQUENCES

# SECTION 4

## ENVIRONMENTAL CONSEQUENCES

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### 4.1 INTRODUCTION

This section describes the likely socioeconomic and environmental consequences, including direct, indirect, and cumulative effects, of the proposed action and the No Action Alternative.

### 4.2 METHODOLOGY

Impact analyses and conclusions are based on NPS staff knowledge of resources and the project area, review of existing literature, and information provided by experts in the NPS or other agencies. Any effects described in this section are based on preliminary design of the alternatives under consideration. This analysis assumes that the mitigation and monitoring measures identified in Section 4.6 will be implemented for the applicable alternative (as specified in Section 4.6). Effects are quantified where possible; in the absence of quantitative data, best professional judgment was used.

#### 4.2.1 Impact Terminology

Terms referring to impact intensity, context, and duration are used in the effects analysis. Each resource has its own impact intensity standards and are listed in the following tables. Unless otherwise stated, the standard definitions for duration are as follows:

- *Short-Term Effect*: The effect occurs only during or immediately after implementation of the alternative.
- *Long-Term Effect*: The effect could occur for an extended period after implementation of the alternative. The effect could last several years or more and could be beneficial or adverse.

#### 4.2.2 Geology and Soils

Environmental consequences from the proposed project would have similar effects on geology and soil (i.e., erosion removal). Therefore, to reduce redundancy, the two resource areas are discussed under one heading. However, methodologies for assessing intensities are different and are presented separately.

##### *Geology*

The planning team based the impact analysis and the conclusions for possible impacts to geological resources on the onsite inspection of known and potential geological resources within the Project area other agencies, and park staff insights and professional judgment. Where possible, map locations of geological resources were compared with locations of proposed developments and modifications of existing facilities. Predictions about short- and long-term site impacts were based on previous studies of impacts to geological resources from similar projects and recent scientific data; there are no short-term impacts to geological resources, all impacts are long term. The thresholds of change for the intensity of an impact are defined as follows:

<b>Impact Intensity</b>	<b>Intensity Description</b>
Negligible	The action would result in a change to a natural physical resource, but the change would be so small that it would not be of any measurable or perceptible consequence.
Minor	The action would result in a change to a natural physical resource, but the change would be small and localized and of little consequence.
Moderate	The action could result in a change to a natural physical resource; the change would be measurable and of consequence.
Major	An action that would result in a noticeable change to a natural physical resource; the change would be measurable and result in a severely adverse or major beneficial impact.

##### *Soils*

All available information on soils potentially impacted in various areas of the monument was compiled. Where possible, map locations of sensitive soils were compared with locations of proposed developments and modifications of existing facilities. Predictions about short- and long-term site impacts were based on previous projects with similar soils and recent studies. The thresholds of change for the intensity of an impact are defined as follows:

<b>Impact Intensity</b>	<b>Intensity Description</b>
Negligible	Soils would not be affected or the effects to soils would be below or at the lower levels of detection. Any effects to soils would be slight.
Minor	The effects to soils would be detectable. Effects to soil area would be small. Mitigation may be needed to offset adverse effects and would be relatively simple to implement and likely be successful.



<b>Impact Intensity</b>	<b>Intensity Description</b>
Moderate	The effect on soil would be readily apparent and result in a change to the soil character over a relatively wide area. Mitigation measures would be necessary to offset adverse effects and likely be successful.
Major	The effect on soil would be readily apparent and substantially change the character of the soils over a large area in and out of the park. Mitigation measures to offset adverse effects would be needed, extensive, and their success could not be guaranteed.

#### 4.2.3 Water Resources

The NPS *Management Policies 2001* state that the Park Service will “take all necessary actions to maintain or restore the quality of surface waters and ground waters within the parks consistent with the Clean Water Act and all other applicable federal, state, and local laws and regulations” (sec. 4.6.3).

A water quality standard defines the water quality goals of a waterbody by designating uses to be made of the water, by setting minimum criteria to protect the uses, and by preventing degradation of water quality through antidegradation provisions. The antidegradation policy is only one portion of a water quality standard. Part of this policy (40 CFR 131.12(a)(2)) strives to maintain water quality at existing levels if it is already better than the minimum criteria. Antidegradation should not be interpreted to mean that “no degradation” can or will occur, as even in the most pristine waters, degradation may be allowed for certain pollutants as long as it is temporary and short term.

Other considerations in assessing the magnitude of water quality impacts is the effect on those resources dependent on a certain quality or condition of water. Sensitive aquatic organisms, submerged aquatic vegetation, riparian areas, and wetlands are affected by changes in water quality from direct and indirect sources.

In order to assess the magnitude of water quality impacts to park waters under the various alternatives State water quality standards governing the waters of the park were examined and compared to baseline water quality data (if available).

Given the above water quality issues and methodology and assumptions, the following impact thresholds were established in order to describe the relative changes in water quality (overall, localized, short and long term, cumulatively, adverse and beneficial) under the management alternatives.

<b>Impact Intensity</b>	<b>Impact Description</b>
Negligible	Impacts (chemical, physical, or biological effects) that would not be detectable, would be well below water quality standards or criteria, and would be within historical or desired water quality conditions.

<b>Impact Intensity</b>	<b>Impact Description</b>
Minor	Impacts (chemical, physical, or biological effects) would be detectable but would be well below water quality standards or criteria and within historical or desired water quality conditions.
Moderate	Impacts (chemical, physical, or biological effects) would be detectable but would be at or below water quality standards or criteria; however, historical baseline or desired water quality conditions would be temporally altered.
Major	Impacts (chemical, physical, or biological effects) would be detectable and would be frequently altered from the historical baseline or desired water quality conditions; and/or chemical, physical, or biological water quality standards or criteria would temporarily be slightly and singularly exceeded.

**Duration:****Short-term** – Following treatment, recovery would take less than one year.**Long-term** – Following treatment, recovery would take longer than one year.**4.2.4 Vegetation**

All available information on vegetation and vegetative communities potentially impacted in the project area park was compiled. Where possible, map locations of sensitive vegetation species, populations, and communities were identified and avoided. Predictions about short- and long-term site impacts were based on previous projects with similar vegetation and recent studies. The thresholds of change for the intensity of an impact are defined as follows:

<b>Impact Intensity</b>	<b>Impact Description</b>
Negligible	No native vegetation would be affected or some individual native plants could be affected as a result of the alternative, but there would be no effect on native species populations. The effects would be on a small scale and no species of special concern would be affected.
Minor	The alternative would affect some individual native plants and would also affect a relatively minor portion of that species' population. Mitigation to offset adverse effects, including special measures to avoid affecting species of special concern, could be required and would be effective.
Moderate	The alternative would affect some individual native plants and would also affect a sizeable segment of the species' population and over a relatively large area. Mitigation to offset adverse effects could be extensive, but would likely be successful. Some species of special concern could also be affected.
Major	The alternative would have a considerable effect on native plant populations, including species of special concern, and affect a relatively large area in and out of the park. Mitigation measures to offset the adverse effects would be required, extensive, and success of the mitigation measures would not be guaranteed.

**Duration:****Short-term** – Recovers in 3 years or less.**Long-term** – Takes more than 3 years to recover.

#### 4.2.5 Wildlife

The NPS Organic Act, which directs parks to conserve wildlife unimpaired for future generations, is interpreted by the agency to mean that native animal life should be protected and perpetuated as part of the park's natural ecosystem. Natural processes are relied on to control populations of native species to the greatest extent possible; otherwise they are protected from harvest, harassment, or harm by human activities. According to NPS Management Policies 2001, the restoration of native species is a high priority (sec. 4.1). Management goals for wildlife include maintaining components and processes of naturally evolving park ecosystems, including natural abundance, diversity, and the ecological integrity of plants and animals. Information on Pu'ukohola Heiau National Historic Site wildlife was taken from park documents and records. The Pu'ukohola Heiau National Historic Site staff natural resource management staff, the U.S. Fish and Wildlife Service, and the Hawai'i Department of Natural Resources also provided wildlife information.

<b>Impact Intensity</b>	<b>Impact Description</b>
Negligible	There would be no observable or measurable impacts to native species, their habitats, or the natural processes sustaining them. Impacts would be well within natural fluctuations.
Minor	Impacts would be detectable, but they would not be expected to be outside the natural range of variability of native species' populations, their habitats, or the natural processes sustaining them. Mitigation measures, if needed to offset adverse effects, would be simple and successful.
Moderate	Breeding animals of concern are present; animals are present during particularly vulnerable life-stages, such as migration or juvenile stages; mortality or interference with activities necessary for survival can be expected on an occasional basis, but is not expected to threaten the continued existence of the species in the park unit. Impacts on native species, their habitats, or the natural processes sustaining them would be detectable, and they could be outside the natural range of variability. Mitigation measures, if needed to offset adverse effects, would be extensive and likely successful.
Major	Impacts on native species, their habitats, or the natural processes sustaining them would be detectable, and they would be expected to be outside the natural range of variability. Key ecosystem processes might be disrupted. Loss of habitat might affect the viability of at least some native species. Extensive mitigation measures would be needed to offset any adverse effects and their success would not be guaranteed.

**Duration:**

**Short-term** – Recovers in less than 1 year.

**Long-term** – Takes more than 1 year to recover.

#### 4.2.6 Visitor Experience and Enjoyment

NPS Management Policies 2001 state that the enjoyment of park resources and values by the people of the United States is part of the fundamental purpose of all parks and that the National Park Service is committed to providing appropriate, high-quality opportunities for visitors to enjoy the parks.

Part of the purpose of Pu'ukohola Heiau National Historic Site is to offer opportunities for recreation, education, inspiration, and enjoyment. Consequently, one of the park's management goals is to ensure that visitors safely enjoy and are satisfied with the availability, accessibility, diversity, and quality of park facilities, services, and appropriate recreational opportunities.

Public scoping input and observation of visitation patterns combined with assessment of what is available to visitors under current management were used to estimate the effects of the actions in the various alternatives in this document. The impact on the ability of the visitor to experience a full range of Pu'ukohola Heiau National Historic Site resources was analyzed by examining resources and objectives presented in the Pu'ukohola Heiau National Historic Site significance statement. The potential for change in visitor use and experience proposed by the alternatives was evaluated by identifying projected increases or decreases in visitor experience and enjoyment and other visitor uses, and determining whether or how these projected changes would affect the desired visitor experience and to what degree and for how long.

<b>Impact Intensity</b>	<b>Impact Description</b>
Negligible	Changes in visitor use and/or experience would be below or at the level of detection. The visitor would not likely be aware of the effects associated with the alternative.
Minor	Changes in visitor use and/or experience would be detectable, although the changes would be slight. The visitor would be aware of the effects associated with the alternative, but the effects would be slight.
Moderate	Changes in visitor use and/or experience would be readily apparent. The visitor would be aware of the effects associated with the alternative and would likely be able to express an opinion about the changes.
Major	Changes in visitor use and/or experience would be readily apparent and severely adverse or exceptionally beneficial. The visitor would be aware of the effects associated with the alternative and would likely express a strong opinion about the changes.

**Duration:**

**Short-term** – occurs only during the treatment action.

**Long-term** – occurs after the treatment action.

#### 4.2.7 Archaeological Resources

The thresholds of change for the intensity of impacts on archaeological resources are defined as follows:

<b>Impact Intensity</b>	<b>Impact Description</b>
Negligible	Impact is at the lowest levels of detection with neither adverse nor beneficial consequences. The determination of effect for §106 would be <i>no adverse effect</i> .

<b>Impact Intensity</b>	<b>Impact Description</b>
Minor	<p><b>Adverse impact</b> — disturbance of a site(s) results in little, if any, loss of integrity. The determination of effect for §106 would be <i>no adverse effect</i>.</p> <p><b>Beneficial impact</b> — maintenance and preservation of a site(s). The determination of effect for §106 would be <i>no adverse effect</i>.</p>
Moderate	<p><b>Adverse impact</b> — disturbance of a site(s) results in loss of integrity. The determination of effect for §106 would be <i>adverse effect</i>. A memorandum of agreement is executed among the National Park Service and applicable state or tribal historic preservation officer and, if necessary, the Advisory Council on Historic Preservation in accordance with 36 CFR 800.6(b). Measures identified in the MOA to minimize or mitigate adverse impacts reduce the intensity of impact under NEPA from major to moderate.</p> <p><b>Beneficial impact</b> — stabilization of a site(s). The determination of effect for §106 would be <i>no adverse effect</i>.</p>
Major	<p><b>Adverse impact</b> — disturbance of a site(s) results in loss of integrity. The determination of effect for §106 would be <i>adverse effect</i>. Measures to minimize or mitigate adverse impacts cannot be agreed upon and the National Park Service and applicable state or tribal historic preservation officer and/or Advisory Council are unable to negotiate and execute a memorandum of agreement in accordance with 36 CFR 800.6(b).</p> <p><b>Beneficial impact</b> — active intervention to preserve a site(s). The determination of effect for §106 would be <i>no adverse effect</i>.</p>

#### 4.2.8 Cultural Landscape

The thresholds of change for the intensity of impacts on cultural landscape are defined as follows:

<b>Impact Intensity</b>	<b>Impact Description</b>
Negligible	Impact(s) is at the lowest levels of detection with neither adverse nor beneficial consequences. The determination of effect for §106 would be <i>no adverse effect</i> .
Minor	<p><b>Adverse impact</b> — alteration of a pattern(s) or feature(s) of the landscape would not diminish the overall integrity of the landscape. The determination of effect for §106 would be <i>no adverse effect</i>.</p> <p><b>Beneficial impact</b> — preservation of landscape patterns and features in accordance with the <i>Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes</i>. The determination of effect for §106 would be <i>no adverse effect</i>.</p>

<b>Impact Intensity</b>	<b>Impact Description</b>
Moderate	<p><b>Adverse impact</b> — alteration of a pattern(s) or feature(s) of the landscape would diminish the overall integrity of the landscape. The determination of effect for §106 would be <i>adverse effect</i>. A memorandum of agreement is executed among the National Park Service and applicable state or tribal historic preservation officer and, if necessary, the Advisory Council on Historic Preservation in accordance with 36 CFR 800.6(b). Measures identified in the MOA to minimize or mitigate adverse impacts reduce the intensity of impact under NEPA from major to moderate.</p> <p><b>Beneficial impact</b> — rehabilitation of a landscape or its patterns and features in accordance with the <i>Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes</i>. The determination of effect for §106 would be <i>no adverse effect</i>.</p>
Major	<p><b>Adverse impact</b> — alteration of a pattern(s) or feature(s) of the landscape would diminish the overall integrity of the landscape. The determination of effect for §106 would be <i>adverse effect</i>. Measures to minimize or mitigate adverse impacts cannot be agreed upon and the National Park Service and applicable state or tribal historic preservation officer and/or Advisory Council are unable to negotiate and execute a memorandum of agreement in accordance with 36 CFR 800.6(b).</p> <p><b>Beneficial impact</b> — restoration of a landscape or its patterns and features in accordance with the <i>Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes</i>. The determination of effect for §106 would be <i>no adverse effect</i>.</p>

#### 4.2.9 Historic Structures

The thresholds of change for the intensity of impacts on historic structures are defined as follows:

<b>Impact Intensity</b>	<b>Impact Description</b>
Negligible	Impact is at the lowest levels of detection with neither adverse nor beneficial consequences. The determination of effect for Section 106 would be <i>no adverse effect</i> .
Minor	<p><b>Adverse impact</b> – alteration of a feature(s) would not diminish the overall integrity of the resource. The determination of effect for Section 106 would be <i>no adverse effect</i>.</p> <p><b>Beneficial impact</b> – stabilization/preservation of features in accordance with the <i>Secretary of the Interior's Standards for the Treatment of historic properties</i>. The determination of effect for Section 106 would be <i>no adverse effect</i>.</p>

<b>Impact Intensity</b>	<b>Impact Description</b>
Moderate	<p><b>Adverse impact</b> – alteration of a feature(s) would diminish the overall integrity of the resource. The determination of effect Section 106 would be <i>adverse effect</i>. A memorandum of agreement (MOA) is executed among the National Park Service and applicable state or tribal historic preservation officer and, if necessary, the Advisory Council on Historic Preservation in accordance with 36 CFR 800.6(b). Measures identified in the MOA to minimize or mitigate adverse impacts reduce the intensity of impact under NEPA from major to moderate.</p> <p><b>Beneficial impact</b> – rehabilitation of a structure in accordance with the <i>Secretary of the Interior's Standards for the Treatment of Historic Properties</i>. The determination of effect Section 106 would be <i>no adverse effect</i>.</p>
Major	<p><b>Adverse impact</b> – alteration of a feature(s) would diminish the overall integrity of the resource. The determination of effect for Section 106 would be <i>adverse effect</i>. Measures to minimize or mitigate adverse impacts cannot be agreed upon and the National Park Service and applicable state or tribal historic preservation officer and/or Advisory Council are unable to negotiate and execute a memorandum of agreement in accordance with 36 CFR 800.6(b).</p> <p><b>Beneficial impact</b> – restoration of a structure in accordance with the <i>Secretary of the Interior's Standards for the Treatment of Historic Properties</i>. The determination of effect for Section 106 would be <i>no adverse effect</i>.</p>

#### 4.2.10 Ethnographic Resources

The thresholds of change for the intensity of impacts on ethnographic resources are defined as follows:

<b>Impact Intensity</b>	<b>Impact Description</b>
Negligible	Impact(s) would be barely perceptible and would neither alter resource conditions, such as traditional access or site preservation, nor the relationship between the resource and the affiliated group's body of practices and beliefs. The determination of effect on Traditional Cultural Properties (ethnographic resources eligible to be listed in the National Register) for §106 would be <i>no adverse effect</i> .
Minor	<p><b>Adverse impact</b> — impact(s) would be slight but noticeable but would neither appreciably alter resource conditions, such as traditional access or site preservation, nor the relationship between the resource and the affiliated group's body of practices and beliefs. The determination of effect on Traditional Cultural Properties (ethnographic resources eligible to be listed in the National Register) for §106 would be <i>no adverse effect</i>.</p> <p><b>Beneficial impact</b> — would allow access to and/or accommodate a group's traditional practices or beliefs. The determination of effect on Traditional Cultural Properties for §106 would be <i>no adverse effect</i>.</p>

<b>Impact Intensity</b>	<b>Impact Description</b>
Moderate	<p><b>Adverse impact</b> — impact(s) would be apparent and would alter resource conditions. Something would interfere with traditional access, site preservation, or the relationship between the resource and the affiliated group's practices and beliefs, even though the group's practices and beliefs would survive. The determination of effect on Traditional Cultural Properties (ethnographic resources eligible to be listed in the National Register) for §106 would be <i>adverse effect</i>.</p> <p><b>Beneficial impact</b> — would facilitate traditional access and/or accommodate a group's practices or beliefs. The determination of effect on Traditional Cultural Properties for §106 would be <i>no adverse effect</i>.</p>
Major	<p><b>Adverse impact</b> — impact(s) would alter resource conditions. Something would block or greatly affect traditional access, site preservation, or the relationship between the resource and the affiliated group's body of practices and beliefs, to the extent that the survival of a group's practices and/or beliefs would be jeopardized. The determination of effect on Traditional Cultural Properties (ethnographic resources eligible to be listed in the National Register) for §106 would be <i>adverse effect</i>.</p> <p><b>Beneficial impact</b> — would encourage traditional access and/or accommodate a group's practices or beliefs. The determination of effect on Traditional Cultural Properties for §106 would be <i>no adverse effect</i>.</p>

#### 4.2.11 Visual Resources

The thresholds of change for the intensity of impacts on visual resources are defined as follows:

<b>Impact Intensity</b>	<b>Impact Description</b>
Negligible	Effects to the visual quality of the landscape would be at or below the level of detection; changes would be so slight that they would not be of any measurable or perceptible consequence to the visitor experience.
Minor	Effects to the visual quality of the landscape would be detectable, localized, and would be small and of little consequence to the visitor experience. Mitigation measures, if needed to offset adverse effects, would be simple and successful.
Moderate	Effects to the visual quality of the landscape would be readily detectable, localized, with consequences at the regional level. Mitigation measures, if needed to offset adverse effects, would be extensive and likely successful.
Major	Effects to the visual quality of the landscape would be obvious, with substantial consequences to the visitor experience in the region. Extensive mitigation measures would be needed to offset any adverse effects and their success would not be guaranteed.

**Duration:**

**Short-term** – occurs only during the construction period.

**Long-term** – occurs even after the construction period.



#### 4.2.12 Hazardous Materials and Public Health and Safety (Lead and Asbestos)

The thresholds of change for the intensity of impacts on hazardous materials and public health and safety are defined as follows:

<b>Impact Intensity</b>	<b>Impact Description</b>
Negligible	Public health and safety would not be affected, or the effects would be at the lowest levels of detection and would not have an appreciable effect on the public health or safety.
Minor	The effect would be detectable but would not have an appreciable effect on public health and safety. If mitigation were needed, it would be relatively simple and would likely be successful.
Moderate	The effects would be readily apparent and result in substantial, noticeable effects to public health and safety on a local scale. Mitigation measures would probably be necessary and would likely be successful.
Major	The effects would be readily apparent and result in substantial, noticeable effects to public health and safety on a regional scale. Extensive mitigation measures would be needed, and success would not be guaranteed.

**Duration:**

**Short-term** – Effects last one year or less.

**Long-term** – Effects last longer than one year.

#### 4.2.13 Traffic

The thresholds of change for the intensity of impacts on transportation and traffic are defined as follows:

<b>Impact Intensity</b>	<b>Impact Description</b>
Negligible	Traffic would not be affected, or the effects would be at the lower levels of detection and would not have an appreciable effect on traffic flow. There would be no changes in the level of service.
Minor	The effect would be detectable, but would be of a magnitude that would not have an appreciable effect on traffic flow. There would be no noticeable changes in the traffic congestion or level of service. If mitigation was needed to offset adverse effects, it would be simple and likely successful.
Moderate	The effects would be readily apparent, and would result in a substantial change in traffic flow patterns, congestion, and/or level of service, in a manner noticeable to the public. Mitigation would be necessary to offset adverse effects and would likely be successful.
Major	The effects would be readily apparent and would result in a substantial change in traffic flow in a manner noticeable to the public and be markedly different from the current traffic flow patterns and levels of service. Extensive mitigation measures to offset adverse effects would be needed and their success could not be guaranteed.

#### 4.2.14 Impairment

NPS Management Policies 2001 require the analysis of potential effects to determine if actions would impair park resources. Under the NPS Organic Act and the General Authorities Act, as amended, the NPS may not allow park resources and values to be impaired, except as authorized specifically by Congress. The NPS must always seek ways to avoid or minimize, to the greatest degree practicable, adverse impacts on park resources and values. However, the laws do give the NPS management discretion to allow impacts to park resources and values when necessary and appropriate to fulfill the purposes of a park, as long as the impact does not constitute impairment to the specific resources and values.

Impairment to park resources and values are analyzed in this section. Impairment is an impact that, in the professional judgment of the responsible NPS manager, would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values. An impact would be more likely to constitute an impairment to the extent that it affects a resource or value whose conservation is key to the cultural or natural integrity of the park or that is a resource or value needed to fulfill a specific purpose identified in the enabling legislation. An impact would be less likely to constitute impairment if it is an unavoidable result that cannot be reasonably mitigated or an action necessary to preserve or restore the integrity of park resources or values.

#### 4.2.15 Cumulative Effects

CEQ regulations implementing NEPA require that the cumulative impacts of a proposed action be assessed (40 CFR Parts 1500-1508). A cumulative impact is an “impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions” (40 CFR § 1508.7). Cumulative impacts can result from individually minor but collectively significant actions taking place over time (40 CFR § 1508.7). CEQ’s guidance for considering cumulative effects states that NEPA documents “should compare the cumulative effects of multiple actions with appropriate national, regional, state, or community goals to determine whether the total effect is significant” (CEQ 1997). This section is a discussion of projects on Hawai‘i that may have cumulative effects when combined with impacts from the alternatives discussed in this EA. Cumulative projects considered below are similar to those of the proposed action, are large enough to have far-reaching effects, or are in proximity to the proposed action with similar types of impacts.

CEQ’s cumulative effects guidance sets out several different methods to determine the significance of cumulative effects, such as checklists, modeling, forecasting, and economic impact assessment, where changes in employment, income, and population are assessed (CEQ 1997). This EA uses a variety of methods, depending on the resource area, to determine cumulative socioeconomic and environmental effects. Methods for gathering and assessing data on cumulative impacts include interviews, use of checklists, trends analysis, and forecasting. In general, past, present, and future foreseeable projects are assessed by resource area. Cumulative effects may arise from single or multiple actions and may result in additive or interactive effects. Interactive effects may be either countervailing, where the adverse cumulative effect is less than the sum of the individual effects, or synergistic, where

the net adverse cumulative effect is greater than the sum of the individual effects (CEQ 1997).

Specific projects with the potential to cumulatively affect the resources (impact topics) evaluated for the project are identified in Table 4-1 below. These projects are further described in the narrative following the table. Some impact topics would be affected by several or all of the described activities, while others could be affected very little or not at all. How each alternative would incrementally contribute to potential impacts for a resource is included in the cumulative effects discussion for each impact topic. Where applicable, these resource sections include a discussion of whether project impacts would accelerate any ongoing trends of resource degradation. The area of potential effect for cumulative impacts is often larger than the area of potential effect for direct and indirect impacts, and the area of potential effect for each specific resource is defined in each resource section.

**Table 4-1**  
**Past, Present and Reasonably Foreseeable Activities Considered**  
**in the Cumulative Effects Analysis**

<b>Cumulative Action</b>	<b>Past</b>	<b>Present</b>	<b>Future</b>
Spencer Beach Park Road Realignment	X		
Stryker Brigade Combat Team			X
Open Burning Permit Program	X	X	X
Kawaihae Deep Draft Harbor – Kawaihae Harbor			X
Land Acquisition – Pohakuloa Training Area			X
Saddle Road Realignment			X
Kawaihae/Waimea Road			X
Waimea to Kawaihae Harbor – New road			X
UXO Cleanup – Former Waikoloa Maneuver Area and Nansay Sites			X
Theater Support Vessel and Use of Kawaihae Harbor			X

Source: LVWCC 2001d.

### ***Stryker Brigade Combat Team, US Army***

Hawai'i has been selected as the location for an interim force based on the Stryker vehicle, or a Stryker Brigade Combat Team (SBCT). As the Army transforms, the interim force will use available technology and weapons, will select new equipment, such as the Stryker, and will adopt a modified training doctrine to train the soldiers to be able to meet the goals of a fast-reacting light force. This will allow the Army to deploy more quickly, be more lethal, highly mobile, and survivable than the legacy force. The interim force will also serve as a “working model” to refine equipment, weapons, and training of the objective force. For training exercises at PTA, SBCT vehicles and equipment for training support would be arriving in the islands at Kawaihae Harbor. Convoys would travel through the travel corridor between the harbor and PTA; this travel corridor includes Saddle Road, Mamalahoa Highway, and Queen Ka'ahumanu Highway (US Army and USACE, 2002).

***Open Burning Permit Program***

Open burning is allowed in Hawai'i, per HDOH regulations (Hawai'i Administrative Rules, Air Pollution Control, Title 11, Section 11-60.1-51 to -57). Most such permits are granted for agricultural burning, although open burning on Army installations is also permitted. Permits are granted year-round, except for no burn periods, which normally fall during winter trade wind season. The state does not keep records on emissions from open burns (Young 2003).

***Kawaihae Deep Draft Harbor—Kawaihae Harbor***

The US Army Corps of Engineers and the state of Hawai'i are proposing to deepen and expand the Kawaihae Harbor. The project consists of an entrance channel, the harbor basin, and a "rubble mound" breakwater. Currently the harbor provides maritime access for commerce on the western side of the island of Hawai'i. Growing demand for cargo support and state plans to pursue a larger share of the North American passenger cruise market will also increase pressure on the current harbor. Presently there are numerous operating inefficiencies at the harbor. Wave surge enters the harbor and damages vessels and piers and causes cargo-handling delays. The current harbor basin is approximately 35 feet deep, and accommodating the new vessels would require a harbor basin of at least 40 feet. Modifications are proposed to the west breakwater, and wave absorbers or breakwaters on the north side are proposed to reduce surge problems. The southwest part of the harbor is the primary port for military equipment, supplies, and personnel destined for the Army's Pohakuloa Training Area (PTA). PTA is 18 miles southwest of Pu'ukohola Heiau National Historic Site. The harbor was first completed in 1962 and was enlarged in 1973. An environmental assessment will be prepared by spring 2005, with construction to begin by 2008 (USACE 2001).

***Land Acquisition—Pohakuloa Training Area***

The Army has been leasing between 990 and 1,010 acres on the northwest of PTA from Parker Ranch. This lease ran out in 1998, and negotiations have been underway for the Army to acquire this land. The Army Real Estate Planning Report prepared for this acquisition states that the neighborhood of the acquisition is dominated by military training and pasture land use, though the report also says that "the land to be acquired has no significant impact on the local community." The HDOT has proposed a new alignment of Saddle Road that would cross the boundary of the proposed acquisition and PTA. Restrictions have been placed on 70 acres after the discovery of the endangered Hawaiian mint on the parcel. (These plants are currently fenced and restricted from training activities.) Endangered Species Act Section 7 consultation is underway, and the Army is finalizing the EA for the purchase (Shimabukuro 2002).

***Saddle Road Realignment—Island of Hawai'i***

This is a long-term highway construction project that includes improvements and modifications to Saddle Road between the Hilo side and Kona side of the island of Hawai'i (see the Internet Web site, [www.saddleroad.com](http://www.saddleroad.com), for more details on the project). Approximately 250 miles of road will be modernized to meet American Association State Highway and Transportation Officials standards. Constructed in 1942, Saddle Road does

not meet design standards for roadways. It is the only road serving PTA and is subject to serious traffic congestion when military convoys are transporting ammunition or troops for training. It is also the only road serving Mauna Kea astronomical observatory complex, Waiki'i Ranch, Kilohana Girl Scout Camp, Mauna Kea State Recreation Area, and major hunting areas. An environmental impact statement was completed in the fall of 1999 (County of Hawai'i 2002). Construction is slated to begin in February 2004.

#### ***Kawaihae/Waimea Road—Island of Hawai'i***

Hawai'i County Public Works Department is investigating traffic mitigation measures along Kawaihae Road from Waimea Park to Merriman's. The intent is to use the existing road corridor and, after minor paving and other improvements, to remark the roads with through lanes and turning pockets. The county is also studying a project to provide for a state right-of-way for a road to replace the Kawaihae/Waimea Road (County of Hawai'i 2002). There are no other county of Hawai'i road projects in the areas of Pohakuloa, Kawaihae, or Waimea (Kuba 2002).

#### ***New Highway—Waimea to Kawaihae Harbor***

The FHWA has proposed constructing an improved 14-mile stretch of upgraded highway between the central and west Hawai'i town of Waimea to Kawaihae Harbor near the district of South Kohala. A notice of intent to prepare an EIS for the proposed project has been issued.

#### ***UXO Cleanup - Former Waikoloa Maneuver Area and Nansay Sites***

The Department of Defense has begun investigating and cleaning up unexploded ordnance (UXO) on lands formerly used by the US Navy and Marines. Starting in 1943, the Navy and the Marines acquired state of Hawai'i and private lands (Parker Ranch) through license agreements and used them for artillery and naval gun firing ranges, live-fire exercises, troop maneuvers, and weapons practice. Ordnance recently used or identified within the entire former maneuver area includes shells, rockets, grenades, mortars, cannons, and small arms. While use of most of the area for training and weapons practice ended in 1946 and 1953, the Pu'u Pa Maneuver Area is still used occasionally as an active US military training area. Parker Ranch leases the area to the Department of Defense. Current use of the former maneuver land on the Parker Ranch property is mainly cattle ranching and grazing and, in the areas near Waimea and Waiaka Village, residential, commercial, and industrial. UXO continues to be found in the former maneuver area, and preliminary investigations show that approximately 48,000 acres could hold ordnance and explosives waste hazards. Units from Schofield Barracks on O'ahu have disposed of UXO, and the Corps of Engineers has prepared a phase II site assessment document discussing possible investigation and cleanup alternatives (USACE 2001b). This report recommends cleanup in various areas in the former maneuver area. This area includes the Ke'amuku area, which may be acquired under the SBCT proposed action. The phase II report did not identify ordnance in the Ke'amuku area because it is still considered an active military training area, and entry is limited. However, the report included an initial visual screening investigation in the Ke'amuku parcel and identified three areas within that parcel as needing further geophysical study.

***Theater Support Vessel***

In the future, the Army is considering the use of theater support vessels to transport troops and supplies between O'ahu and the island of Hawai'i. These vessels would be launched from Pearl Harbor with troops and equipment and would land at Kawaihae Harbor. The 25<sup>th</sup> ID(L) units would offload and transit from Kawaihae Harbor to PTA. Some of the transit areas for the vessels between the two islands are within or in close proximity to the Hawaiian Islands Humpback Whale National Marine Sanctuary waters. If and when this project is implemented, the Army plans to comply with all appropriate environmental regulations, including NEPA, the Endangered Species Act, and the Marine Mammal Protection Act.

***TSV Pier Use—Kawaihae Harbor***

The Army could replace the logistic support vehicles (LSV) landing craft with theater support vehicles (TSV). The TSV would need to dock at a pier and to have cargo offloaded by either a ship-mounted or shore crane. Kawaihae Harbor is the main seaport for the Army to access PTA and would probably be the site of any TSV landings. The existing entrance channel and depths in Kawaihae Harbor could accommodate the TSV, but the piers may need to be modified. Specific sites, plans, and specifications for pier modification are not available, so any impact analysis at this stage would be speculative. Such a project would be subject to NEPA documentation.

**4.3 ALTERNATIVE A (NO ACTION)**

For the purpose of this analysis, intensity thresholds discussed in Section 4.2.1 were used.

Under Alternative A, because there would be no major adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the park's establishing legislation, 2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park, or 3) identified as a goal in the park's general management plan or other relevant NPS planning documents, there would be no impairment of park resources or values related to geology and soils, water resources, vegetation, wildlife, visitor experience and enjoyment, archaeological resources, cultural landscapes, historic structures, ethnographic resources, visual resources, Hazardous Materials and Public Health and Safety and traffic.

**4.3.1 Geology and Soils*****Direct and Indirect Effects***

No direct effects from implementing Alternative A would result in negligible adverse, long-term effect on the geological resources of the area since no changes are scheduled to take place. No new adverse effects to soils and geology would be introduced under Alternative A. The project site would not be disturbed, and no unique mineral resources have been identified. There is no known soil contamination at the site. Current management practices would continue. Changes would be so small that it would not be of any measurable or perceptible consequence.

***Cumulative Effects***

Alternative A would not contribute to cumulative effects. Existing erosion conditions would remain. Cumulative projects listed in Section 4.2.15 that involve military activity, construction, or an increase in traffic would contribute to erosion in the region, however, Alternative A will not contribute to a change in the geological and soil resources. The cumulative projects could result in a change that would be measurable and loss of a small amount soils.

***Conclusion***

No direct effects from implementing Alternative A would result in negligible adverse, long-term effect on the geological resources of the area since no changes are scheduled to take place. Alternative A would not contribute to cumulative effects. No impairment to the geological and soil resources would occur under Alternative A.

**4.3.2 Water Resources*****Direct and Indirect Effects***

The existing septic distribution system at the project site consists of portable toilets with sewage directed toward the sewage disposal site located at Samuel M. Spencer Park (NPS 1988). There are no ongoing adverse effects from this system on the quality of water resource known to exist. Effects would be negligible adverse and long-term.

***Cumulative Effects***

The above cumulative projects would threaten water resources for the region. Effects would be minor adverse and long-term. Activities associated with military and construction operations would generate wastes and pollutants. Agencies, contractors, and military personnel are required to follow federal and state regulations for transportation, handling, storage and disposal of hazardous materials in order to prevent release or discharge of these materials to the environment.

These identified projects would not impair water resources within the area of potential effect.

***Conclusion***

Direct effects from implementing Alternative A would result in a negligible adverse, long-term effect on water resources. Cumulative projects would have minor adverse, long-term effects on water resources within the area of potential effect. No impairment is anticipated.

**4.3.3 Vegetation*****Direct and Indirect Effects***

Direct effects from implementing Alternative A would result in a negligible adverse, long-term effect on biological resources. Under the Alternative A no native vegetation or species of concern would be affected. Current efforts to control nonnative species should continue

and be expanded, in keeping with the resources management plan and the *Vegetation Management Strategies for three National Historical Parks on Hawai'i Island* (Pratt 1999).

#### ***Cumulative Effects***

Cumulative projects would have a moderate, adverse, long-term effect on vegetation resources. Most of the projects listed in Section 4.2.15 will result in a loss of plants and habitat. The road projects will further decrease corridors for species migration and habitation, and increased development will further segment or marginalize the native natural areas. The projects listed in Section 4.2.15 will have a moderate adverse, long-term effect on the natural resources of Hawai'i. These identified projects would have no impact on vegetation resources within the area of potential effect.

#### ***Conclusion***

Direct effects from implementing Alternative A would result in a negligible adverse, long-term effect on biological resources. Cumulative projects would have a moderate, adverse, long-term effect on vegetation resources within the area of potential effect. No impairment is anticipated.

#### **4.3.4 Wildlife**

##### ***Direct and Indirect Effects***

There would be no direct or indirect effects on wildlife within the area of potential effect under Alternative A. Alternative A would have no impact on wildlife in the project area. There would be no observable or measurable impacts to native species, their habitats, or the natural processes sustaining them. Impacts would be well within natural fluctuations.

##### ***Cumulative Effects***

There would be no cumulative effects on wildlife within the area of potential effect under Alternative A. Most of these projects will result in a loss of wildlife as well as habitat. The road projects will further decrease corridors for species migration and habitation, and increased development will further segment or marginalize the native natural areas.

Under cumulative projects, there would be no observable or measurable impacts to native species, their habitats, or the natural processes sustaining them. Impacts would be well within natural fluctuations. Cumulative projects would have no impact on resources within the area of potential effect.

##### ***Conclusion***

There would be no direct, indirect, or cumulative effects on wildlife within the area of potential effect under Alternative A. No impairment is anticipated.



#### 4.3.5 Visitor Experience and Enjoyment

##### *Direct and Indirect Effects*

Implementing Alternative A would result in negligible adverse, long-term effects on recreational resources. Under Alternative A, there will be no changes in access to recreation at the park, and no changes in the demand for recreational resources would occur.

##### *Cumulative Effects*

The project's cumulative effects would result in a minor adverse, long-term effect on the current visitor experience and enjoyment. The projects listed above would contribute to cumulative effects to visitor experience and enjoyment. Increasing harbor traffic and the presence of larger vessels in the area would also threaten passive recreational activities at the park.

##### *Conclusion*

Implementing Alternative A would result in negligible adverse, long-term effects on recreational resources. The project's cumulative effects would result in a minor adverse, long-term effect on the current visitor experience and enjoyment. No impairment is anticipated.

#### 4.3.6 Cultural Resources

##### *Archaeological Resource*

##### *Direct and Indirect Effects*

Direct effects from implementing Alternative A would result in negligible adverse, long-term effects to archaeological resources. Under Alternative A, the existing visitor center and administrative buildings would remain on the "Hill of the Whale" in close proximity to the Pu'ukohola Heiau. There would be no new construction or disturbance to surrounding areas or to the known archaeological features that were identified in the last survey of the area of potential effect. There would be no loss of integrity for archaeological resources.

##### *Cumulative Effects*

Cumulative projects would have no adverse effects on archaeological resources within the area of potential effect. The projects listed in Section 4.2.15 are not expected to impact archaeological resources in the NPS project area. The cumulative projects include actions that would disturb archeological resources in the region in areas that have not been surveyed.

##### *Conclusion*

Direct effects from implementing Alternative A would result in negligible adverse, long-term effects to archaeological resources. Cumulative projects would have no adverse effects on archaeological resources within the area of potential effect. No impairment is anticipated.

### ***Cultural Landscape***

#### ***Direct and Indirect Effects***

Direct effects from implementing Alternative A would result in minor adverse, long-term effects on the cultural landscape. Under Alternative A, the visitor center and administrative facilities would continue to sit in close proximity to the Pu'ukohola Heiau. The temporary wooden structures of the visitor center and administrative facilities are an obvious contrast to the prehistoric stone structures of the heiau and do not reflect the cultural landscape. However, the overall integrity of the landscape is not diminished.

#### ***Cumulative Effects***

Cumulative effects would also result in minor adverse, long-term effects on this resource. Most projects listed in Section 4.2.15 will result in altering the patterns and features of the landscapes in the region. Surrounding developments with the roadways and Kawaihae Deep Draft Harbor will introduce new developments in the neighboring landscapes that will detract from the cultural landscape of Pu'ukohola Heiau National Historic Site. Surrounding developments will not affect the integrity of the cultural landscape of the park.

#### ***Conclusion***

Direct effects from implementing Alternative A would result in minor adverse, long-term effects on the cultural landscape. Cumulative effects would also result in minor adverse, long-term effects on this resource. No impairment is anticipated.

### ***Historic Structures***

#### ***Direct and Indirect Effects***

Implementing Alternative A would result in negligible impacts neither adverse nor beneficial impacts on historic structures for both direct and indirect effects. Under Alternative A, the visitor center and administrative facilities would continue to sit in close proximity to the Pu'ukohola Heiau, the largest historic structure on the site. The temporary wooden structures of the visitor center and administrative facilities do not reflect the historic scene of the three historic heiau. Under Alternative A, no alteration to the historic structures would take place. The determination of effect for Section 106 would be no adverse effect.

#### ***Cumulative Effects***

Implementing Alternative A would result in minor adverse, long-term impacts on historic structures for cumulative effects. Alternative A would add a very small increment to the total cumulative effects on historic structures in the region. Most projects listed in Section 4.2.15 will result in new developments in the region which will be in contrast with the historic structures of the Pu'ukohola Heiau National Historic Site. Surrounding developments will not affect the integrity of the cultural landscape of the park.

#### ***Conclusion***

Implementing Alternative A would result in negligible impacts neither adverse nor beneficial impacts on historic structures for both direct and indirect effects. Alternative A would result

in minor adverse, long-term impacts on historic structures for cumulative effects. No impairment is anticipated.

### ***Ethnographic Resources***

#### ***Direct and Indirect Effects***

Under Alternative A, direct and indirect impacts would be negligible, neither adverse nor beneficial. The presence of the existing visitor center and administrative facilities and its associated activities in close proximity to the heiau would continue to impose on cultural practices which occur on the platforms of the Pu'ukohola Heiau. However, impacts would be barely perceptible and would neither alter resources conditions, such as traditional access or site preservation, nor the relationship between the resource and Native Hawaiian practices and beliefs. The determination of effect on Traditional Cultural Properties for §106 would be no adverse effect.

#### ***Cumulative Effects***

Under Alternative A, cumulative impacts would be negligible adverse, long-term. Many of the road improvement could allow for better access to the park and cultural resources; however, the impact of larger vessels in Kawaihae Harbor and resultant increased traffic on the nearby highway could result in an additional adverse effect on cultural practitioners while they are on the platforms of the heiau and the ahu.

#### ***Conclusion***

Under Alternative A, direct and indirect impacts would be negligible, neither adverse nor beneficial. Cumulative impacts would be negligible adverse, long-term impacts. No impairment is anticipated.

### **4.3.7 Visual Resources**

#### ***Direct and Indirect Effects***

Implementing Alternative A would result in a minor adverse, long-term effect as the visitor center and administration building would continue to intrude on the viewshed of the heiau. Under Alternative A, the current visitor center and administrative buildings would be left in place. Since no change to the structures would occur, there would be no change to the viewshed during cultural and religious ceremonies. Features of the landscape would not diminish the overall integrity of the landscape.

#### ***Cumulative Effects***

The cumulative effects would result in a minor adverse, long-term effect on visual resources. A deep draft harbor would allow for larger vessels to enter the viewshed of the heiau. Increasing harbor traffic and the presence of larger vessels in the area would also threaten the viewshed experienced from the park.

#### ***Conclusion***

Implementing Alternative A would result in a minor adverse, long-term effect as the visitor center and administration building would continue to intrude on the viewshed of the heiau.

The cumulative effects would result in a minor adverse, long-term effect on visual resources. No impairment is anticipated.

#### **4.3.8 Hazardous Materials and Public Health and Safety (Lead and Asbestos)**

##### ***Direct and Indirect Effects***

Improvements at the Pu'ukohola Heiau National Historic Site were reportedly completed in 1974. Because of the age of the facilities, lead-based paint and asbestos containing materials are assumed to be present. Periodic facility maintenance and repainting have likely contained initial layers of lead-based paint. Under Alternative A, no demolition or relocation would occur. Assuming that paint and materials potentially containing asbestos are intact, negligible impacts neither adverse nor beneficial are anticipated under Alternative A.

##### ***Cumulative Effects***

Alternative A and the above projects would not incrementally affect the generation of hazardous waste or use of pesticides on the island of Hawai'i because the proposed action would not generate significant amount of hazardous waste or use significant amounts of pesticides. Negligible cumulative impacts neither adverse nor beneficial are anticipated under Alternative A.

##### ***Conclusion***

Implementing Alternative A would result in negligible impacts, neither adverse nor beneficial, for direct, indirect, and cumulative impacts. No impairment is anticipated.

#### **4.3.9 Traffic**

##### ***Direct and Indirect Effects***

Implementing Alternative A would result in the negligible adverse, long-term effect on traffic. Traffic volumes and circulation patterns would not be altered with Alternative A.

##### ***Cumulative Effects***

Cumulative effects would be moderate beneficial and long-term to the infrastructure in the region. The projects listed in Section 4.2.15 are not expected to impact traffic in the NPS project area. The cumulative projects include actions that would improve traffic and circulation in the region.

##### ***Conclusion***

Implementing Alternative A would result in the negligible adverse, long-term effect on traffic. Cumulative effects would be moderate beneficial and long-term to the infrastructure in the region. No impairment is anticipated.

#### **4.4 ALTERNATIVE B (PREFERRED)**

Under Alternative B, because there would be no major adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the park's establishing legislation, 2) key to the natural or cultural integrity of the park or to

opportunities for enjoyment of the park, or 3) identified as a goal in the park's general management plan or other relevant NPS planning documents, there would be no impairment of park resources or values related to geology and soils, water resources, vegetation, wildlife, visitor experience and enjoyment, archaeological resources, cultural landscapes, historic structures, ethnographic resources, visual resources, Hazardous Materials and Public Health and Safety and traffic.

#### 4.4.1 Geology and Soils

##### *Direct and Indirect Effects*

The trace rainfall and frequent trade winds would escalate erosional effects during construction, but this is expected to be short term. Alternative B would result in detectable change to the soil resource, but the change would be small and localized and of little consequence. The use of best management practices, such as using water trucks on exposed areas and the use of silt dams, would mitigate the amount of erosion and dust generated during the facility construction, demolition, and relocation. Alternative B would have negligible adverse, long-term impact to geology and minor adverse, short-term impact to soils due to the construction activities.

##### *Cumulative Effects*

Cumulative effects are moderate adverse and short-term, but Alternative B would contribute a very small increment to the total cumulative effects on soil and geologic resources. Activities associated with the Waimea and Saddle Road construction projects would involve off-road vehicle movement. Military training involves off-road foot and vehicle maneuvers. These activities, construction operations of several of the above cumulative projects, and UXO cleanup in the former Waikoloa Maneuver Area and Nansay Sites would each involve ground disturbance, vegetation loss, and subsequent erosional effects and would be moderate and long-term in nature. The total cumulative impact to geology and soils would be moderate and long-term, however Alternative B would contribute an imperceptible component of the total cumulative effects.

##### *Conclusion*

Implementing the Alternative B would result in minor adverse, short-term effects on soils and negligible long-term impacts to geology. Following infrastructure modifications under Alternative B, no further impacts on the geological resources on the site are expected. Cumulative effects are moderate adverse and short-term. No impairment is anticipated.

#### 4.4.2 Water Resources

##### *Direct and Indirect Effects*

Implementation of Alternative B would result in negligible beneficial, long-term direct and indirect effects. A sewage lift station would be constructed under Alternative B, including underground wastewater distribution lines between the Visitors Center and administrative buildings to the septic system. As discussed in Section 2.3, the system would include a septic tank and leach field located northeast of the proposed relocated administrative buildings. Sewage would be directed to the septic tank, where bio-solid material would be filtered and

wastewater would continue into the leach field where geologic filtration would naturally filter nutrients from the wastewater during the percolation process. Bio-solids would presumably be collected from the septic tank on a regular or as needed basis, which would eliminate most of the nutrients from the waste material. Wastewater would eventually reach Waimea Aquifer. Although slow filtration and percolation would likely remove most nitrogen and phosphorus sewage components, because of the saltwater intrusion that continually compromises the integrity of the groundwater below the project site, this aquifer is not considered adequate for potable use.

The construction of the new wastewater system and associated leach field under the Proposed Action would be implemented with a construction objective to minimize the potential release of waste to the aquifer system. Appropriate permitting and monitoring would be incorporated into the schedule to ensure no adverse impact to the environment. As compared to the existing use of portable toilets with wastewater direct to the septic system located at Spencer Beach, this onsite system would ensure a more secure capture and treatment of wastewater. This proposed project is not predicted to threaten water quality at the Park or adjacent properties during construction or during operation.

#### ***Cumulative Effects***

Cumulative impacts on water resources may occur in four categories: water supply, surface water quality, groundwater quality, and flooding. The area of potential effect for the cumulative effects on water resources is the sum of the area of potential effect of the combined projects. For the proposed action, the area of potential effect is the region within the Pu'ukohola Heiau Park and watersheds and aquifer systems downgradient of the site. Although most of the cumulative projects discussed above are in the northwest region of Hawai'i, two projects, SBCT and Saddle Road Realignment, extend across the island, southeast of the proposed action.

As discussed in Section 3.2, Water Resources, volcanic rocks are highly permeable and allow aquifer intrusion from saltwater sources below and surface water sources above. For this reason, there are no drinking water wells in the northwest region of Hawai'i near most of the above cumulative projects. These rocks also act as filters to remove some contaminants from rainwater, irrigation water, or other surface sources. For this reason, and the low levels of rainfall in the northwest region of Hawai'i, the risk of flooding is unlikely in this area.

The cumulative projects associated with military and construction operations would have the greatest impact on water resources. Each of these operations would use water to suppress erosion and for operation of certain activities, such as mixing road base material. Water use would not be constant or simultaneous between projects and is therefore not expected to cause a significant cumulative impact.

Vehicles and equipment used for both military and construction operations as well as other byproduct waste generated during these activities would threaten the quality of both surface water and groundwater. Agencies, contractors, and military personnel are required to follow federal and state regulations for transportation, handling, storage and disposal of hazardous

materials in order to prevent release or discharge of these materials to the environment. As these projects would occur over time and not simultaneously, the overall impact on water quality is considered minor adverse and long-term.

### ***Conclusion***

Direct effects from implementing Alternative B would result in a negligible beneficial, long-term effect on water resources. Cumulative projects would have minor adverse, long-term effects on water resources within the area of potential effect. No impairment is anticipated.

#### **4.4.3 Vegetation**

##### ***Direct and Indirect Effects***

Direct effects of implementing Alternative B would result in minor adverse, short-term and long-term effects on vegetation. The new facilities would draw more people to the park, which would increase the pressure on the natural resources in the project area. Alternative B would affect a relatively minor portion of native plants and mitigation will be used to offset adverse effects to avoid affecting vegetation resources.

##### ***Cumulative Effects***

The cumulative projects listed in Section 4.2.15 will have a greater adverse effect on the natural resources of Hawai'i than the proposed project itself; however, as stated in the vegetation resources section, care must be taken when constructing or relocating the buildings and trail. Overall the cumulative projects will have a moderate adverse, long-term effect on the biological resources of the region. Relocating the visitor center and administrative headquarters would have minor adverse short-term and long-term effects on the vegetation in the project area. The following describes effects on vegetation resources that would result from NPS actions in conjunction with those projects described in this section. The extensive disturbance and reduction of native habitats has caused the extinction of many native Hawaiian species and has placed in peril most of those that remain.

Additional pressure from an increase in tourism, facilitated by the road and harbor projects, can tip the scale in favor of species and habitat loss.

### ***Conclusion***

Direct effects of implementing Alternative B would result in minor adverse, short-term and long-term effects on vegetation. Overall the cumulative projects will have a moderate adverse, long-term effect on the biological resources of the region. No impairment is anticipated.

#### **4.4.4 Wildlife**

##### ***Direct and Indirect Effects***

Implementing Alternative B would result in minor adverse, short- and long-term effects on wildlife. There may be short-term effects to bird species from the construction proposed under Alternative B. Effects would be detectable, but they would not be expected to be outside the natural range of variability of native species' populations, their habitats, or the

natural processes sustaining them. Noise from equipment and construction could alter bird behavior in the short term. No native bird species are known in the project area, so this effect is expected to be negligible. One migratory bird species is found in the project area (pacific golden plover). Construction would be timed to avoid effects to this MBTA-protected species, which resides in Hawai'i from late August through early May. This simple mitigation measure would be enough to offset adverse effects.

#### ***Cumulative Effects***

Overall the cumulative projects will have a moderate adverse, long-term effect on the wildlife resources of the region. The area of potential effect for cumulative effects on wildlife resources overlaps with the project area for the NPS site. Effects would be detectable, but they would not be expected to be outside the natural range of variability of native species' populations, their habitats, or the natural processes sustaining them. The following describes effects on biological resources that would result from NPS actions in conjunction with those projects described in this section. As discussed in Section 1.6.2, the extensive disturbance and reduction of native habitats has caused the extinction of many native Hawaiian species and has placed in peril most of those that remain. Development, heightened human activities, fire, and the introduction of nonnative species have been the main causes of habitat degradation and loss and the subsequent loss and endangerment of native species.

The cumulative projects listed in Section 4.2.15 will have a greater negative effect on the natural resources of Hawai'i than the proposed project itself; however, as stated in the wildlife resources section, care must be taken when constructing or relocating the buildings and trail. Fires allow for greater spread of nonnative fire-prone grasses, which can significantly alter habitat, and any individual loss of a sensitive plant or wildlife resource decreases that species' chances for survival. Additional pressure from an increase in tourism, facilitated by the road and harbor projects, can tip the scale in favor of species and habitat loss.

#### ***Conclusion***

Implementing Alternative B would result in minor adverse, short- and long-term effects on wildlife. Overall the cumulative projects will have a moderate adverse, long-term effect on the wildlife resources of the region. No impairment is anticipated.

#### **4.4.5 Visitor Experience and Enjoyment**

##### ***Direct and Indirect Effects***

Implementing Alternative B would result in moderate adverse, short-term effects for the duration of construction activities and moderate beneficial, long-term effects to visitor experience and enjoyment. Under Alternative B, there would be an increased demand for the use of the park and facilities. Constructing the new Visitor Center, comfort station and its parking lot, which would accommodate buses, and its close proximity to Spencer Beach Park would encourage more people to visit the park and provide an improved visitor experience. The new Visitor Center will improve the interpretive value to visitors and the



new loop trail will provide better access to the cultural sites. The new comfort station will allow for a convenient, enjoyable, and uninterrupted experience. With the construction of the new Visitor Center, the changes in visitor use and experience would be readily apparent and exceptionally beneficial. The visitor would be aware of the effects associated with the alternative and would likely express a strong opinion about the changes.

During construction of the new facilities, visitors would be disturbed by construction activities, such as the movement of heavy equipment, and may have to pass through or near construction sites to gain access to the park. For the duration of construction, changes in visitor use and experience would be detectable, although the changes would be slight, the visitor would be aware of the effects associated with the alternative, and would likely be able to express an opinion about the changes.

#### ***Cumulative Effects***

Cumulative effects would result in minor adverse, long-term effects on visitor experience and enjoyment. While Alternative B would improve visitor experience and enjoyment of the park, the projects listed in Section 4.2.15 would have an overall minor adverse, long-term effect on the cultural resources of the region. Growing development in surrounding areas, such as the harbor, would encroach on the surrounding open spaces of the park and detract from the interpretive value and passive recreational experience. Alternative B would add a very small increment to the total cumulative effects on visitor experience and enjoyment the region.

#### ***Conclusion***

Implementing Alternative B would result in moderate adverse, short-term effects for the duration of construction activities and moderate beneficial, long-term effects to visitor experience and enjoyment. Cumulative effects would result in minor adverse, long-term effects on visitor experience and enjoyment. No impairment is anticipated.

#### **4.4.6 Cultural Resources**

##### ***Section 106 Summary***

Under Alternative B, National Park Service structures would be either removed from the “Hill of the Whale” or relocated out of the viewshed of the heiau, a new Visitor Center would be constructed just north of the new Spencer Beach Road, scars left from removing temporary structures would be restored to natural conditions, new trails and a new septic system would be constructed. The National Park Service would design the project to either avoid or minimize effects to archeological resources. After applying the Advisory Council on Historic Preservation’s criteria of adverse effect (36 CFR 800.5), the National Park Service proposes that implementing Alternative B would result in a determination of no adverse effect to historic properties.

##### ***Archaeological Resource***

***Direct and Indirect Effects***

Under Alternative B, the relocation of the Visitor Center and the administrative facilities would result in ground disturbance; however structures and features would be designed and located to avoid or minimize impacts to archeological resources. In addition, the relocation of the administrative buildings to the east side of the existing visitor parking lot would result in minimal ground disturbance. Therefore, impacts to archeological resources under Alternative B would be negligible neither adverse nor beneficial.

***Cumulative Effects***

Overall the cumulative projects will have a moderate adverse, long-term effect on the archeological resources of the region. The projects listed in Section 4.2.15 are not expected to impact archaeological resources in the project area. The cumulative projects include actions and developments that would disturb archeological resources in the region in areas that have not been surveyed.

***Conclusion***

Under Alternative B, direct and indirect effects on archaeological resources would be negligible neither adverse nor beneficial. Overall the cumulative projects will have a moderate adverse, long-term effect on the archeological resources of the region. No impairment is anticipated

***Cultural Landscape******Direct and Indirect Effects***

Implementation of Alternative B would have minor adverse, short-term effect and a negligible to minor adverse, long-term effect. Under Alternative B, the Visitor Center and the administrative buildings would be relocated off the “Hill of the Whale” to locations which are less intrusive on the cultural landscape of the three heiau. Facilities to be built at the base of the “Hill of the Whale” would remain visible from the “inner courtyard” of the heiau and are thus within the heiau viewshed. The facilities would consist of visitor services buildings and would not include park administration structures; therefore the built footprint would be smaller. The pattern of the landscape would be altered, but not such that it would diminish the overall integrity of the landscape. The footprint of the old visitor center, administrative facilities, and demolished trails would be revegetated with native plants. The grounds would be landscaped using native vegetation. The alternation of the patterns and features of the landscape would be short term and for the duration of construction and would not diminish the overall integrity of the landscape. The determination of effect for §106 would be no adverse effect. The resulting view of the heiau would be more similar to the most common view of the heiau that was seen during its period of significance.

***Cumulative Effects***

Cumulative effects would result in minor adverse, long-term effects. Cumulative effects on the cultural landscape would be the same as cumulative effects presented for Alternative A. Surrounding developments would introduce new developments in the neighboring

landscapes that will detract from the cultural landscape of the heiau. Surrounding developments will not affect the integrity of the cultural landscape of the park.

### ***Conclusion***

Implementation of Alternative B would have minor adverse, short-term effect and a negligible to minor adverse, long-term impact on the cultural landscape of the Pu'ukohola Heiau National Historic Site. Cumulative effects would result in minor adverse, long-term effects. No impairment is anticipated.

### ***Historic Structures***

#### ***Direct and Indirect Effects***

Implementing Alternative B would result in minor beneficial, long-term effects on historic structures for direct effects. Under Alternative B, the Visitor Center and administrative facilities would be relocated to a site which is farther away from the historic structures of the heiau. Relocating the administrative facilities would allow for the restoration of a portion of a rock wall on the "Hill of the Whale", maintenance, preservation, and stabilization of historic structures, all of which are in accordance with the *Secretary of the Interior's Standards for the treatment of Historic Properties*. The determination of effect for §106 would be no adverse effect.

#### ***Cumulative Effects***

Implementing Alternative B would result in minor adverse, long-term effects on historic structures for cumulative effects. Alternative B would add a very small increment to the total cumulative effects on historic structures in the region. Projects listed in Section 4.2.15 will result in new developments in the region which will be in close proximity and in contrast with the historic structures of the Pu'ukohola Heiau National Historic Site. Surrounding developments will not affect the integrity of the cultural landscape of the park.

### ***Conclusion***

Implementing Alternative B would result in minor beneficial, long-term effects on historic structures for direct effects. Implementing Alternative B would result in minor adverse, long-term effects on historic structures for cumulative effects. No impairment is anticipated.

### ***Ethnographic Resources***

#### ***Direct and Indirect Effects***

Implementation of Alternative B would result in moderate beneficial long-term effects on ethnographic resources. Under Alternative B, cultural activities taking place on the platforms of Pu'ukohola Heiau would benefit from the relocation of the Visitor Center and the administrative facilities. Landscaping created by planting plants used in previous cultural ceremonies would be kept in place. Additional landscaping would use more native plants, many of which are associated with the plants that are used as offerings at the heiau. Alternative B would facilitate traditional access and accommodate Native Hawaiian cultural practices and beliefs. The determination of effect for §106 would be no adverse effect.

***Cumulative Effects***

Cumulative effects under Alternative B would be minor adverse, long-term effects. Alternative B would add a very small increment to the total cumulative effects on ethnographic resources in the region. Traffic improvement projects listed in section 4.2.15 would increase the accessibility to the Pu'ukohola Heiau National Historic Site. Further development of surrounding areas would be seen as an intrusion and disturbance to the traditional practices that occur at the heiau and its grounds.

***Conclusion***

Implementation of Alternative B would result in moderate beneficial long-term effects on ethnographic resources. Cumulative effects under Alternative B would be minor adverse, long-term effects. No impairment is anticipated.

**4.4.7 Visual Resources*****Direct and Indirect Effects***

Implementing the Alternative B would result in minor adverse, short-term effects and moderate beneficial, long-term effects on visual resources. Under Alternative B, for the duration of construction, landscaping and revegetation, effects on the scenic vista would be detectable and localized. The footprint of the former visitor center and demolished trails would be visible until vegetation grows in. Also, the presence of the construction site would be out of character with a historic site.

Alternative B would result in moderate beneficial, long-term effects on visual resources. The new Visitor Center would be reconstructed at a site off the "Hill of the Whale," which is considered to be a sensitive viewing location, and the administration buildings would be out of view and moved farther away from the temple sites. All human-made structures would be relocated to reduce their visibility from the Pu'ukohola Heiau, while improving the view of the heiau from the new Visitor Center. The center would have an unimpaired view of the heiau and would be in compliance with the National Park Service Act (16 USC 1). Building design would be contoured to blend into its surrounding areas to minimize visual effects on the scenic vista (Figure 4-1). The proposed action would have a beneficial effect because developing the property with a modern Visitor Center would be a more aesthetically pleasing use than the current Visitor Center, which is housed in portable structures.

***Cumulative Effects***

The cumulative projects would result in minor adverse, long-term effects. While the Preferred Alternative would improve the visual resources of the park, the projects listed in Section 4.2.15 would have an overall negative effect on the cultural resources of the region. Growing development in surrounding areas such as the harbor would visually detract from the park or from the NPS's attempt to restore the historic scene of the heiau to the time of Kamehameha. Increasing harbor traffic and accommodating larger vessels in the area would also threaten to change the viewshed of Pu'ukohola Heiau National Historic Site.

**Conclusion**

Implementing Alternative B would result in minor adverse, short-term effects and moderate beneficial, long-term effects on visual resources. The cumulative projects would result in minor adverse, long-term effects. No impairment is anticipated.

**4.4.8 Hazardous Materials and Public Health and Safety (Lead and Asbestos)*****Direct and Indirect Effects***

Demolition and relocation of existing improvements under Alternative B could result in the release of lead-based paint or asbestos, from materials such as floor and roof tiling or insulation material, to the environment. These materials are assumed to be present in the existing buildings as construction occurred prior to 1978, when these materials were discontinued or regulated. Prior to demolition or relocation activities, facilities should be tested for the presence of these materials. If lead or asbestos are found to be present, proper containment and abatement procedures should be implemented in accordance with RCRA and OSHA regulations in order to prevent release to the environment or exposure to workers. Unless properly abated, these activities could have a moderate adverse, short-term effect on human health and the environment.

***Cumulative Effects***

“Large quantity generators” report hazardous waste generation to the EPA every other year in odd years. Overall, the quantity of hazardous waste generated in Hawai‘i from 1991 to 1999 varied from 1,300 to 3,000 tons. From 1991 to 1999 the trend in hazardous waste generation has generally decreased, after a slight increase between 1993 and 1997. Waste generation data from small quantity generators were included in the survey in 1995 and could be responsible for the increased amount (HDOH 2003).

Alternative B and the above projects would not incrementally affect the generation of hazardous waste or use of pesticides on the island of Hawai‘i because Alternative B would not generate significant amounts of hazardous waste. The cumulative projects would result in negligible adverse, long-term effects.

**Conclusion**

Implementing Alternative B would result in moderate adverse, short-term effects. The cumulative projects would result in negligible adverse, long-term effects. No impairment is anticipated.

**4.4.9 Traffic*****Direct and Indirect Effects***

Negligible adverse, long-term effects on traffic and circulation would be generated by Alternative B. The proposed parking lot has a greater capacity than the current lot, so the proposed action could increase the number of vehicles using surrounding roads. State Highway 270 is the main highway intersecting Spencer Beach Park Road, which is the only route into or out of the subject property. The main intersection was recently redesigned and upgraded with an added left turn lane on State Highway 270. State Highway 270 and Spencer

Beach Park Road are adequately designed and are not currently subject to traffic congestion. An increase in the number of visitors to the subject property is not expected to create congestion on State Highway 270 or Spencer Beach Park Road.

***Cumulative Effects***

Cumulative effects would be moderate beneficial and long-term to the infrastructure in the region. The cumulative projects described in Section 4.2.15 in combination with the NPS project will not place overburdening demands on traffic in the project area. The listed projects that propose to upgrade Kawaihae Harbor and the surrounding roads will improve local infrastructure at the same time that the NPS proposed action will take place.

***Conclusion***

Implementing Alternative B would result in negligible adverse, long-term effects on traffic. Cumulative effects would be moderate beneficial and long-term to the infrastructure in the region. No impairment is expected.



Northeastern View



Southeastern View

Source: Daniel Quan Designs 2003

The new Visitor Center design is contoured to blend into its surrounding areas to minimize visual effects on the scenic vista.

# ***New Visitor Center***

Hawai'i, Hawai'i

**Figure 4-1**

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#### 4.5 ALTERNATIVE C (REMOVAL FROM THE "HILL OF THE WHALE")

Under Alternative C, because there would be no major adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the park's establishing legislation, 2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park, or 3) identified as a goal in the park's general management plan or other relevant NPS planning documents, there would be no impairment of park resources or values related to geology and soils, water resources, vegetation, wildlife, visitor experience and enjoyment, archaeological resources, cultural landscapes, historic structures, ethnographic resources, visual resources, Hazardous Materials and Public Health and Safety and traffic.

##### 4.5.1 Geology and Soils

###### *Direct and Indirect Effects*

The effects on geology and soils under Alternative C would be the same as that of the Preferred Alternative. No permanent or indirect effects are expected, and following proposed infrastructure modifications, no further effects on the geological resources on the site are expected. The use of best management practices would mitigate the amount of erosion and dust generated during facility construction, demolition, and relocation.

###### *Cumulative Effects*

The cumulative effects on geology and soils under Alternative C would be the same as that of Alternative B. Implementing Alternative C would have the same minor adverse, short-term effects on geology and soils as described under Alternative B. Cumulative effects are minor adverse and short-term. Effects would be reduced by using best management practices during each operation. The cumulative effects on geologic resources would not be significant.

###### *Conclusion*

Implementing Alternative C would have the same minor adverse, short-term effects on geology and soils as described under Alternative B. Cumulative effects are minor adverse and short-term. No impairment is anticipated.

##### 4.5.2 Water Resources

###### *Direct and Indirect Effects*

The potential impacts from the proposed septic system under Alternative C would be similar to those discussed for Alternative B. Implementation of Alternative C would result in negligible adverse, long-term direct and indirect effects. The system design would be identical to that of the Preferred Alternative, however the distribution of the system would be more condensed as all facilities would be clustered together. This may provide a reduced vulnerability of the distribution system delivering waste material from restrooms to the septic tank. This benefit, however is considered minor as the design of the system would minimize releases. Alternative C is not predicted to impair water quality at the Park or on adjacent properties as a result of the proposed septic system.



***Cumulative Effects***

The cumulative effects on water resources under Alternative C would be the same as that of Alternative B.

***Conclusion***

Direct effects from implementing Alternative C would result in a negligible adverse, long-term effect on water resources. Cumulative projects would have minor adverse, long-term effects on water resources within the area of potential effect. No impairment is anticipated

**4.5.3 Vegetation*****Direct and Indirect Effects***

The direct effects of implementing Alternative C would result in moderate adverse, short- and long-term effects on vegetation. Abandoning the current Visitor Center site will result in loss of the numerous indigenous re-plantings on the hill. All utilities will be removed from the "Hill of the Whale." There will be no water source available to maintain the reintroduced native species for a long-term period.

***Cumulative Effects***

The cumulative effects on vegetation under Alternative C would be the same as that of Alternative B.

***Conclusion***

The direct effects of implementing Alternative C would result in moderate adverse, short- and long-term effects on vegetation. The cumulative projects listed in Section 4.2.15 will have a greater negative effect on the natural resources of Hawai'i than the proposed project itself; however, as stated in the vegetation resources section, care must be taken when constructing or relocating the buildings and trail. No impairment is anticipated.

**4.5.4 Wildlife*****Direct and Indirect Effects***

Implementing Alternative C would result in minor adverse, short-term and long-term effects on wildlife. There may be short-term effects to bird species from the construction proposed under Alternative C. Noise from equipment and construction could alter bird behavior in the short term. No native bird species are known from the project area, so this impact is expected to be negligible. One migratory bird species is found in the project area (pacific golden plover). Construction would be timed to avoid effects to this MBTA-protected species, which resides in Hawai'i from late August through early May.

***Cumulative Effects***

The cumulative effects on wildlife under Alternative C would be the same as that of Alternative B.

**Conclusion**

Implementing Alternative C would result in minor adverse, short-term and long-term effects on wildlife. Overall, the cumulative projects will have a moderate adverse, long-term effect on the wildlife resources of the region. No impairment is anticipated.

**4.5.5 Visitor Experience and Enjoyment****Direct and Indirect Effects**

Effects under Alternative C would be similar as those under Alternative B. Implementing Alternative C would result in moderate adverse, short-term effects for the duration of construction activities and moderate adverse, long-term effects to visitor experience and enjoyment. For the duration of construction, changes in visitor use and experience would be detectable. With the new Visitor Center, there would be an increase in demand and use of the park, and the visitor experience would be improved. However, with the administrative facilities being at the same location as the Visitor Center, activities at the administrative facilities will detract from a contemplative visitor experience. The lack of a comfort station, the removal of the landscaped area surrounding the current visitor center and the removal of the road access to the site will be an inconvenience for visitors.

**Cumulative Effects**

Under Alternative C, cumulative effects would be the same as discussed under Alternative B. Cumulative effects would result in minor adverse, long-term effects on visual resources.

**Conclusion**

Implementing Alternative C would result in moderate adverse, short-term effects for the duration of construction activities and moderate adverse, short-term and long-term effects to visitor experience and enjoyment. Cumulative effects would result in minor adverse, long-term effects on visual resources. No impairment is anticipated.

**4.5.6 Cultural Resources****Section 106 Summary**

Under alternative C, National Park Service structures would be either removed from the "Hill of the Whale" or relocated out of the viewshed of the heiau, a new Visitor Center would be constructed just north of the new Spencer Beach Road, scars left from removing temporary structures would be restored to natural conditions, new trails and a new septic system would be constructed. The National Park Service would design the project to either avoid or minimize effects to archeological resources. The new construction will alter the cultural landscape and ethnographic resources, resulting in the overall integrity of these resources to be diminished. After applying the Advisory Council on Historic Preservation's criteria of adverse effect (36 CFR 800.5), the National Park Service proposes that implementing Alternative C could result in a determination of an adverse effect to historic properties. The National Park Service would consult with the Hawai'i State Historic Preservation Office and applicable Native Hawaiian Organizations and, and if necessary, the Advisory Council on Historic Preservation in accordance with 36 CFR 800.6 to execute a memorandum of agreement to reduce the intensity of impact under NEPA.

### ***Archaeological Resource***

#### ***Direct and Indirect Effects***

Implementing Alternative C would have the same negligible neither adverse nor beneficial effects on archaeological resources as described under the Alternative B. Alternate locations for the administrative facilities would create ground disturbance in the area of potential effect, however, there are no archeological resources in the alternate locations chosen for administrative facilities.

#### ***Cumulative Effects***

Cumulative projects would have no impact on archaeological resources within the area of potential effect. The cumulative effects on archaeological resources under Alternative C would be the same as that of Alternative B.

#### ***Conclusion***

Implementing Alternative C would have the same negligible neither adverse nor beneficial effects on archaeological resources as described under the Alternative B. No permanent or indirect effects are expected, and following proposed locations for administrative facilities, no further effects on the archaeological resources on the site are expected.

Cumulative projects would have no impact on archaeological resources within the area of potential effect. No impairment is anticipated.

### ***Cultural Landscape***

#### ***Direct and Indirect Effects***

Implementing Alternative C would have a minor adverse, short-term effect and minor to moderate adverse, long-term effect on cultural landscapes. Locating all NPS facilities at the base of the "Hill of the Whale would result in a larger built footprint. The proposed location for the visitor center is visible from the heiau and adding park administrative buildings to this built complex would increase the size and scale of the built environment at this location. This would result in an alteration of a pattern of the landscape which would diminish the overall integrity of the landscape.

#### ***Cumulative Effects***

The cumulative effects on cultural landscape under Alternative C would be the same as that of the Alternative B. Cumulative effects are minor adverse and long-term.

#### ***Conclusion***

Implementing Alternative C would have the same minor adverse, short-term effect and minor to moderate adverse, long-term effect on cultural landscapes as described under Alternative B. Alternative C would result in an adverse effect for § 106. Cumulative effects are minor adverse and long-term. No impairment is anticipated.

### ***Historic Structures***

***Direct and Indirect Effects***

The direct and indirect effects on historic structures under Alternative C would be the same as that of the Alternative B. Implementing Alternative C would result in minor beneficial, long-term effects on historic structures for direct effects.

***Cumulative Effects***

The cumulative effects on historic structures under Alternative C would be the same as that of the Alternative B. Implementing Alternative C would result in minor adverse, long-term effects on historic structures for cumulative effects.

***Conclusion***

Implementing Alternative C would result in minor beneficial, long-term effects on historic structures for direct effects. Implementing Alternative C would result in minor adverse, long-term effects on historic structures for cumulative effects. No impairment is anticipated.

***Ethnographic Resources******Direct and Indirect Effects***

The direct and indirect effects on historic structures under Alternative C would be moderate adverse and long-term. The removal of the landscaped area near the present visitor center would result in the elimination of a gathering area used by Hawaiian cultural groups and educational groups. The lack of a comfort station located on the "Hill of the Whale" would force those who are participating in activities on or near the heiau to return to the Visitor Center at the bottom of the hill to use facilities. The effects would be apparent and would alter resource conditions, such as traditional access. The relationship between the resources and the Native Hawaiian practice and beliefs would be interfered with at Pu'ukohola, although the Native Hawaiian believes would survive elsewhere in Hawai'i. Traditional access would be interrupted by abandoning the grounds and removing the road access. The determination of effect on Traditional Cultural Properties for § 106 would be adverse effect. The National Park Service would consult with the Hawai'i State Historic Preservation Office and applicable Native Hawaiian Organizations and, and if necessary, the Advisory Council on Historic Preservation in accordance with 36 CFR 800.6 to execute a memorandum of agreement to reduce the intensity of impact under NEPA.

***Cumulative Effects***

The cumulative effects on historic structures under Alternative C would be the same as that of the Alternative B. Cumulative effects under Alternative B would be minor adverse, long-term effects.

***Conclusion***

Implementation of Alternative C would result in moderate adverse long-term effects on ethnographic resources and an adverse effect for § 106. Cumulative effects under Alternative C would be minor adverse, long-term effects. No impairment is anticipated.

**4.5.7 Visual Resources**

***Direct and Indirect Effects***

Implementing Alternative C would result in minor adverse, short-term effects and minor beneficial, long-term effects on visual resources of the historic site. Under Alternative C, effects would be similar to the Preferred Alternative. For the duration of construction, the viewshed would be for the duration of construction, landscaping and revegetation, effects on the scenic vista would be detectable and localized. The presence of the construction site would be out of character with a historic site. The location of the administrative facilities next to the Visitor Center would create a detraction from the viewshed and would be in contrast to its surroundings, as it has not been designed with lines of contour that follow that of the Visitor Center and the surrounding hill slopes. The administrative facilities would detract from the views of the Visitor Center.

***Cumulative Effects***

Under Alternative C, cumulative effects would be the same as described under the Preferred Alternative. The cumulative effects would result in minor adverse, long-term effects.

***Conclusion***

Implementing Alternative C would result in minor adverse, short term effects and minor beneficial, long-term effects on visual resources of the historic site. The cumulative effects would result in minor adverse, long-term effects. No impairment is anticipated.

**4.5.8 Hazardous Materials and Public Health and Safety (Lead and Asbestos)*****Direct and Indirect Effects***

Potential effects under Alternative C regarding the potential release and exposure of lead-based paint and asbestos are the same as that discussed under Alternative B as relevant proposed actions are largely identical. Alternative C includes the removal of more buildings, which could elevate the risk of material release. As discussed under Alternative B, all existing improvements should be tested for the presence of lead and asbestos prior to demolition or relocation activities to identify areas of concern. If lead or asbestos are found, proper containment and abatement procedures should be implemented in accordance with RCRA and OSHA regulations. If these procedures are implemented short-term effects would be prevented.

***Cumulative Effects***

The cumulative effects on traffic under Alternative C would be the same as that of Alternative B. The above projects would not incrementally affect the generation of hazardous waste or use of pesticides on the island of Hawai'i because Alternative B would not generate significant amounts of hazardous waste. The cumulative projects would result in negligible adverse, long-term effects.

***Conclusion***

Implementing Alternative C would result in moderate adverse, short-term effects. Cumulative effects would be negligible adverse, long-term. No impairment is anticipated.

#### 4.5.9 Traffic

##### ***Direct and Indirect Effects***

Implementing Alternative C would result in negligible adverse, long-term effects on traffic. The effects on traffic under Alternative C would be the same as that of Alternative B. The parking lot under Alternative C would have the same capacity as the parking lot under Alternative B. The increase in the number of visitors to the subject property would be the same as Alternative B and is not expected to create congestion to State Highway 270 or Spencer Beach Park Road.

##### ***Cumulative Effects***

The cumulative effects on traffic under Alternative C would be the same as that of Alternative B. Cumulative effects would be moderate beneficial and long-term to the infrastructure in the region.

##### ***Conclusion***

Implementing Alternative C would result in negligible adverse, long-term effects on traffic. Cumulative effects would be moderate beneficial and long-term to the infrastructure in the region. No impairment is anticipated.

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## SECTION 5

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# SECTION 6

## LIST OF PREPARERS

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**7. AGENCIES AND INDIVIDUALS CONSULTED**

# SECTION 7

## AGENCIES AND INDIVIDUALS CONSULTED

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Kunani Nihipali, Po'o, Hui Malama i Na Kupuna o Hawai'i Nei

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President, Kawaihae Pua ka 'Ilima Community Association

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Jojo Tanimoto, President, Kawaihae Hawaiian Homesteaders Association

Manuel Veincent, President, Kawaihae Canoe Club

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**APPENDIX A**  
**BIOLOGICAL INFORMATION**

# COPY



## United States Department of the Interior

NATIONAL PARK SERVICE  
Pu'ukohola Heiau National Historic Site  
P.O. Box 44340  
Kawaihae, Hawai'i 96743

IN REPLY REFER TO:

D5217  
PUHE-155

February 5, 2003

Field Supervisor  
US Fish and Wildlife Service  
Office of Endangered Species  
3310 El Camino Avenue, Suite 130  
Sacramento, California 95821-6340

Dear Field Supervisor;

Reference: Pu'ukohola Heiau NHS, Package 155, Reestablish Historic Scene

Subject: Current List of Federally Listed Threatened and Endangered Species

The National Park Service (NPS) is initiating planning to reestablish the historic scene at Pu'ukohola Heiau National Historic Site, Hawai'i County, Hawai'i. The project includes:

- Constructing new visitor services facilities below and to the south of the Pu'ukohola Heiau, east of the Old Spencer Beach Road and north of the New Spencer Beach Road, with vehicle access provided mid-hill from the New Spencer Beach Road. All future park visitors will be welcomed and greeted at this new facility and location once completed.
- Reestablishing the historic scene of Pu'ukohola (the "Hill of the Whale) by completely removing three and relocating the remaining two park headquarters / administration buildings from their existing location to the east side of the existing visitor parking lot further away and out from the Pu'ukohola Heiau viewshed. These two buildings will house and continue to serve the park management, administrative, and law enforcement personnel and functions.
- Restoration of Pu'ukohola by rehabilitating the scar left by the buildings' footprint, removing and relocating a portion of the hiking trail further away and out from the temple's viewshed, and removing some vegetation from the hilltop and along part of the hiking trail.
- As part of a separate project, construction of permanent toilets replacing porta-potties on the hill (current Visitor Center / Administrative facility site) will also be

implemented. These facilities will be used by the park staff who will remain at the present headquarters location, in addition to school and community groups who will continue to use the present visitor center grounds for educational and special use activities.

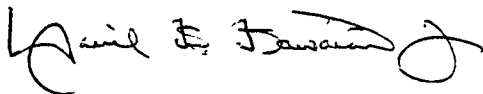
I am requesting a current list of federally listed threatened or endangered species, species of concern, or any other special status species that might occur in the locality mentioned above, and designated critical habitats, if any, for these species.

In order to meet project schedules, I would appreciate your response to me at the address above by March 15, 2003. If you have any questions or comments I can be reached by phone at 808/882-7218.

This letter will serve as a record that the NPS is initiating informal consultation with your agency pursuant to the requirements of the 1973 Endangered Species Act, as amended, and 2001 NPS *Management Policies*.

We appreciate your continuing assistance with National Park Service projects.

Sincerely,



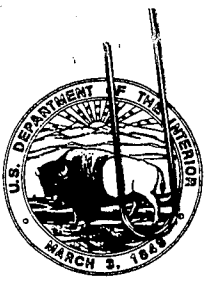
Daniel K. Kawaiiea Jr.  
Superintendent

cc:

PISO, Bryan Harry  
PGSO, Alan Schmeirer

bcc:

DSC-PM, Ray Todd  
DSC-PIF



## United States Department of the Interior

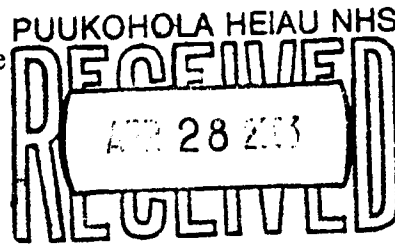
### FISH AND WILDLIFE SERVICE

Pacific Islands Fish and Wildlife Office  
300 Ala Moana Boulevard, Room 3-122  
Box 50088  
Honolulu, Hawaii 96850

In Reply Refer To:  
1-2-2003-SP-101

Mr. Daniel K. Kawaiaea Jr.  
National Park Service  
Pu`ukohola Heiau National Historic Site  
P.O. Box 44340  
Kawaihae, HI 96743

APR 24 2003




Dear Mr. Kawaiaea:

This responds to your February 5, 2003, letter in which you request the U. S. Fish and Wildlife Service provide a species list for the Pu`ukohola Heiau National Historic Site (NHS), Package 155, Reestablish Historic Site project located on the island of Hawaii, Hawaii. Your letter was received in this office on February 25, 2003. The Pu`ukohola Heiau NHS, Package 155, Reestablish Historic Site project consists of constructing new visitor services facilities below and to the south of the Pu`ukohola Heiau, east of the Old Spencer Beach Road and north of the New Spencer Beach Road, with vehicle access provided mid-hill from the New Spencer Beach Road. Additionally, the proposed project involves the removal of one existing building, relocating two buildings, some landscaping, and construction of new restroom facilities.

We reviewed the information you provided and pertinent information in our files, including maps prepared by the Hawaii Natural Heritage Program. No federally listed endangered, threatened, or rare species occur in the proposed project area, and the area does not overlap with any proposed or designated critical habitat.

We appreciate your efforts to conserve endangered species. If you have any questions, please contact Mike Richardson, Entomologist (phone: 808/541-3441; fax: 808/541-3470).

Sincerely,

 Paul Henson, Ph.D.  
Field Supervisor

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**APPENDIX B**  
**PUBLIC INVOLVEMENT**



National Park Service  
U.S. Department of the Interior

Pu'ukohola Heiau National  
Historic Site

P.O. Box 44340  
62-3601 Kawaihae Road  
Kawaihae, Hawaii 96743

808-882-7218 X 22 phone  
808-882-1215 fax

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## Pu'ukohola Heiau NHS News Release

*Release Date – February 4, 2003*

FOR IMMEDIATE RELEASE: Contact Daniel Kawaihae, Jr., Park Superintendent (808) 882-7218

### **Pu'ukohola Heiau National Historic Site Plans to re-establish the historic scene at the "Hill of the Whale"**

Pu'ukohola Heiau, Kawaihae, Hawaii - Superintendent Daniel Kawaihae, Jr. announced that the National Park Service proposes to re-establish the historic scene at the "Hill of the Whale" in Kawaihae.

The project involves constructing new visitor services facilities below and to the south of the Pu'ukohola Heiau, east of the Old Spencer Beach Road and north of the New Spencer Beach Road, with access to the new facility provided mid-hill from the New Spencer Beach Road. All future park visitors will be welcomed and greeted at this new facility and location once completed.

The historic scene of Pu'ukohola (the "Hill of the Whale"), will then be reestablished by removing three and relocating the remaining two park headquarters / administration buildings from their existing location to the east side of the existing visitor parking lot further away and out from the temple's viewshed. These two buildings will house and continue to serve the park management, administrative, and visitor / resource protection personnel and functions.

The historic scene of Pu'ukohola will be further restored by rehabilitating the scar left by the buildings' footprint, removing and relocating a portion of the hiking trail further to the south and outside from the temple viewshed, and removing some vegetation from the hilltop and along part of the hiking trail.

As part of another project, the construction of a permanent restroom facility at the present visitor center location to replace existing porta-potties will also occur. The existing grounds on the hilltop will continue to be used by large school and community groups for educational and special use activities.

An environmental assessment for the project is expected to be available for public review and comment in late spring of 2003. Superintendent Kawaihae said that construction could begin in the spring of 2004.

Superintendent Kawaihae invites the public to direct concerns or comments about the project to him at (808) 882-7218 or by sending an e-mail to [PUHE\\_Superintendent@nps.gov](mailto:PUHE_Superintendent@nps.gov) or by writing him at P.O. Box 44340, Kawaihae, HI 96743.

-NPS-

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