

**FINAL ENVIRONMENTAL ASSESSMENT
AND FINDING OF NO SIGNIFICANT IMPACT**

**HOOKENA BEACH PARK IMPROVEMENT
PROJECT**

**KAUHAKO, SOUTH KONA, ISLAND OF HAWAII
TAX MAP KEY NO. (3) 8-6-13: 20-25, & 47**

APPROVING AGENCY: COUNTY OF HAWAII,

**25 AUPUNI STREET
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SEPTEMBER, 1998

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1. INTRODUCTION

1.1 Purpose

The Department of Parks and Recreation (P&R), County of Hawaii, is proposing to construct a new restroom facility and related improvements at the Hookena Beach Park situated at Kauhako, South Kona, Hawaii. The purpose of this Environmental Assessment is to comply with the requirements of Chapter 343, Hawaii Revised Statutes (HRS) which are triggered by the proposed use of State Conservation district land, as well as the use of County land and funds.

1.2 Identification of Proposing Agency

Mr. George Yoshida is the Director of the Department of Parks and Recreation for the County of Hawaii. The mailing address for the Department of Parks and Recreation is 25 Aupuni Street, Room 210, Hilo, Hawaii 96720-4252.

1.3 Identification of Approving Agency

In accordance with Chapter 343, HRS, the Mayor, or an authorized representative of the County of Hawaii is the appropriate accepting authority of the Environmental Assessment.

1.4 Technical Description

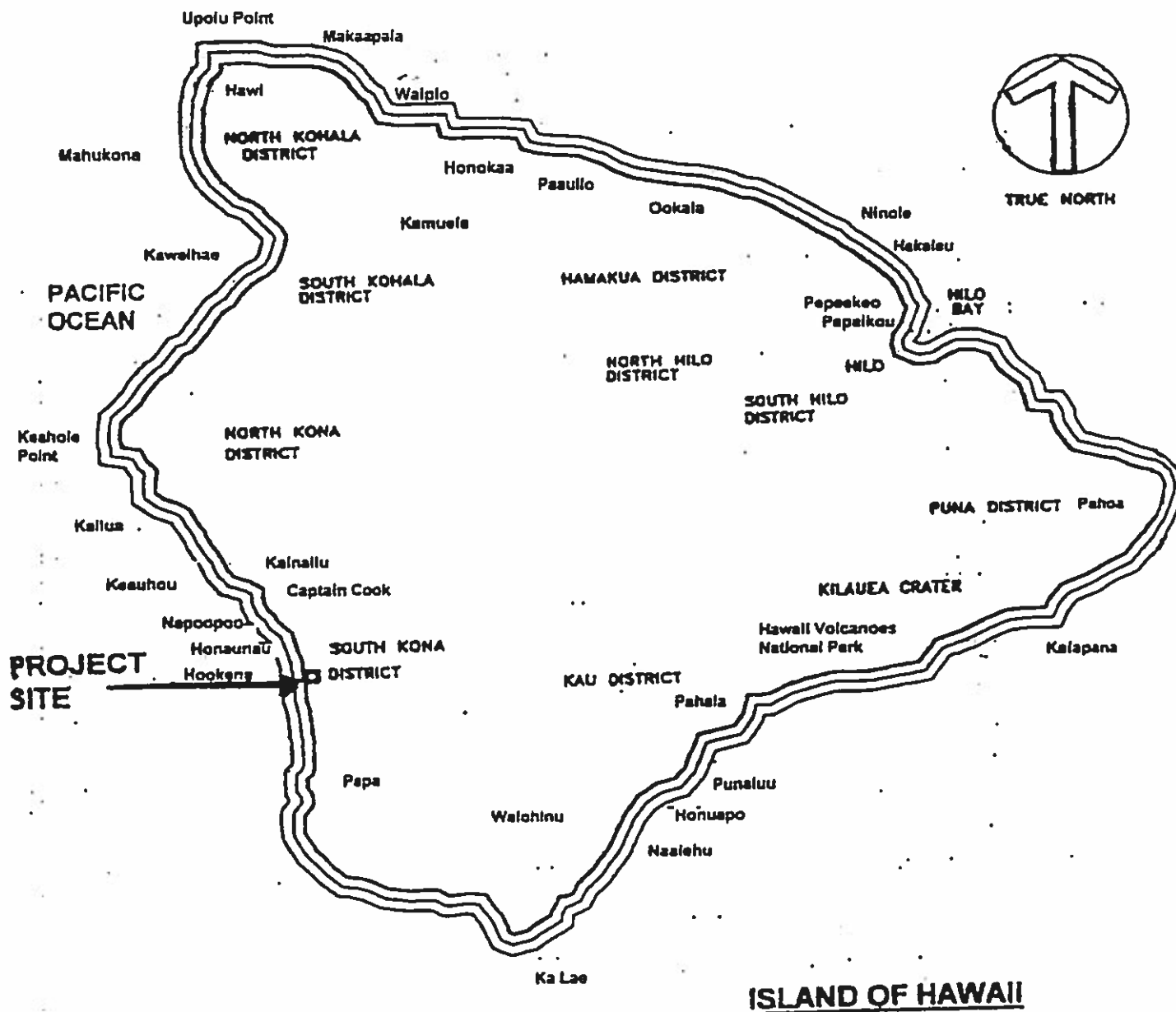
The P&R is proposing to construct a new restroom facility and related improvements at the Hookena Beach Park situated at Kauhako, South Kona, Hawaii. The project area involves several parcels* including, Tax Map Key No. (3) 8-6-13: 20-25 & 47. (See Figure 1 - Vicinity Map) *County owned parcels to be consolidated to comply with setback requirements.

The new restroom facility will be situated on parcel 25 and the septic tank and leach field will be situated on parcel 23. Other improvements will include construction of accessible pathways, selective clearing of the property for park use and conversion of the existing restroom facility to a pavilion. (See Figure 2 - Site Plan and Figure 3 - Tax Plat Map)

The new restroom facility will have two (2) waterclosets and one (1) lavatory for women and one (1) water closet, one (1) urinal and one (1) lavatory for men. The building will have CMU walls with corrugated metal roofing over light gauge steel framing and will be constructed to meet Americans with Disabilities Act Accessibility Guidelines (ADAAG). The new restroom facility will have an area of approximately 550 square feet and will include a small storage room. Two (2) outside shower heads will be provided along the southern wall of the restroom facility.

The project area is situated at an elevation ranging between 6 and 17 feet above sea level. The site for the new restroom and leach field is currently vacant with large kiawe trees covering the property.

FIGURE 1 - VICINITY MAP



The septic system will consist of one (1) concrete circular septic tank, twenty-six (26) lineal feet of six (6) inch P.V.C. sewerline and a leaching bed with an area of approximately one thousand seven hundred (1,700) square feet. The septic tank will have a diameter of six (6) feet, depth of six (6) feet and a capacity of one thousand forty-two (1,042) gallons. The leaching bed will be excavated to a depth of approximately six (6) feet and will contain a three (3) foot bottom layer of one (1) inch minus cinder, a one (1) foot layer of one half (1/2) inch to three fourth (3/4) inch drain rock and two (2) feet of planter material topped with grass upon completion.

The proposed project has an estimated cost of \$350,000 and will be completed within one (1) year from the date of receiving all necessary permit approvals.

1.5 Project Background

1.5.1 Need for the Project

The existing restroom facility is an old single story structure which utilizes a cesspool for wastewater disposal. The existing restroom facility does not meet Americans with Disabilities Act Accessibility Guidelines (ADAAG). Completion of the proposed project will provide park users with an improved facility meeting wastewater disposal and ADAAG requirements.

1.5.2 Land Use Designations

The subject property is situated within the State Land Use Conservation district and the Conservation district subzone designation is the Limited (L) subzone. Hawaii Administrative Rules, Title 13, states that, "The objective of this subzone is to limit uses where natural conditions suggest constraints on human activities."

The County General Plan and Zoning designations for the subject area is Open. Section 25-5-160, of the Zoning Code states, "The O (open) district applies to areas that contribute to the general welfare, the full enjoyment, or the economic well-being of open land type use which has been established, or is proposed. The object of this district is to encourage development around it such as a golf course and park, and to protect investments which have been or shall be made in reliance upon the retention of such open type use, to buffer an otherwise incompatible land use or district, to preserve a valuable scenic vista or an area of special historical significance, or to protect and preserve submerged land, fishing ponds, and lakes (natural or artificial tide lands).

The project area is also situated within the County's Special Management Area (SMA).

1.5.3 Listing of Permits and Approvals

State of Hawaii

Board of Land and Natural Resources-Conservation District Use Permit
Department of Health-Approval of Plans for Wastewater System

County of Hawaii

Planning Commission-Special Management Area Use Permit
Planning Department-Approval of Project Construction Plans
Department of Public Works- Approval of Project Construction Plans
Department of Water Supply- Approval of Project Construction Plans

1.6 Agency and Public Consultation

The following public and private organizations were consulted during the preparation of this environmental assessment:

United States Fish and Wildlife Services, Division of Ecological Services
State of Hawaii, Department of Land and Natural Resources, Historic Preservation
Division and Division of Forestry and Wildlife
State of Hawaii, Department of Health
State of Hawaii, Department of Transportation
State of Hawaii, Office of Hawaiian Affairs
County of Hawaii, Planning Department
County of Hawaii, Department of Public Works
County of Hawaii, Police Department

2. ENVIRONMENTAL SETTING

2.1 Physical Environment

2.1.1 Geology and Hazards

The project area is located on the basalts and olivine basalts of the present Mauna Loa shield which are known as the Ka'u Volcanic Series. The Ka'u series includes lavas of present day eruptions of a'a and pahoehoe flows. During historic times, there have been six (6) lava flows originating in the Southwest rift of Mauna Loa. Four (4) of these flows were extensive enough to reach the ocean (1859, 1919, 1926 and 1950) (Macdonald and Abbott, 1970).

The island of Hawaii is susceptible to a number of geologic hazards due to its volcanic origin and the fact that two of the volcanoes, Kilauea and Mauna Loa, are still active. A lava flow hazard zone map has been developed by the United States Geological Survey which divides the island into zones ranked from 1 through 9 based on the probability of coverage by lava flows. (Zone 1 is the area of the greatest hazard, Zone 9 is the least) The project area is within lava flow hazard zone "2" which includes, "areas adjacent to and downslope of active rift zones." (Heliker 1990)

The entire island of Hawaii is in earthquake zone 3 of the Uniform Building Code which establishes structural design standards for earthquake resistance for certain types of buildings. This zone is prone to major damages from potential earthquake activity.

2.1.2 Soils

The U.S. Department of Agriculture Soil Conservation Service (SCS) Soil Survey identifies the soil type of the subject area as follows:

"Lava flows, pahoehoe (rLW), has been mapped as a miscellaneous land type. This lava has a billowy, glassy surface that is relatively smooth. In some areas, however, the surface is rough and broken, and there are hummocks and pressure domes. (U. S. Soil Conservation Service 1973)

2.1.3 Climate

The climate of the project area is directly influenced by the mountain masses of Mauna Loa and Hualalai which shelter the Kona district from the prevailing northeasterly tradewinds which influences the climate for most of the State. In that respect, the wind, rainfall and temperature patterns of the district are atypical of the predominant conditions elsewhere in Hawaii.

The rainfall pattern, for example, is that the winter months are dry and the summer months are wet. Moreover, rainfall maximums are usually in the late afternoons and

evenings as a result of showers that form from sea breezes which move onshore and upslope during the day rather than rainfall as a result of tradewinds. Annual rainfall along this section of the South Kona coast is less than fifty (50) inches.

Hawaii enjoys mild, equable temperatures the year round. Temperature differences on the island of Hawaii are influenced by elevation and the sheltering influences of terrain. Along this section of the South Kona coast, the mean annual temperature is approximately 75 degrees F. (University of Hawaii, 1983)

2.1.4 Hydrology and Drainage

The project area is within the Kaapuna aquifer system which has a sustainable yield of approximately 50 million gallons per day. In fiscal year 1990-91 daily withdrawals from the Kaapuna aquifer system averaged approximately 2.9 million gallons per day.

According to the Flood Insurance Rate Map (FIRM) prepared by the Federal Emergency Management Agency (Panel 1169-C), the parcels being utilized for the new restroom facility and septic system, parcels 23 and 25, are situated within Flood Zone "X" (areas determined to be outside the 500 year flood plain). The parcels on the lower section of the beach park, including parcels 20, 21, 22, 28, 46 and 47 are wholly or partially within Zone VE (Coastal High Hazard Area). (See Figure 3 - Tax Plat Map with interpretation of flood boundaries)

2.1.5 Water Quality

The offshore waters of the subject area have been classified as Class AA by the State Department of Health. This designation is intended to protect uses such as oceanographic research, the support and propagation of shellfish and other marine life, conservation of coral reefs and wilderness areas, and compatible recreation and aesthetic enjoyment.

2.1.6 Flora and Fauna

Vegetation of the project area is dominated by a kiawe canopy (*Prosopis pallida*) with an understory of shrub and grass. No known candidate or endangered plant species are present on the project site.

In terms of fauna, there are two federally endangered, threatened or candidate species that are known to be present in the area and they are the Hawaiian hawk (*Buteo solitarius*) and the Hawaiian hoary bat (*Lasiurus cinereus semotus*). Native birds known to the area include the golden plover (*Pluvialis dominica*), and the pueo (*Asio flammeus*). The proposed project will not have any significant impact on these protected or native species since the project is limited in scope and surrounded by residential or recreational uses.

Introduced mammals expected to be found in the project area include mongoose, feral cats and dogs and several varieties of mice and rats. Introduced birds common to the area include the cardinal, doves, black francolin, ricebird, myna, and house finch.

2.1.7 Air Quality

The air quality of the subject area is affected by pollutants derived from the volcanic emissions from the ongoing Kilauea eruption. Other sources of air pollutants to a limited degree include vehicle emissions and dust from traffic on the Hookena Beach Road.

2.1.8 Noise

Ambient noise levels at the project site are quite low and reflect the isolated rural nature of the Hookena Beach community. Temporary noise impacts will occur from construction activities for the restroom facility and septic system. Mitigation measures can be taken, however, to minimize noise impacts including the use of mufflers and implementing construction curfew periods. State Department of Health regulations must be adhered to during construction.

2.1.9 Scenic Resources

The Hookena-Kauhako Bay area is listed as an example of natural beauty sites in the Hawaii County General Plan. The proposed restroom and septic system improvements will not adversely affect the scenic beauty of the surrounding area.

2.2 Social, Cultural and Economic Setting

2.2.1 Socio-Economic Characteristics

The South Kona district is the smallest district on the island in terms of size as well as population. The South Kona district is still largely undeveloped and has a low density, rural character with a 1990 population of approximately 7,658 residing within a total of 143,341 acres. Most of the residents in the South Kona district reside in Captain Cook and Kealahou on the northern side of the district.

The major economic activity for the South Kona district is the agricultural industry led by coffee, macadamia nuts and ranching. Other commodities include bananas, citrus, avocados, winter tomatoes and other truck crops.

There are no resort destination centers in South Kona. Several visitor attractions including the Kealahou Bay Marine Preserve, City of Refuge National Park and coffee farms and processing plants are located within the district.

2.2.2 Adjacent Land Uses

The project area is situated in a sparsely populated section of the South Kona district located on the coastline. The Hookena Beach Park sits at the northern end of Kauhako Bay and is surrounded by a handful of single family dwellings. Most of the land along the two mile stretch of the Hookena Beach Road from the junction with the Mamalahoa Highway is utilized as open pasture. Small outrigger fishing conoes utilize the beach for ingress and egress from the water.

2.3 Public Facilities and Services

2.3.1 Roads

The Hookena Beach Road has a varying pavement width of 12.to 16 feet and is the primary roadway link between the beach park and the Mamalahoa Highway situated two miles to the east.

2.3.2 Water Svstem

The Department of Water Supply has provided the following comments:

"The property, as you know, does not have an existing water system and is beyond the service limits of the Department's existing water system facility. The Department's nearest facility is an 8-inch line that is located on the Hawaii Belt Road at its intersection with the Hookena Beach Road. This is a distance of approximately two (2) miles."

The existing restroom and shower facility is currently utilizing water from a private connection and the new facility will continue to utilize the same connection. The Department of Parks and Recreation will work with the Department of Water Supply to improve water service to the Hookena Beach Park.

2.3.3 Protective Services

The closest County fire station is situated in Captain Cook approximately twelve (12) miles north of the project area. One police facility serves the entire North and South Kona Districts and is located in Kailua, approximately twenty-five (25) miles north of the project area. The proposed project is not likely to create an additional burden on the existing service providers.

2.4 Archacology, Historic and Cultural Resources

The project area is situated within the ahupua'a of Kauhako in the district of South Kona. An archaeological inventory survey for the Hookena Elementary School expansion performed by

Archaeological Consultants of Hawaii, Inc. in 1994 provides the following historical description of the project area:

"Only a handful of kuleana awards were claimed in the ahupua'a of Kauhako. Based upon the information contained in the Land Board of Commissioners to Quiet Land Titles' Native and Foreign Registers and Testimonies (State Archives), general settlement patterns for the mid-nineteenth century may be interpolated. Claims in the ahupua'a of Ho'okena and Kauhako were sometimes mixed; taro and sweet potato were being grown in both places. In the village of Ho'okena and the northern side of Kauhako Bay, claims were made for houselots and garden plots."

"A number of historic maps of part of Kauhako were located at the State Survey Office and contain information about land use in the late nineteenth and early twentieth century. A map of Kauhako Landing and Vicinity (surveyed by J.S. Emerson in May 1883) shows the village of Ho'okena gathered around the Kauhako Landing on the shore. A church, a stone school, a frame school house, a courthouse, two stores, and quite a few residences are designated on this map. The land appears to be divided into kuleana which extend up to the edge of the pali. A spring, a tomb, and a pigpen are also shown."

Preliminary comments submitted by the Hawaii State Department of Land and Natural Resources, State Historic Preservation Division stated in part, the following:

"We have no record of historic sites on any of the subject parcels, but they do not appear to have ever been surveyed by an archaeologist. An historic site was found on parcel 49, which is fairly close to the present ones. Thus it is possible that historic sites are present.

"If any of these parcels are undisturbed (i.e., have never been grubbed and/or graded or otherwise developed), then we would recommend that a field inspection be undertaken to determine if historic sites are present and whether an archaeological inventory survey might be required. Our staff may be able to assist in the initial field inspection if we are given ample notice."

Based on the preliminary comments of the State Historic Preservation Division, a field inspection was conducted with staff archaeologist Marc Smith on June 23, 1998. The field inspection revealed that the property appears to have been graded although stone walls remain on sections of the property. The additional comments from the State Historic Preservation Division reflecting the findings of the field inspection will be included in the Final Environmental Assessment.

3. SUMMARY OF POTENTIAL ADVERSE ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

3.1 Flood Hazard

Impacts: The makai sections of the Hookena Beach Park property are situated within the VE (Coastal High Hazard Area). The affected area includes the existing restroom facility which is proposed to be converted into a pavilion. The site for the new restroom facility and the septic system, however, are not situated within the hazard area.

Mitigation: Any proposed improvements within the Coastal High Hazard Area will be done in accordance with the requirements of Chapter 27 (Flood Control) of the Hawaii County Code.

3.2 Fauna

Impacts: In terms of fauna, there are two federally endangered, threatened or candidate species that are known to be present in the area and they are the Hawaiian hawk (*Buteo solitarius*) and the Hawaiian hoary bat (*Lasiurus cinereus semotus*). Native birds known to the area include the golden plover (*Pluvialis dominica*), and the pueo (*Asio flammeus*).

Mitigation: The proposed project will not have any significant impact on any protected or native species since the project is limited in scope and surrounded by residential or recreational uses. As such, no mitigation measures are proposed.

3.3 Construction Activity

Impacts: Short term impacts will result from the proposed construction activity including increased noise levels, dust and exhaust from machinery involved in the construction of the restroom facility and septic system. Given the nature and scale of the proposed project, the potential impacts of these construction activities should be minimal.

Mitigation: The contractor will be instructed to utilize best management practices to minimize all impacts including the use of mufflers and implementing construction curfew periods. State Department of Health regulations must be adhered to during construction.

3.4 Archaeological Resources

Impacts: Although the project site appears to have been previously graded, rock walls remain which may reflect kuleana boundaries. The State Historic Preservation Division is currently working on revised comments based on a recent field inspection of the property.

Mitigation: The Department of Parks and Recreation will coordinate their efforts with the State Historic Preservation Division to ensure that archaeological resources are not

affected by the proposed project. The Department of Parks and Recreation will await further comments from the State Historic Preservation Division regarding possible mitigation measures.

4. ALTERNATIVES

4.1 No Action

If the proposed new restroom facility and septic system are not constructed, the Department of Parks and Recreation will continue to utilize the old restroom and cesspool. The public will not have the benefit of a new and improved restroom facility that complies with Americans with Disabilities Act Accessibility Guidelines (ADAAG).

4.2 Alternative Location

The Department of Parks and Recreation could utilize an alternative location for the new restroom facility and septic system. The impacts generated by using a different location within the existing boundaries of the Hookena Beach Park property, would be the same or even more severe. Factors relating to the Coastal High Hazard Area, distance to the shoreline and adequate space and setbacks for the leach field would all be adversely affected by a alternative location.

5. ANTICIPATED DETERMINATION, FINDINGS AND REASONS FOR SUPPORTING ANTICIPATED DETERMINATION

5.1 Significance Criteria

According to the Department of Health Rules (11-200-12), an applicant or agency must determine whether an action may have a significant impact on the environment, including all phases of the project, its expected consequences both primary and secondary, its cumulative impact with other projects, and its short and long-term effects. In making the determination, the Rules establish "Significance Criteria" to be used as a basis for identifying whether significant environmental impact will occur. According to the Rules, an action shall be determined to have a significant impact on the environment if it meets any one of the following thirteen criteria.

- 1. Involves an irrevocable commitment to loss or destruction of any natural or cultural resources.**

The proposed project involves the construction of a new restroom facility and septic system at the Hookena Beach Park. Other improvements will include construction of accessible pathways, selective clearing of the property for park use and conversion of the existing restroom facility to a pavilion. Any natural or cultural resources that may have existed on the property have been affected by the previous grading of the property. The rock walls that do remain will be addressed based on forthcoming recommendations of the State Historic Preservation Division.

- 2. Curtails the range of beneficial uses of the environment.**

The proposed park improvements will not curtail the range of beneficial uses within the park environment. Park use will be enhanced by the proposed improvements which will increase the area of usable space and provide a new and improved restroom facility that complies with Americans with Disabilities Act Accessibility Guidelines (ADAAG).

- 3. Conflicts with the State's long-term environmental policies or goals and guidelines as expressed in Chapter 344, HRS; and any revisions thereof and amendments thereto, court decisions, or executive orders.**

The proposed development is consistent with the Environmental Policies established in Chapter 344, HRS, and the National Environmental Policy Act.

- 4. Substantially affects the economic or social welfare of the community or state.**

The proposed project will have a substantial impact on the economic and social welfare of the community by providing a new and improved restroom facility that complies with Americans with Disabilities Act Accessibility Guidelines (ADAAG).

Improvements to park facilities support both the resident and visitor population making their park experience a more enjoyable one.

5. Substantially affects public health

The proposed project will have a positive impact on public health by replacing an existing cesspool that is situated close to the ocean with a new septic system that complies with all of the requirements of the State Department of Health. This will be a substantial improvement to the existing system.

6. Involves substantial secondary impacts, such as population changes or effects on public facilities.

The proposed project will not have any substantial secondary impacts because it is primarily an upgrade to existing facilities. Due to the remote nature of this beach park, the proposed improvements are not likely to increase the number of visitors to the park.

7. Involves a substantial degradation of environmental quality.

The proposed project is an upgrade to existing facilities and will improve rather than degrade environmental quality.

8. Is individually limited but cumulatively has considerable effect on the environment, or involves a commitment for larger actions.

As stated previously, the proposed project will not have any substantial secondary impacts because it is primarily an upgrade to existing facilities. The proposed project does not involve a commitment for larger actions and will not induce other actions having a cumulative effect on the environment.

9. Substantially affects a rare, threatened or endangered species or its habitat.

The proposed project will not have any substantial adverse effect on any rare, threatened or endangered species or its habitat.

10. Detrimentially affects air or water quality or ambient noise levels.

Short term impacts will result from the proposed construction activity including increased noise levels, dust and exhaust from machinery involved in the construction of the restroom and septic system. Given the relative short construction time period and the limited scale of the improvements, the potential impacts of these construction activities should be minimal.

11. **Affects or is likely to suffer damage by being located in an environmentally sensitive area, such as a flood plain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, freshwater, or coastal waters.**

The major improvements proposed, including the construction of the new restroom and septic system are not situated within any environmentally sensitive or hazardous area. The conversion of the existing restroom to a pavilion is situated in the Coastal High Hazard Area and must be done in compliance with Chapter 27 (Flood Control) of the Hawaii County Code.

12. **Substantially affects scenic vistas and view planes identified in county or state plans or studies.**

The nature and scale of the proposed improvements are such that the proposed project will not have any impact on scenic vistas and view planes of the area.

13. **Requires substantial energy consumption.**

The proposed project will not require substantial energy consumption.

5.2 Findings

Based on the foregoing information presented, it is determined that the proposed Hookena Beach Park Improvements will not have a significant effect. As such, a determination of a Finding of No Significant Impact for the proposed action is appropriate.

5.3 Reasons Supporting Anticipated Determination

The nature and scale of the proposed park improvements at the Hookena Beach Park are such that no significant environmental effects are anticipated. Potential impacts, if any, can be mitigated through careful construction management practices and compliance with all governmental requirements including those of the State Department of Health, State Historic Preservation Division, and the County Department of Public Works.

REFERENCES

Archaeological Consultants of Hawaii, Inc. 1994. "Archaeological Inventory Survey" Site Selection Report and Final Environmental Impact Statement for the Hookena Elementary School Expansion. State of Hawaii Department of Accounting and General Services. Gima-Yoshimori-Miyabara-Deguchi Architects, Inc. Honolulu.

Heliker, C. 1990. *Volcanic and Seismic Hazards on the Island of Hawaii*. Washington: GPO

Macdonald, G.A., and Abbott, A.T. 1970. *Volcanoes in the Sea: The Geology of Hawaii*. Honolulu. University of Hawaii Press.

University of Hawaii, Department of Geography. 1983. *Atlas of Hawaii*. University of Hawaii Press.

U.S. Soil Conservation Service. 1973. *Soil Survey of the Island of Hawaii, State of Hawaii*. Washington: U.S.D.A.

**APPENDIX A - REPRODUCTION OF COMMENTS MADE DURING THE
PRE-ASSESSMENT CONSULTATION PERIOD**

1. State of Hawaii, Department of Land and Natural Resources, Division of Forestry and Wildlife, May 1, 1998.
2. State of Hawaii, Department of Land and Natural Resources, Historic Preservation Division, June 1, 1998.
3. State of Hawaii, Department of Health, June 23, 1998.
4. State of Hawaii, Department of Transportation, May 20, 1998.
5. County of Hawaii, Department of Water Supply, June 2, 1998.
Response: Brian T. Nishimura, March 3, 1998
6. County of Hawaii, Police Department, May 22, 1998.