DRAFT ENVIRONMENTAL IMPACT STATEMENT

KŌKE'E AND WAIMEA CANYON

STATE PARKS MASTER PLAN

MAY 2006

Proposing Agency:

DIVISION OF STATE PARKS

DEPARTMENT OF LAND AND NATURAL RESOURCES

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Department of Land and Natural Resources

This document and all ancillary documents were prepared in accordance with content requirements of Chapter 343, Hawaiʻi Revised Statutes, and Title 11, Chapter 200, Hawaiʻi Administrative Rules.

Approving Authority:
Governor
State of Hawaiʻi

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ACRONYMS

BLNR	Board of Land and Natural Resources
DAR	Division of Aquatic Resources
DLNR	Department of Land and Natural Resources
DOCARE	Division of Conservation and Resources Enforcement
DOFAW	Division of Forestry and Wildlife
DOE	Department of Education
DOH	Department of Health, State of Hawai‘i
DSP	Division of State Parks
EIS	Environmental Impact Statement
FONSI	Finding of No Significant Impact
HAR	Hawai‘i Administrative Rules
HFCI	Hawai‘i Forestry and Communities Initiative
HRS	Hawai‘i Revised Statutes
MAS	Microwave Antennae Station
NARS	Natural Area Reserves System
USAF	United States Air Force
USFWS	United States Fish and Wildlife Service
KDC	Kōke‘e Discovery Center, DOE facility

SECTION 1
INTRODUCTION AND SUMMARY

1.1 INTRODUCTION

This Environmental Impact Statement is prepared for the Kōkeʻe and Waimea State Parks Master Plan. Kōkeʻe and Waimea Canyon State Parks are two adjoining parks located on the west side of Kauaʻi. They were among the first parks established under the Territorial Park System, created in recognition of the unique environmental resources, abundant recreational opportunities, and rich natural heritage existing in the uplands of western Kauaʻi.

The Parks were officially established in 1952 and 1965, respectively, and are administered by the Department of Land and Natural Resources (DLNR), Division of State Parks (DSP). In total, the two Parks occupy 6,182.4 acres of land, with Kōkeʻe State Park encompassing 4,345 acres and Waimea Canyon State Park 1,837.4 acres (See **Figure 1-1, Study Area Map**).

Each year, the Parks are enjoyed by hundreds of thousands of people. Local residents and visitors alike come to Kōkeʻe and Waimea Canyon State Parks for sightseeing, recreational activities, cultural and educational pursuits, and simply to get away from daily routines and relax in the beautiful mountain setting.

The tremendous popularity of the two parks is testament to the foresight of the territorial foresters who advocated their preservation in the early 1900s, and a clear indicator of the Parks' continued value to the people of Hawaiʻi. This popularity also poses challenges to park managers and caretakers who are working to ensure that the Parks' resources can be enjoyed by visitors today and will be available for the experience of future generations.

1.2 MASTER PLAN PURPOSE AND GOALS

The master plan will guide the management and development of Kōkeʻe and Waimea Canyon State Parks for a twenty-year period extending from 2005 to 2025. Preservation, enhancement, and management of existing resources and facilities, and the identification of potential interpretive programs and recreational opportunities are primary goals of the Master Plan. The State also wishes to preserve the unique historic character of Kōkeʻe and Waimea Canyon State Parks, a character that island residents and visitors have come to cherish.

The Master Plan includes an analysis of activities within these Parks, impacts to adjoining State lands, and an assessment of impacts to the Parks resulting from activities in the adjoining State

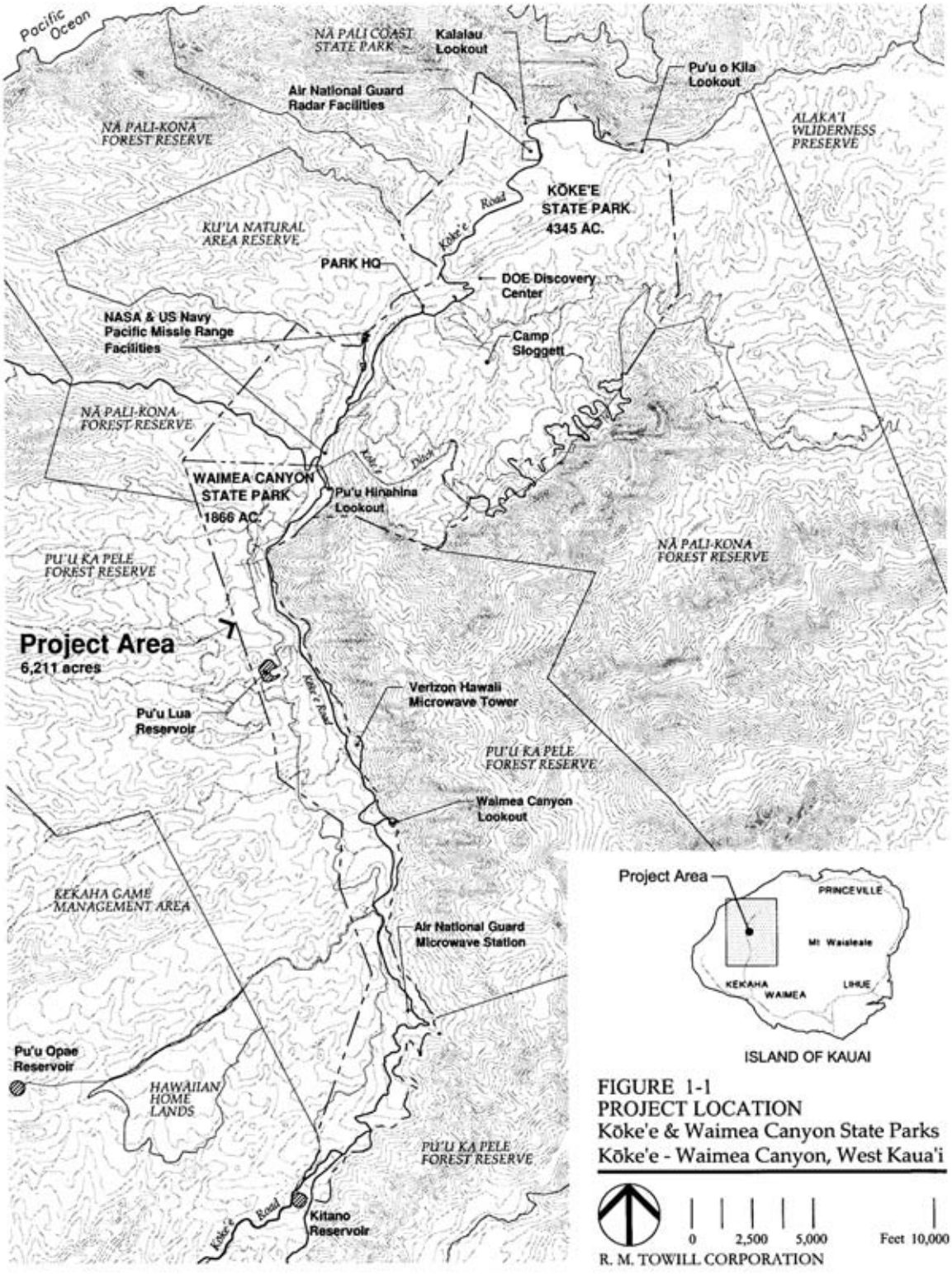

FIGURE 1-1
PROJECT LOCATION
Kōke'e & Waimea Canyon State Parks
Kōke'e - Waimea Canyon, West Kaua'i

lands. Leased and encumbered lands within the Parks' boundaries are also included in the analysis. The Master Plan, thus, takes a regional approach to analysis, planning and management of the Parks and their context.

To frame the master planning process, the overall goals for Kōke´e and Waimea Canyon State Parks and for each resource category were set by the project team. Goals were developed for each of the resource categories after a review of the values, issues, concerns, and problems that were raised during the data collection phase of the project, and through an evaluation of the mission and goal statements of each of the DLNR divisions.

GOAL 1: NATURAL RESOURCES

To protect, preserve, and restore the unique natural environments of Kōke'e and Waimea Canyon, enhance human understanding and appreciation of Hawai'i's native ecosystems and introduced species, and ensure the continued existence of Hawai'i's unique flora and fauna for the benefit of Hawai'i's future generations.

GOAL 2: CULTURAL RESOURCES

To protect, preserve, and manage archaeological resources, historic sites and traditional cultural places within Kōke'e and Waimea Canyon State Parks, and ensure the continuity of the traditional cultural values and practices that are unique to these Parks.

GOAL 3: SCENIC RESOURCES

To protect, enhance, and interpret the scenic resources of Kōke'e and Waimea Canyon State Parks and expand opportunities for visitors to experience the Parks' scenic resources.

GOAL 4: OUTDOOR RECREATION RESOURCES

To establish a broad range of outdoor recreation opportunities that promote heightened visitor awareness and appreciation of the Parks' natural and cultural resources and encourage the enjoyment of the outdoors in a safe and responsible manner.

GOAL 5: RECREATION RESIDENCES

To preserve, manage, and interpret the legacy of the recreation residences in Kōke'e and Waimea Canyon State Parks and promote the cultural landscape as part of the Parks' history.

GOAL 6: INTERPRETATION

To heighten visitor understanding, awareness, and appreciation of the Parks' natural, cultural, scenic, and recreational resources; and to promote preservation of these resources through public education programs and interpretive materials.

GOAL 7: PARK INFRASTRUCTURE

To provide safe, economical, and dependable utility and infrastructure systems to facilitate visitors' and users' experiences while in the Parks, and to ensure that valuable natural, cultural, and scenic resources are not compromised by utility or infrastructure development.

GOAL 8: ORGANIZATIONAL DEVELOPMENT AND MANAGEMENT

To create a management structure that will ensure that operations at Kōkeʻe and Waimea Canyon State Parks are financially self-sustaining, protect natural resources, and provide a high level of customer service. Also, to have in place a comprehensive program of education, prevention, enforcement, and control in order to respond to and, where possible, eliminate natural and man-made threats to public safety and the natural environment.

GOAL 9: PARK EXPANSION

To preserve lands contiguous with the Parks in order to preserve open space and natural resources, such as the views from and towards Waimea Canyon, Kekaha, and points beyond. To protect, through acquisition, lands along Waimea Canyon Drive in order to protect the scenic beauty of the area and prevent undesirable development.

1.3 SCOPE AND AUTHORITY

This Draft Environmental Impact Statement (DEIS) is prepared for the Kōkeʻe and Waimea Canyon State Parks Master Plan and for the proposed improvements recommended therein. This document is prepared in accordance with Chapter 343, *Hawai'i Revised Statutes* (HRS), and Chapter 200, Title 11, *Hawai'i Administrative Rules* (HAR).

The following criteria under Chapter 343, HRS, may be triggered by this proposed project: (1) Use of State or County lands or funds, (2) Use within the State Conservation District, and (3) Use within any historic site or district as designated in the National or Hawai'i Registers of Historic Places;

An EIS Preparation Notice (EISPN) was published in the May 8, 2005, issue of *The Environmental Notice*, a publication of the State Department of Health (DOH), Office of Environmental Quality Control (OEQC). Public comments were received during the public comment period for the EISPN and at meetings before the affected public and community. Comments received are in Section 15. This DEIS describes the proposed project, the environmental conditions of the site, the potential for significant adverse impacts, and the application of mitigation measures, as appropriate, to reduce or minimize the potential for significant environmental impacts.

1.4 PROJECT SUMMARY

The Master Plan is based on the "Remedial Improvement" alternative. Improvements are generally limited to repairing and upgrading existing facilities, infrastructure, and utilities. The objective is to meet regulatory standards and to enhance the park users' experience by improving orientation, service, and safety and by eliminating incompatible and obtrusive elements within the Parks.

Additionally, several primary destination sites within the Parks are identified for improvement to address the special demands placed on them. These sites include Kanaloahuluhulu Meadow and the four major lookouts: Pu'u o Kila, Kalalau, Pu'u Hinahina, and Waimea Canyon. See **Figure 1-2, Master Plan**.

1.4.1 Design Principles

Planned improvements will be concentrated within existing developed areas along the Kōke'e Road corridor in order to minimize the development "footprint" on the natural landscape. Exceptions include construction of a new park entry station at the entrance to Waimea Canyon State Park, and development of new lower elevation lookouts along Waimea Canyon Drive.

Man-made elements are subordinate to the natural landscape. Structures are to be located away from primary view zones, set back from roadways and screened from view where appropriate.

Natural materials are to be used to preserve the Parks' rustic character and to blend man-made elements into the wilderness landscape. Materials may be finished or unfinished depending on location and function of the structure.

1.4.2 Landscaping and Vegetation

Over time, the activities of the recreation residents have produced a mosaic of several distinct landscape typologies. Though each typology expresses a different relationship with the land, there is an apparent shared landscape characteristic of open lawn space defined and accented with natural and introduced tree plantings. This landscape feature is emblematic of Kōke'e and evident throughout the public spaces and lease lots within the two Parks. It is most prominently displayed in the open spaces and monumental trees of Kanaloahuluhulu Meadow.

Landscape design based on these typologies is appropriate for the "settlement" areas within the Park, such as at Kanaloahuluhulu Meadow and within the recreation residential areas where people have asserted a human presence. Outside of the settled areas, the natural landscape should prevail.

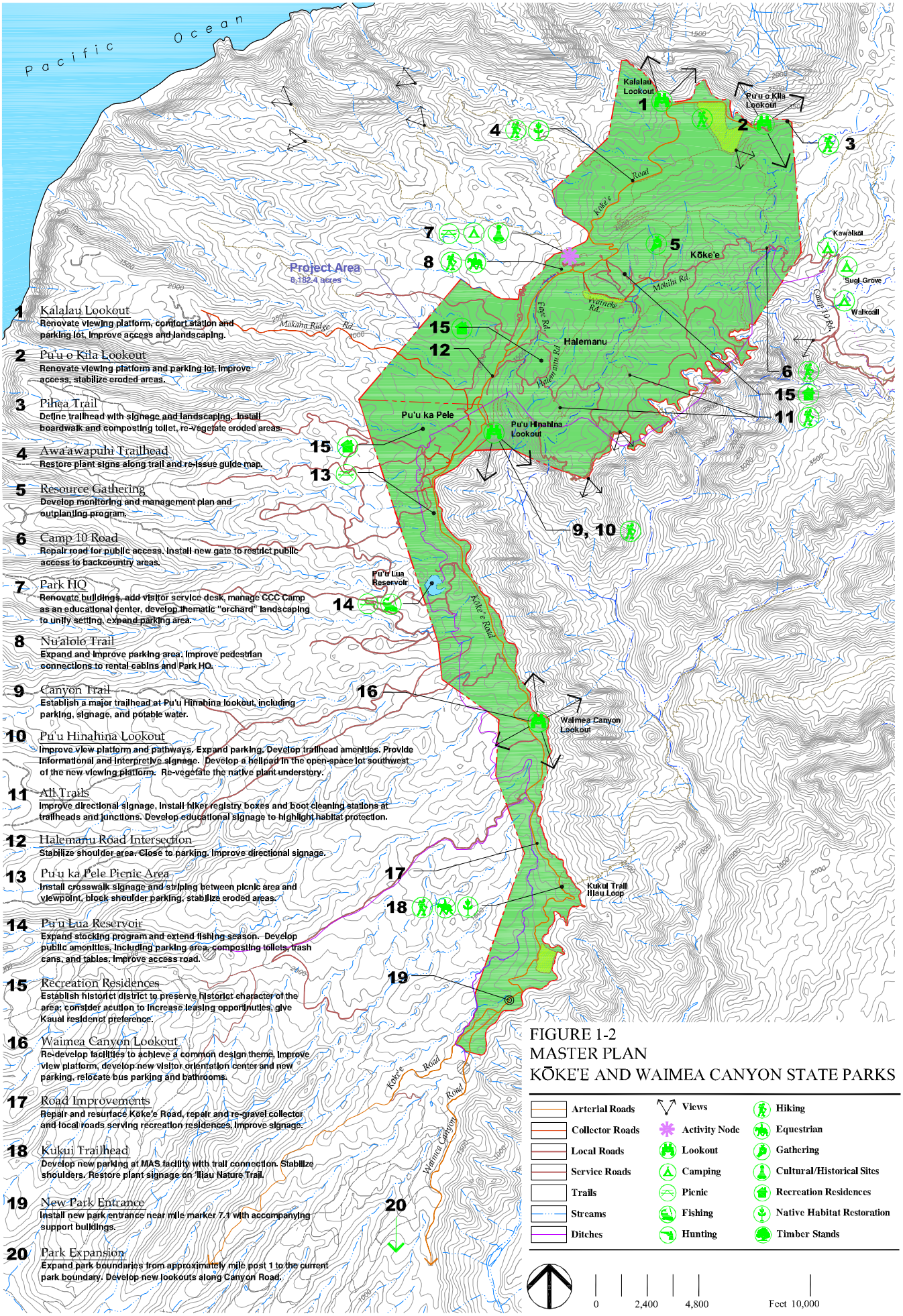

FIGURE 1-2
MASTER PLAN
KŌKE'E AND WAIMEA CANYON STATE PARKS

Landscaping at facilities which are developed to showcase the natural beauty of the Parks, such as the lookouts and trailheads, should be designed to blend into the "wilderness" setting. Native plant materials and massings, local earth forms, and color and texture palettes drawn from the immediate vicinity should be used in the design.

1.4.3 Park Entrance Station

A new park entry is planned for the entrance to Waimea Canyon State Park. The entry is an essential component of the master plan. It will serve to:

- Control access for park safety and resource management.
- Orient and inform park visitors.
- Establish park identity and ranger presence.

1.4.4 Roads

Roads are categorized as Arterial (Kōkeʻe Road, Puʻu o Kila Road, and Waimea Canyon Drive), Collector (Waineke Road, Makaha Ridge Road), and Local (recreation residence access, Camp 10 Road). Improvements include:

- Repair and resurface the entire length of Kōkeʻe Road and Puʻu o Kila Road to Puʻu o Kila. Stabilize shoulders and install road-surface reflectors.
- Re-grade, gravel, and correct drainage on unpaved collector roads.
- Re-grade, gravel, and correct drainage on local roads serving recreation residences.
- Repair Camp 10 Road for public access, including re-grading and graveling, and improving stream crossings.
- Improve identity and directional signage at key intersections.
- Transfer jurisdiction over all roads within the Parks to DSP.

1.4.5 Trails

Recommendations and improvements planned for the trails system include:

- Improve identification of trails and directional signage at all trailheads and junctions.
- Update trail guide materials and trailhead signs to inform visitors of trail conditions and amenities.
- Expand or improve parking at Kukui Trailhead, Nuʻalolo Trailhead, and Awaʻawapuhi Trailhead.
- Update informational and interpretive materials for Awaʻawapuhi Trail, Iliau Nature Loop, and Kanaloahuluhulu Nature Loop Trail.
- Complete construction of Ditch Trail and Canyon Trail segments with connection to Puʻu Hinahina.

- Develop new trailhead facilities at Pu'u Hinahina, Water Tank Trail and Kaluapuhi Trail;
- Install boardwalk/steps along the valley rim between Pu'u o Kila Lookout and Pihea Overlook to control erosion.
- Consider elevated canopy trails in the forest.
- Develop Americans with Disabilities Act (ADA) accessible interpretive trails to highlight the five main plant community types found in the two Parks.

1.4.6 Kanaloahuluhulu Meadow/Park Headquarters

Kanaloahuluhulu Meadow is the heart of Kōke'e and a primary park visitor destination. The meadow area serves several valuable park functions:

- Park Identity/Landmark
- Ranger Presence/Visitor Service
- Park Community/Social Center
- Research/Education Center
- Revenue Generation Center

Proposed improvements include:

- Renovate or construct new Kōke'e Lodge building. Possibly integrate visitor center, museum, concession, and visitor lodging in a single lodge complex.
- Establish and enforce Kōke'e vernacular architectural design standards in the meadow architecture.
- Continue to lease Kōke'e Natural History Museum operations to a non-profit organization, such as Hui o Laka.
- Expand the existing Museum building to create space for a visitor service desk to be staffed by a uniformed DSP ranger or docent.
- The service desk will provide the following services: (1) One-stop location for all park permits (camping, gathering, fishing, hunting, and commercial trail use); (2) Reservations and check-in/-out for short-term State rental cabins; (3) Visitor orientation and information; and (4) Complaints, reports, and emergency communications.
- Renovate the historic Kanaloahuluhulu Ranger Station to serve as park volunteer housing.
- Develop orchard landscape theme based on historic CCC Camp plantings. Extend orchard plantings along the north edge of the Meadow to provide a unified landscape context for the park buildings - Kanaloahuluhulu Ranger Station, Kōke'e Lodge, Kōke'e Natural History Museum, and Pavilion.
- Expand parking along the edge of the Meadow between the Kōke'e picnic pavilion and tent campground.

- Continue use as an educational center and field station for natural and historic resource research and management.
- Maintain existing cabins for short-term rental use. Outsource rental cabin operations and maintenance through lease to a private/non-profit organization.
- Redesign intersection to Meadow.

1.4.7 Lookouts

A. General

- Replace all cesspools with septic systems or composting toilets as appropriate to the location.
- Develop potable water system (except at Pu'u o Kila).
- Improve informational and directional signage and interpretive materials.

B. Waimea Canyon Lookout

- Redevelop visitor facilities, including viewing platforms, bathrooms, concession area, new information center, and landscaping, to achieve a cohesive design.
- Redevelop the existing parking area as a pedestrian drop-off and handicap parking only zone. Develop a pedestrian view plaza between the view platform and comfort stations.
- Develop a new parking lot and bus staging area at the lookout driveway entrance. Relocate bus parking to the new parking area.

C. Pu'u Hinahina Lookout

The adjacent Pu'u Hinahina helicopter landing zone (LZ) (TMK: 1-4-02: 04) offers more expansive canyon views than the existing lookout site, as well as an open, park landscape setting well-suited for picnic use. For these reasons, the master plan recommends the future relocation of the Pu'u Hinahina Lookout facilities to the helicopter LZ site. The new facility would include parking for approximately 40 cars, ADA accessible pathways and restroom, view platform, interpretive signage, and picnic tables. The existing lookout would be converted to a trailhead for the Canyon Trail and the canyon rim view platform would be closed. The Ni'ihau Island View Platform would be maintained; and an improved trail would connect the new Pu'u Hinahina Lookout and Canyon Trail trailhead facilities. Interim improvements to the existing lookout include the following:

- Develop a lookout plaza at the convergence of the pathways and Cliff Trail and redevelop the pathways to both the Waimea Canyon and Ni'ihau viewing platforms to comply with ADA accessibility requirements.
- Construct a new ADA accessible comfort station in the lookout plaza between the parking lot and canyon viewing platform.

- Develop trailhead facilities and signage for the Canyon Trail.
- Develop a new parking lot to serve the trailhead.

D. Kalalau Lookout

- Realign Kōkeʻe Road to create a stop-controlled T-intersection at the entrance to the Kalalau Lookout parking lot with right-hand turn towards Puʻu o Kila.
- Improve pathway system to comply with ADA accessibility requirements.
- Relocate comfort station to edge of open lawn area.
- Identify location for package plant septic system leach field (potential in center lawn of parking area).
- Redesign and expand the scenic lookout.
- Expand the parking lot.

E. Puʻu o Kila Lookout

- Reconstruct and restripe parking lot.
- Provide composting toilets in parking lot area.
- Improve walkway from parking lot to viewing platform and Pihea Trailhead.
- Renovate viewing platform to provide direct access to Pihea Trail along valley rim alignment.

F. Lower Elevation Lookouts

Waimea Canyon Drive offers spectacular views spanning from the coastal regions, into the canyon, and on to the distant green uplands of the Alakaʻi wilderness and Mt. Waiʻaleʻale. Capturing these views at lower elevation lookouts will enable the complete visual story of Kōkeʻe and Waimea Canyon to be told. Lower elevation lookouts will also help orient visitors and build anticipation for the rich resources waiting in the Parks above.

The Waimea Canyon State Park's lower boundary would be extended to include new lower elevation lookouts. Typical amenities would include: parking, ADA accessible pathways and comfort station, and interpretive signage and kiosk.

G. Kaleinamanu Ridge Picnic Area

Located off of Waimea Canyon Drive mile marker 2, this ridge affords sweeping views of the Waimea-Kekaha area. The lower ridge above the ancient sea cliffs is proposed as a new picnic area in a wooded setting. Planned development includes the following:

- Install picnic tables under shade trees.
- Develop small picnic pavilions.
- Provide potable water system with drinking fountains.
- Install BBQ grills.

- Develop paved road and parking lot.
- Develop restroom facilities.

1.4.8 Recreation Residences

The recreation residence lots will remain in recreational use following the expiration of the current leases in 2006. The Division of State Parks is currently pursuing the following actions as directed by the BLNR on February 10, 2006:

1. Entering into an auction for the disposition of the recreation residences.
2. Approved entering into direct negotiations at a nominal rent for the lease of recreation residences to nonprofit organizations holding current leases, in accordance with HRS, Section 171-43 or Section 171-43.1.
3. Approved the Department's retention of nine (9) cabins for State use.
4. Other terms and conditions as may be prescribed by the Chairperson.
5. All disposition processes are subject to review and approval of the Department of the Attorney General.

1.4.9 Utilities

A. Electrical System

- Replace electrical system distribution lines.

B. Wastewater System

- Expand the Kanaloahuluhulu leach field to handle periods of high rainfall.
- Replace all large capacity cesspools (20 or more users) with wastewater collection and treatment systems.
- Connect all recreation residences within the well head protection zone to a wastewater collection and treatment system.
- Establish user fees to pay for operations and maintenance costs.

C. Water System

- Replace existing water transmission and distribution system. Extend water transmission lines to Waimea Canyon Lookout.
- Continue exploration for potable water source development.
- Develop a replacement and backup source of potable water. Construct a second water tank at the main storage area.
- Install water meters for all major users.
- Develop water supply, including dip tanks, for fighting wildland fires.

D. Communication System

- Install solar-powered emergency call boxes at the major lookouts and trail hubs.

1.4.10 Park Expansion

Waimea Canyon State Park is proposed to be expanded to include lands along Waimea Canyon Drive for a parkway with scenic lookouts and viewpoints:

- Kaleinamanu Ridge Picnic Area – develop a new picnic area on Kaleinamanu Ridge overlooking the town of Waimea.

1.4.11 Park Management/Operations

Management recommendations represent a range of alternatives to address opportunities and constraints identified in the background research and through input from task force members and the public.

- Create a Kōkeʻe Regional Authority under DLNR that incorporates the functions of all of the divisions which operate in Kōkeʻe and Waimea Canyon State Parks and the surrounding forests and natural areas.
- Create a single DLNR interface through which the public can obtain permits for camping, hunting, fishing, gathering, and commercial uses.
- Review park services, including utility, maintenance, and visitor services to determine which services can be privatized. Incorporate all existing access and utility easements into Kōkeʻe and Waimea Canyon State Parks. This is necessary to give DSP greater management control over the resources within the easement corridors.
- Transfer jurisdiction over all roads within the Parks to DSP.

1.4.12 Monitoring Program/Limits of Acceptable Change

- Develop a monitoring program to record changes to park conditions over time.
- Develop a list of indicators to be used to measure conditions of natural resources, facilities, infrastructure, and levels of use.

1.4.13 Educational/Interpretive Programs

- Develop a coordinated information program among the DLNR divisions to ensure that visitor information and materials are consistent.
- Develop a park-wide Archaeological and Historic Resources Management Plan to set priorities, establish standards for interpretive materials, and ensure consistency of information.
- Use the CCC Camp facilities to conduct educational programs on cultural activities in Kōkeʻe, including traditional Hawaiian practices and cultural practices of Kauaʻi's other ethnic groups.

1.4.14 Public Services

- Continue to provide State support for annual cultural events, such as the Emalani Festival and Banana Poka Roundup.
- Establish a uniformed ranger/docent presence in Kōkeʻe and Waimea Canyon State Parks to reinforce the Parks' identity.

1.4.15 Revenue

Proposals for revenue generation include:

- Entry Fee – Charge an entry fee for park visitors. Exempt Hawaiʻi residents from entry fees.
- User Fees – User fees should be charged to park tenants, concessionaires, and lessees to recapture the true costs to operate and maintain water, sewer, electrical and road systems.
- Lease Rents and Rental Fees – Lease rents from recreation residences will be based on auction results. Other user fees (camping, hiking, and other daily fees will be determined on operational costs. Concession fee(s) will be based on competitive bid.
- Concession Fees – Reassess concession fees, from Kōkeʻe Lodge, and Waimea Canyon Lookout and Kalalau Lookout lunch wagons.
- Miscellaneous Permits – Special use permit rates (gathering, hunting, and fishing) should be adjusted to capture costs of maintaining the impacted resource.
- Request funds from the State's fuel tax.
- Request a surcharge on rental cars to pay for road improvements.

1.5 SIGNIFICANT BENEFICIAL AND ADVERSE IMPACTS AND PROPOSED MITIGATION MEASURES

Some of the anticipated environmental impacts are short-term and some are long-term in nature. In most cases, it is possible to mitigate adverse environmental impacts and construct projects within acceptable limits. The remaining adverse environmental impacts are counterbalanced by the essential benefits provided to the general public by the proposed improvements.

1.5.1 Short-Term Impacts

Short-term impacts that may result from implementation of Master Plan improvements include:

- Construction-related noise, dust, and exhaust from work activities, the operation of heavy equipment and concentrated presence of internal combustion vehicles.
- Construction-related visual impacts in localized areas. Construction activities, signs and nighttime lighting have the potential to obstruct scenic vistas and to create visual distractions.

- Temporary closure or interruption of park facilities during construction which would affect park visitors.
- Disturbance of park fauna due to noise, lighting, dust, and other construction-related conditions.
- Impacts to plant species from project activities that encroach outside the edges of developed areas.

1.5.2 Long-Term Impacts

Long-term impacts relate primarily to increases in the number of visitors attracted by improved recreational facilities. Greater numbers of visitors will place additional burdens on the full spectrum of park resources including infrastructure and utilities, recreation facilities, and natural resources. Potential long-term impacts include:

- Increased vehicle traffic and related impacts to roadways and air quality.
- Increased wear and tear on recreational facilities, including park trails, picnic areas, campgrounds, and lookouts.
- Increased demand for water, sewer, power, and communication services at all park facilities.
- Increases in the number of short-term (daily) rental cabins will place an additional burden on roads, water and sewer systems, and building maintenance.
- Impacts to natural resources, flora, fauna, and sensitive habitats from increased human presence.
- Increased calls for emergency services, including police, fire, rescue and ambulance.

Long-term impacts will also result from permanent changes to the parks' built facilities, including modifications to existing structures, construction of new facilities, and related changes in management, maintenance, and operations of those facilities.

Where new facilities are constructed, there is the potential for displacement of flora and fauna and potential to adversely impact historic or archaeological resources. No threatened or endangered species were identified where construction is scheduled to occur.

The method of disposition of the recreation residence leases could result in adverse impacts to current lessees, integrity of existing residences and to their value within Kōkeʻe's unique cultural landscape. The DLNR is committed to having design guidelines in place prior to re-leasing the recreation residences.

1.6 ALTERNATIVES CONSIDERED

Four Master Plan alternatives were considered and are discussed below.

1.6.1 "No Action" Plan – maintain the status quo.

Facilities, activities, and programs are administered on a case-by-case basis at the two parks. No new facilities or park programs are developed. Current activities and programs will be continued with existing revenues and management resources.

1.6.2 Remedial Improvement Plan

Preserve the existing character of the Parks with upgrades to visitor amenities, infrastructure, and utilities in a manner that reinforces the Parks' historic character and avoids intensifying development. A fundamental goal of the remedial plan is to enhance revenue generation sufficiently to sustain park operations, maintenance, and routine program upgrades. Improvements to facilities, activities, and programs are to be administered on a case-by-case basis.

1.6.3 Limited Access/Conservation Plan

Restore the Parks to a more natural state by scaling back existing development. The Conservation Plan seeks to create a destination in which visitors can experience the area's unique native ecosystem and historic cultural landscape through education and interpretive programs and personal immersion in the environment.

1.6.4 Enhanced Park Facility Development Plan

To optimize recreational opportunities and facilities and to expand interpretive programs that allow park visitors to experience the natural, cultural and historic resources. The plan seeks to create a destination that enhances the wildland experience that visitors of all physical skill levels can enjoy and appreciate while engaging in a variety of outdoor recreational and educational activities.

1.7 UNRESOLVED ISSUES

The following are issues that will require further study:

- Design guidelines are pending.
- Lease terms, conditions, and appraisals for the recreation residences pending.

1.8 LIST OF NECESSARY PERMITS AND APPROVALS

The following permits and approvals may be required prior to construction of individual master plan projects. As individual projects are budgeted and designed, DLNR will continue its consultation with the appropriate agencies to ensure that all required permits are obtained prior to construction.

Permit or Approval	Jurisdiction	Granting Agency	Why Required
Department of the Army Permit	Federal	U.S. Army Corps of Engineers	Construction of structures or work within navigable waters or wetlands
Section 7, Endangered Species Act	Federal	U.S. Fish and Wildlife Service	Impact to endangered species
401 Water Quality Certification	State of Hawai'i	Dept. of Health	Work near a body of water
National Pollutant Discharge Elimination System (NPDES) Permit	State of Hawai'i	Dept. of Health	Increasing the quantity of any discharge and storm water runoff
Historic Preservation Review	State of Hawai'i	Dept. of Land and Natural Resources	Sites over 50 years old
Conservation District Use Permit	State of Hawai'i	Dept. of Land and Natural Resources	Lands within the Conservation District
Public Land Dispositions	State of Hawai'i	Dept. of Land and Natural Resources	State-owned lands
Stream Channel Alteration Permit	State of Hawai'i	Commission on Water Resources Management	For projects involving alterations to stream banks
State Highways Permit	State of Hawai'i	Dept. of Transportation	Construction work within or next to State Highway right-of-way
Non-Covered Source Permit	State of Hawai'i	Dept. of Health	Source of air pollution (during construction)
Permit to Construct a Wastewater System	State of Hawai'i	Dept. of Health	Construction of waste water system
Hazardous Waste Permit	State of Hawai'i	Dept. of Health	Treatment, disposal, and storage of hazardous waste
Asbestos Regulations	State of Hawai'i	Dept. of Health	Removing or managing asbestos
Flood Hazard Controls	County of Kaua'i	Dept. of Public Works	Any development in a flood zone area
Grading, Grubbing, Excavating, and Stockpiling Permits	County of Kaua'i	Dept. of Public Works	Excavation or fill, removal of vegetation from the surface of the ground, or purposeful accumulation and set-aside of loose soil
Building Permit	County of Kaua'i	Dept. of Public Works	Erecting, constructing, enlarging, demolishing, or altering any building or structure

1.9 PUBLIC PARTICIPATION

During the preparation of the Master Plan for the Kōke'e and Waimea Canyon State Parks, the public was provided with regular updates on the preparation of the plan as well as the opportunity to give input to the plan. The following is a list of the meetings held to date:

- August 24, 2002 Discussion on recreation residences
- October 9, 2002 Public information meeting
- September 30, 2003 Public information meeting
- October 14, 2003 Public information meeting
- November 18, 2004 Public information meeting
- March 22-23, 2005 Public information meetings
- January 14, 2005 Board of Land and Natural Resources meeting
- September 9, 2005 Board of Land and Natural Resources meeting
- February 10, 2006 Board of Land and Natural Resources meeting

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SECTION 2

PROJECT DESCRIPTION

2.1 PROJECT LOCATION

The Kōkeʻe and Waimea Canyon State Parks are two adjoining parks located on the west side of Kauaʻi. The Parks were officially established in 1952 and 1965, respectively, and are administered by DLNR, Division of State Parks (DSP). In total, the two parks occupy 6,182.4 acres of land, with Kōkeʻe State Park encompassing 4,345 acres and Waimea Canyon State Park comprised of 1,837.4 acres (See **Figure 1-1, Study Area Map).**

The combined acreage is approximately 1.75 percent of the total land area on the island, and 40 percent of the State Parks acreage on Kauaʻi. The 6,175-acre Nā Pali Coast State Wilderness Park adjoins Kōkeʻe along a portion of the rim of Kalalau Valley, forming a continuous natural park landscape of nearly 12,500 acres. Access between Kōkeʻe and the Nā Pali Coast is not feasible, however, due to the sheer valley cliffs.

Waimea Canyon State Park is located entirely within Waimea District. The Waimea-Hanalei District Boundary crosses Kōkeʻe State Park just south of mile marker 17 on Kōkeʻe Road.

Study Area

The Master Plan *study area* includes the project area plus adjacent State-owned lands that include Puʻu ka Pele and Nā Pali-Kona Forest Reserves, Alakaʻi Wilderness Preserve, Kuʻia Natural Area Reserve, and the Mokihana Game Management Area. The Department of Hawaiian Home Lands (DHHL) administers the Puʻu ʻŌpae Hawaiian Homes Land, which abuts the southern end of Waimea Canyon State Park. The primary access road to the DHHL property is Hāʻeleʻele Ridge Road, an unimproved 4-wheel drive road that originates off of Kōkeʻe Road within the park boundary. Hāʻeleʻele Ridge Road also provides access to a segment of Kōkeʻe Ditch and to Puʻu ʻŌpae Reservoir.

Lands surrounding the Parks consist primarily of State forest reserve, natural area reserve, and wilderness preserve lands administered by DLNR, Division of Forestry and Wildlife (DOFAW). These lands are actively managed by DOFAW for natural resource conservation, forest product development, hunting, and outdoor recreation. Access to DOFAW administered lands is via numerous unimproved 4-wheel drive ridge roads that originate off of Kōkeʻe Road within the two parks.

State-owned lands along Waimea Canyon Drive are included in the study area as a possible location for expansion of Waimea Canyon State Park. Several State and federal agencies, and private entities also operate facilities within the two parks. These include:

- NASA - operates a tracking station on Kaunuohua Ridge within Kōkeʻe State Park.
- U. S. Navy, Pacific Missile Range Facility - operates two radar stations, one on Kaunuohua Ridge within Kōkeʻe State Park, and one at the end of Makaha Ridge Road within the Nā Pali-Kona Forest Reserve.
- Hawaiʻi Air National Guard - operates a radar tracking station within Kōkeʻe State Park and a microwave antenna site within Waimea Canyon State Park.
- Department of Education - operates the Kōkeʻe Discovery Center, an educational facility within Kōkeʻe State Park.
- Agribusiness Development Corp. - operates the Kōkeʻe Irrigation Ditch system under lease from the State to serve diversified agricultural users in the Kekaha Agricultural Park.
- Hawaiian Telcom - operates a communication tower at Puʻu ka Pele.

2.2 PURPOSE AND NEED FOR THE PROJECT

Kōkeʻe and Waimea Canyon State Parks were among the first parks established under the Territorial Park System. They were created in recognition of the unique environmental resources, abundant recreational opportunities, and rich natural heritage existing in the uplands of western Kauaʻi.

Each year, the Parks are enjoyed by an estimated 300,000 people. Local residents and visitors alike come to Kōkeʻe and Waimea Canyon State Parks for sightseeing, recreational activities, cultural and educational pursuits, and simply to get away from daily routines and relax in the beautiful mountain setting.

The tremendous popularity of the two parks is testament to the foresight of the territorial foresters who advocated their preservation in the early 1900s, and a clear indicator of the Parks' continued value to the people of Hawaiʻi. This popularity also poses challenges to park managers and caretakers who are working to ensure that the parks' resources can be enjoyed by visitors today, and will be available for the experience of future generations.

Towards this end, a Master Plan has been prepared to guide the management, enhancement and development of Kōkeʻe and Waimea Canyon State Parks for a twenty-year period extending from 2005 to 2025.

2.3 MISSION OF THE STATE PARKS SYSTEM

"The Mission of the Division of State Parks is to properly manage and protect Hawaiʻi's natural and cultural heritage values found within the State Park System, provide a broad range of outdoor recreation opportunities, promote a safe, high quality park experience for Hawaiʻi's residents and visitors and preserve Native Hawaiian gathering and cultural access rights."

The goals of the Master Plan were cited earlier (Section 1.2).

2.4 MASTER PLANNING PROCESS

The master plan was developed through a four step process:

1. Background Inventory and Facility Assessment
2. Analysis
3. Plan Alternatives Development and Evaluation
4. Plan Selection and Refinement

2.4.1 Background Inventory and Facility Assessment

Background information about park resources, activities, operations, management, and issues and opportunities was obtained through research of existing documentation, field investigations, agency comments, and public input. The background research conducted for the Master Plan focused on the following subject areas (see Section 4 and 5 for analysis):

- Natural Resources
- Cultural and Historic Resources
- Scenic Resources
- Outdoor Recreation Resources
- Other issues identified by agencies and the public
- Recreation Residences
- Infrastructure
- Organizational Development and Management
- Costs and Revenues

2.4.2 Analysis

Each resource is analyzed in terms of its condition-fragility, resource limits, public use, user limits, and issues. Opportunities and constraints of the resources were related to protection, management, restoration, development, enhancement, and interpretation.

For the Parks' developed resources, analysis includes:

- Evaluation of existing buildings to determine if they are suitable for short-term and/or long-term use.
- Evaluation of the historic integrity of buildings within the parks and assessment of their value to Kōke'e's cultural and historic landscape.

- Evaluation of existing utilities (water, sewage, electrical-communication, and roads), identification of utility deficiencies, and necessary repair work.
- Estimation of budgetary costs for repairs to park buildings, infrastructure, and utilities.

2.4.3 Plan Alternatives Development and Evaluation

Four conceptual Master Plan alternatives are presented for the Kōkeʻe and Waimea Canyon State Parks (see Section 3 for alternatives discussion). The alternatives are based on available information, the analysis and development themes for the Kōkeʻe and Waimea Canyon State Parks, the adjoining game management areas, the forest reserves, and the Natural Area Reserve.

The development of the alternatives included the following tasks:

- Establishment of development themes. The alternatives express a range of development options from status quo and low-intensity development to expanded development of park facilities and recreational resources.
- Identification of Recreation Opportunity Zones (ROZ). ROZs are a means of geographically organizing the plan area according to user expectations of "wilderness" and development. Five ROZs are identified for Kōkeʻe and Waimea Canyon State Parks, including primitive, semi-primitive motorized, semi-primitive non-motorized, rustic, and concentrated. These designations establish levels of access, facility development, and environmental preservation.
- Identification of park activities, programs, and use intensities that are related to the different development themes.
- Evaluating the alternatives based on costs, public review, agency comments, park resources and recreation goals.

The planning process included an opportunity for community members, interested parties, and other groups to participate in developing plan elements, to comment on plan concepts, and to vote for a preferred alternative.

2.4.4 Plan Selection and Refinement

A single preferred alternative was selected based on public input, DLNR staff and consultant recommendations, and review by the Board of Land and Natural Resources (BLNR) (see Section 3, Alternatives). The preferred plan underwent revisions through input received from the BLNR, DLNR staff, the Kōkeʻe Task Force, and public comments received during the alternatives evaluation phase. Upon deliberation by the BLNR, the Board recommended proceeding with the preferred alternative as discussed in Section 3, Alternatives Considered.

2.5 PROPOSED MASTER PLAN

The proposed Master Plan is based on the Remedial Improvement Alternative (See Figure 1-2). Improvements are generally limited to repairing and upgrading existing facilities, infrastructure and utilities. The objective is to meet regulatory standards and to enhance the park users' experience by improving orientation, service, and safety and by eliminating incompatible and obtrusive elements within the Parks. Additionally, several primary destination sites within the Parks are identified for more intensive redevelopment to address the special demands placed on them. These sites include Kanaloahuluhulu Meadow and the four major lookouts: Pu'u o Kila, Kalalau, Pu'u Hinahina, and Waimea Canyon Lookouts.

2.5.1 Design Guidelines

A. Design Principles

- Man-made elements are subordinate to the natural landscape. Structures are to be located away from primary view zones, set back from roadways and screened from view where appropriate.
- Natural materials are to be used to preserve the Parks' rustic character and blend into the wilderness landscape.
- Consistent design elements are to be used throughout the Parks to reinforce park identity.
- Planned improvements will be concentrated within existing developed areas along the Kōke'e Road corridor in order to minimize the development "footprint" on the natural landscape. Exceptions include construction of a new park entry gate at the entrance to Waimea Canyon State Park, and development of a new lower elevation lookout on Waimea Canyon Drive.

B. Kōke'e Vernacular

- Design - The typical architectural style is simple vernacular, with rustic features that complement the natural landscape of Kaua'i's upland forests at Kōke'e.
- Construction Methods – Architectural styles are dominated by board-and-batten or vertical-board, post-on-pier construction. For example, recreation residences primarily feature six-light wood-framed sliding windows or wood-framed double-hung windows. Foundations are typically post-on-pier and may feature rough-finished log posts and rocks.
- Roofing - Roofs are traditionally gable. Hipped roofs, introduced to Kōke'e in the 1920's, may be used. Primary roofing materials are corrugated metal or shake.
- Rustic Features and Craftsmanship - Rustic features include the use of 'ōhi'a (or other tree) logs and branches in porch railings. Native materials are also used in rock

fireplaces and chimneys and foundations. Exteriors may be left unpainted to reinforce a rustic character.

- Access - Unpaved driveways lead to on-site parking hidden from view.

C. Building Materials

Materials used in construction of park facilities should be natural in appearance to reinforce the Parks' rustic character and to blend into the wilderness context. Materials may be finished or unfinished depending on location and function of the structure. Acceptable structural materials include:

- Timber
- Stone
- Anchor-block
- Stained concrete
- Compacted/binded soil
- Grass and gravel pavers

D. Landscaping & Vegetation

Over time, the activities of the mountain residents have produced a mosaic of several distinct landscape typologies. Though each typology expresses a different relationship with the land, there is an apparent shared landscape characteristic of open lawn space defined and accented with natural and introduced tree plantings. This landscape feature is emblematic of Kōke'e and evident throughout the public spaces and lease lots within the two parks. It is most prominently displayed in the open meadow space and monumental trees of Kanaloahuluhulu. Landscape typologies evident in Kōke'e includes:

Forest Clearing Landscape

This landscape type is representative of the recreation residence origins in the early forest camps and hunters' cabins. It is characterized by the cabin set within a small, grassed clearing from which the forest has been beaten back, but remains dominant. Surrounding vegetation is generally comprised of dense, untended, natural forest constituents. Landscape improvements are minimal. Planted trees are typically used to define lot entry drives and property boundaries. Tended vegetation (typically ornamental ti, ginger, hydrangea, and similar plants) is limited to the immediate perimeter of the cabin.

Woodland Park Landscape

This landscape type suggests a forested park in which scattered trees are set within a meadow-like environment to create a naturalistic woodland appearance. This landscape

represents the integration of the forest through both selective clearing and introduced tree plantings. Trees are typically left untended. Planted trees are used also to define entry ways and property boundaries.

Orchard Landscape

This landscape type developed from agricultural experimentation conducted by the Civilian Conservation Corps at Kanaloahuluhulu Meadow. Fruit trees, including varieties of plum, pear, cherry and apple, were provided to early recreation residents to assist in meeting annual planting quotas under the terms of the early camp lot leases. In this landscape, the forest is cleared to create open space for orderly plantings of fruit trees in rectangular or triangular rows. The landscape is controlled and the lot displays a functional organization of space with built elements--residences and peripheral utility structures--sited for the convenience of orchard maintenance. Ornamental vegetation is typically limited to the periphery of built elements. In some examples, orchard plantings are incorporated on a small scale within other landscape typologies.

Cottage Garden Landscape

This landscape type is suggestive of a formal, English garden style and may reflect early park residents' identification with cultural roots from both sides of the northern Atlantic. In this landscape, the forest is beaten back to create controlled, ornamental space. Characteristics include carefully tended flower and vegetable beds set within well-manicured lawns surrounding the residence. The natural forest may be represented within the landscape by carefully groomed specimens of trees or shrubs.

Landscape design based on these typologies is appropriate for the "settlement" areas within the park, such as at Kanaloahuluhulu Meadow and within the recreation residential areas where people have asserted a human presence. Outside of the settled areas, the natural landscape should prevail.

Landscaping at facilities which are developed to showcase the natural beauty of the parks, such as the lookouts and trailheads, should be designed to blend into a "wilderness" setting. Native plant materials and massings, local earth forms, and color and texture palettes drawn from the immediate vicinity should be used in the design.

E. Signage

Park signage is used for identification, direction, information, and interpretation. Park signage should be designed and sited to complement the immediate natural setting and be constructed of approved materials that reinforce the parks' rustic character.

F. Parking

Design limits on parking capacity will be used to limit visitor access in sensitive natural areas. Parking areas will be located off of the roadways and screened from view. Shoulder parking will be discouraged. Parking along road shoulders visually detracts

from the natural landscape and diminishes the road's function as a scenic parkway. Shoulder parking creates a safety hazard for vehicle traffic and pedestrians and results in erosion and soil instability. Allowing shoulder parking in some locations sets an undesirable precedent by encouraging park visitors to park wherever they please along the road.

2.5.2 Infrastructure

A. Roads

The road system in Kōkeʻe and Waimea Canyon State Parks provides access as well as sight-seeing and recreation opportunities for park users. For the purposes of the Master Plan, roads are treated in three categories: arterial roads, collector roads, and local roads. Proposals for each category are described below.

General recommendations for the entire road system include:

- Permit recreational bicycle riding on improved and unimproved roads throughout the Parks.
- Permit 4-WD vehicles and street-legal off-road motorcycles on unpaved roads. Prohibit operation of all-terrain recreational vehicles, including dirt bikes, within the Parks.
- Construct barriers to block access in areas where illegal off-road vehicle use is evident. Use natural materials, such as logs and stones, where available and effective.

B. Arterial Roads

Arterial roads within the Parks include Kōkeʻe Road, Waimea Canyon Drive, and Puʻu o Kila Road. The arterial roads are the most significant man-made intrusion in the natural landscape. They function as scenic parkways and provide visitors with important first impressions of the Parks. As such, structural elements visible from the roadway should be constructed with natural materials that compliment and blend into the wilderness setting. Development adjacent to the roadways, such as parking areas and buildings, should be screened from view with landscaping using native plantings and geo-forms. Consistent design treatments should be used throughout the road system to unify and strengthen park identity.

Planned improvements to arterial roads include:

- Repair and resurface the entire length of Kōkeʻe Road and Puʻu o Kila Road to Puʻu o Kila.
- Stabilize shoulders and install shoulder barriers to restrict roadside parking. Shoulder bollards are to be constructed of boulders, timber, or other natural-looking material.

- Install road-surface reflectors along the center line and shoulders.
- Improve identity and directional signage at key intersections, including: Kanaloahuluhulu/Park HQ, the four major lookouts, Pu'u ka Pele, Halemanu Road, Faye Road, Waineke Road, Makaha Ridge Road, and the Pu'u Lua Reservoir turnoff.
- Stabilize shoulder area of Halemanu and Kōke'e Road intersection for parking. When new trailhead parking at Pu'u Hinahina is complete, close intersection shoulder to parking and restore area to natural, vegetated condition.
- Redesign Kōke'e Road from Kanaloahuluhulu Meadow to Kalalau Lookout to safely accommodate full-size buses.
- Develop the roadways as fuel breaks with selective clearing setbacks 40 to 50 feet from the road edge. The setback to be 50 feet maximum in sloped conditions. Clearing should target non-native trees, particularly silk oaks and eucalyptus. Some koa and 'ōhi'a may be removed where they would block the road if toppled.

Incorporate Kōke'e Road and Waimea Canyon Drive in Kōke'e and Waimea Canyon State Parks. The Division of State Parks (DSP) should assume management authority over roads within the Parks provided DSP receives a portion of the State Fuels Tax to support operations and maintenance of the roads. Fuels tax revenue will be used for personnel, equipment, and materials. This action is desirable for the following reasons:

1) It will give DSP the capability to manage the parks' paved and unpaved roads in accordance with park program objectives.
2) It will improve management of roads during emergency events.
3) It will provide greater management control to prevent the introduction and spread of invasive weeds and disease.
4) It will provide greater management control to develop and maintain the road system as a scenic resource. Currently, the road system is not managed to take advantage of the scenic features and visual opportunities along the roadway corridors.
5) It will provide greater management control for maintenance of firebreaks and removal of hazardous trees. DSP has special understanding of ecological and aesthetic considerations of vegetation clearing in a park environment that State and County transportation departments lack.
6) DSP jurisdiction over the road system is a prerequisite for developing a park entry gate and entry fee program. State DOT will not allow DSP to collect a fee on a state road.

C. Collector Roads

Collector roads include Waineke Road, Tank Lot Road, Makaha Ridge Road, and Kā'aweiki Ridge Road into Pu'u ka Pele. Planned improvements to collector roads include:

- Re-grade, gravel, and correct drainage on unpaved collector roads.

- Provide directional signage and improve road name signs within Kōkeʻe and Puʻu ka Pele recreation residence neighborhoods.

D. Local Roads

Local roads include Faye Road, Halemanu Road, Mōhihi Road, Camp 10 Road, and other recreation residence access roads in Kōkeʻe and Puʻu ka Pele. Planned improvements to local roads include:

- Re-grade, gravel, and correct drainage on local roads serving recreation residences.
- Repair Camp 10 Road for public access, including re-grading and graveling, and improving stream crossings.
- Improve directional and warning signage, include prohibition of two-wheel drive vehicles on Halemanu Road, Camp 10 Road, and the road to Puʻu Lua Reservoir. Include warning signs for two-wheel drive vehicles on all other local roads.

E. Electrical System

- Renovate electrical system distribution lines.
- Relocate poles, towers, and communication antenna away from areas where they will intrude on scenic views.
- Place electrical and telephone lines underground in Kanaloahuluhulu Meadow. Priority for undergrounding is: (1) Meadow, (2) State cabins, and (3) remainder of the Park.

F. Wastewater System

- Expand the Kanaloahuluhulu leach field to handle periods of high rainfall adjacent to the Ranger Station, historic location of the chicken yard and garden.
- Replace all large capacity cesspools (20 or more users) with wastewater collection and treatment systems.
- Connect all recreation residences within the wellhead protection zone to a wastewater collection and treatment system.
- Replace public cesspools at lookout and picnic area comfort stations with septic systems or package plant treatment systems.
- Establish "no build zone" for new cesspools and leach fields based on geology and ground water resources.
- Establish user hookup fees.
- Establish user fees to pay for operations and maintenance costs.
- Investigate privatizing the development, operation and maintenance of wastewater systems.

G. Water System

- Replace existing water transmission and distribution system.
- Continue exploration for additional potable water source development.
- Develop a replacement and backup source of potable water particularly at Kalalau Lookout.
- Install water meters for all users.
- Establish fees for all users to pay for operations and maintenance of the water system.
- Require backflow prevention devices for all large camps and facilities with commercial kitchens.
- Extend water transmission lines to Waimea Canyon Lookout.
- Establish "no build zone" for new cesspools and leach fields based on geology of the area and impacts to water resources.
- Enforce a Wellhead Protection Zone of 1000 feet from cesspools for potable well sources.
- Develop Kōkeʻe irrigation ditch system as non-potable water source for fire protection.
- Develop dip tanks in open areas to provide water supply for fighting wildland fires.
- Construct a second water tank at the main storage area.

H. Communication System

Install solar-powered emergency call boxes in locations where historical records of accidents and rescue calls indicate there is a need.

2.5.3 Public Facilities

A. Park Entrance Station

An entry station is an essential component of the Master Plan. It serves to:

- Control access for park safety and resource management.
- Orient and inform park visitors.
- Establish park identity and personnel presence.

The new entry station will be located within the Waimea Canyon State Park boundary immediately above the junction of Waimea Canyon Drive and Kōkeʻe Road (Hwy 550), in the vicinity of mile marker 6.8. An entry booth will be positioned between incoming and exiting travel lanes. See **Figure 2-1**.

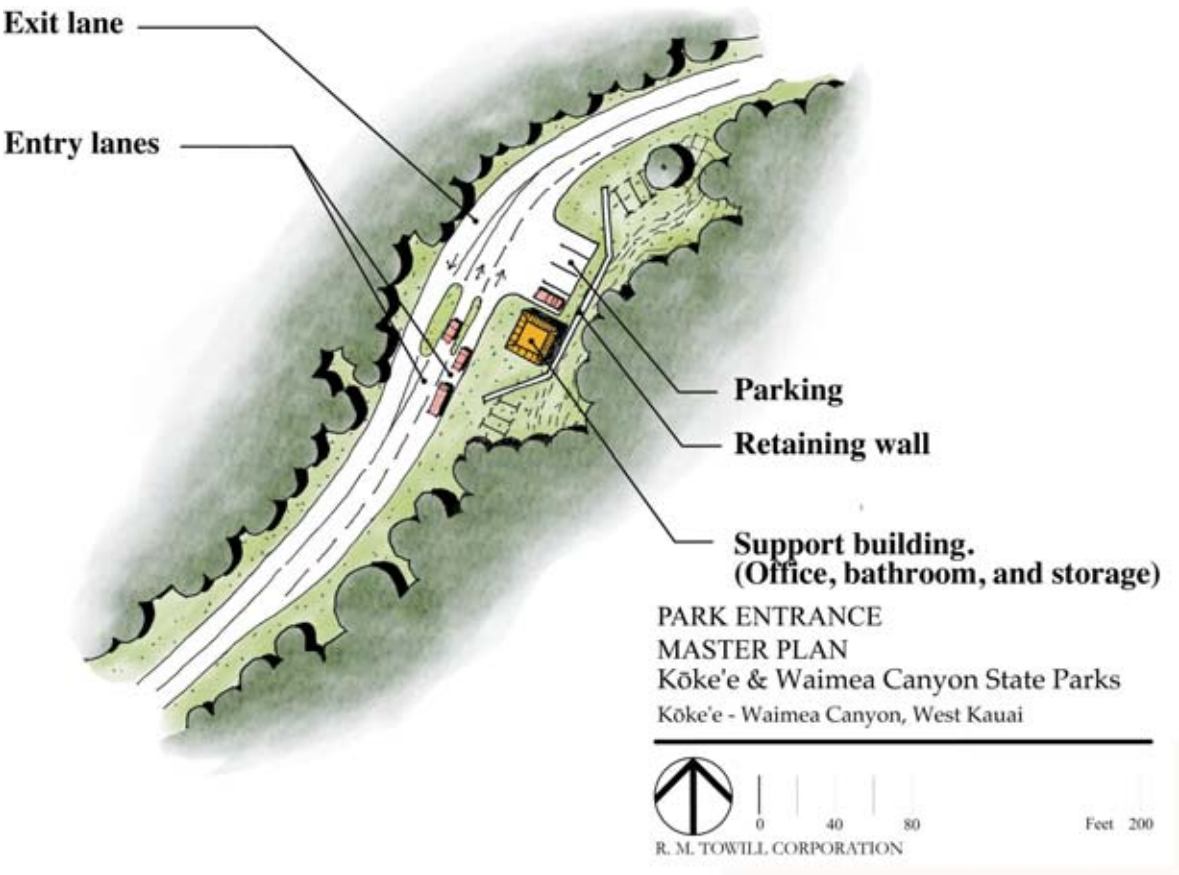


Figure 2-1. Park Entrance Station

The entry station will provide a minimum of 100 square feet (s.f.) of space to house park personnel. It will be located on an elevated median strip and protected with traffic crash barriers. A support building with 400 s.f. of space will be constructed at roadside. The support building will house office/ communications functions for park rangers (250 s.f.), bathroom (50 s.f.), and storage space (100 s.f.). A minimum of four parking spaces, including one ADA van-accessible space, will be provided.

As an alternative, the existing Park HQ building located at Kanaloahuluhulu Meadow will be relocated and renovated to serve as the support building. Use of the existing Park HQ structure at the entrance will reinforce the historic character of Kōkeʻe and Waimea Canyon and help establish park identity.

The entry station will be staffed by a single park employee (or contractor) or docent backed up by Conservation Officers. Hours of operation are to be determined. The entry station will be used to distribute informational brochures and address visitor inquiries. The entry gate will not function as a visitor rest stop or comfort station.

B. Kanaloahuluhulu Meadow/Park Headquarters

Kanaloahuluhulu Meadow is the heart of Kōkeʻe and a primary park visitor destination. The meadow area serves several valuable park functions:

- Park Identity/Landmark
- Ranger Presence/Visitor Service
- Park Community/Social Center
- Research/Education Center
- Revenue Generation Center

Proposed improvements are illustrated in **Figure 2-2** and described in the following sections.

C. Kōkeʻe Lodge

Renovate and/or reconstruct the Kōkeʻe Lodge building to meet Kōkeʻe vernacular architectural design standards and current building codes. Improve the interior to better accommodate Lodge functions (dining service, book and sundries store, visitor services), and to improve ADA access.

Integrate the building with the common area landscaping between the lodge and the Kōkeʻe Natural History Museum.

Develop low-maintenance fuel break behind the restaurant by excavating, as necessary, grading, and grassing so it can be easily mowed.

D. Kōkeʻe Natural History Museum

- Continue to lease museum operations to a nonprofit organization, such as Hui o Laka.
- Expand or reconstruct the existing museum building to create space for a visitor service desk to be staffed by a uniformed DSP ranger or docent.
- Integrate the museum building with the common area landscaping between the museum and Kōkeʻe Lodge.
- Renovate or reconstruct the museum building to meet Kōkeʻe vernacular architectural design standards and to improve the building functions.

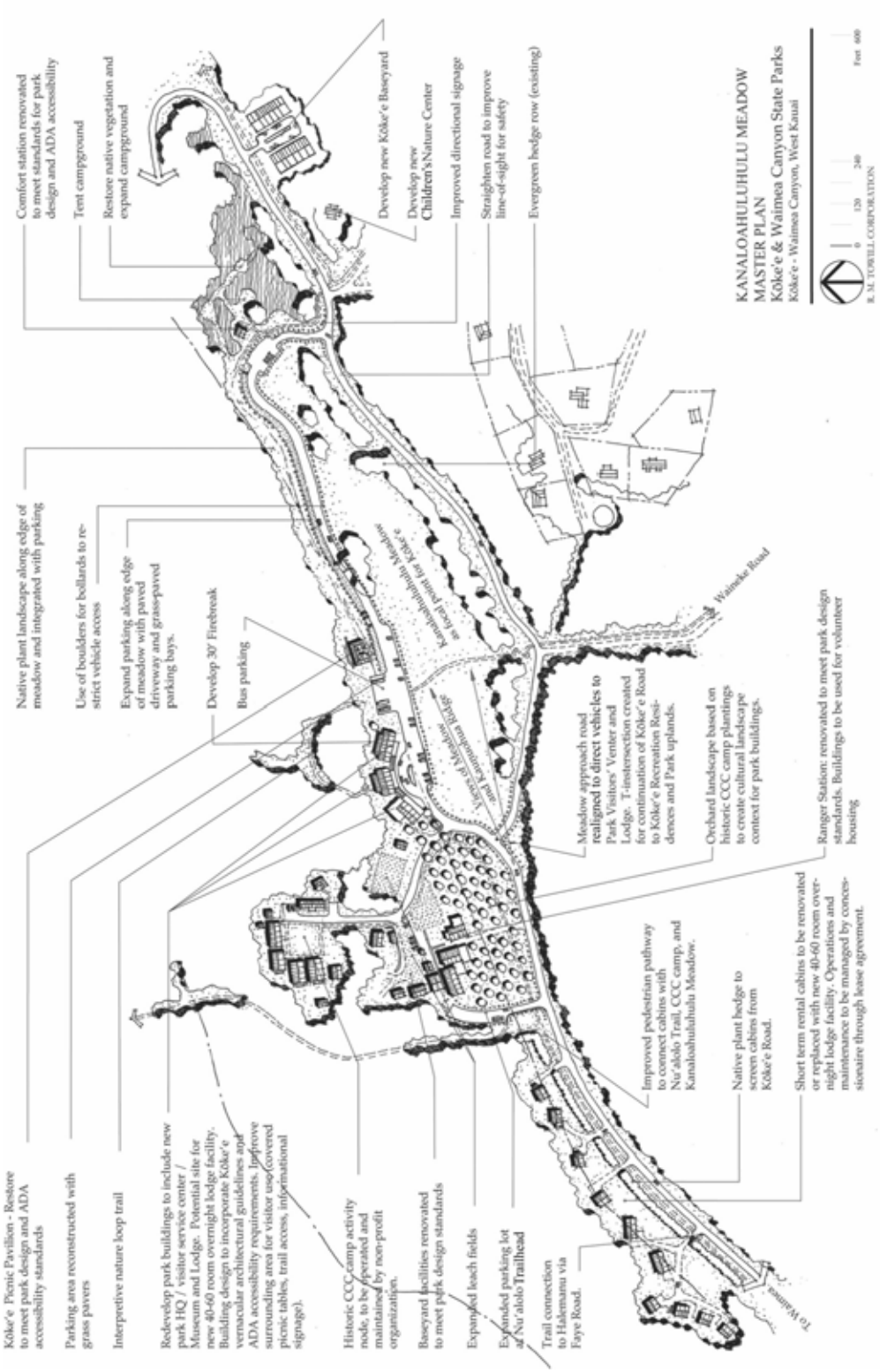


Figure 2-2. Kanaloahululu Meadow

E. Visitor Service Desk

Provide a visitor service desk within the expanded Kōkeʻe Natural History Museum or lodge complex. The visitor center will be designed to comply with Kōkeʻe vernacular architectural standards. The new building will be sited in relationship with the redeveloped Kōkeʻe Lodge and Kōkeʻe Natural History Museum building to create a unified setting. The visitor center building will be sited and designed to distinguish it from the lodge and museum. The service desk will be staffed by a uniformed park ranger or docent and will provide the following services:

- One-stop location for all park permits (camping, gathering, fishing, hunting, commercial trail use, etc.).
- Reservations and check-in/-out for short-term State rental cabins.
- Visitor orientation and information, including interpretive displays of the Parks' overall natural and cultural resource context, recreation opportunities, and visitor education regarding resource preservation efforts and precautionary rules for visitors.
- Visitor education, i.e., resources preservation efforts and safety rules for visitors.
- Complaints, reports, and emergency communications.
- The visitor center will include space for the following: service counter (120 s.f.), office/communications space (150 s.f.), personnel comfort space (lockers, food, storage)(150 s.f.), storage space (100 s.f.), public restroom (men and women)(100 s.f.), and display area for interpretive and informational materials (400 s.f.).

F. Park Headquarters Building

- Relocate the current Park Headquarters building to serve as the park entrance station support building. Infill vacated space with new orchard landscape plantings.
- Renovate the historic Park Manager's House to serve as the new Park HQ. The new Park HQ will be used by the Division of State Parks staff and volunteers for office and meeting space, communications center, storage, and overnight accommodations.

G. DLNR Baseyard

- Renovate the baseyard buildings to meet park design standards. Continue use as baseyard for maintenance operations.
- Renovate the existing baseyard buildings in the historic CCC Camp complex.
- Expand existing leach filed into the historic baseyard area. Cover leach field area using grass pavers to allow continued light vehicle and pedestrian traffic.

- Continue use of certain baseyards building for storage and maintenance operations. Use other buildings in the baseyard for interpretive programs.

H. Kōkeʻe Picnic Pavilion

- Restore the stone pavilion building and rear BBQ area.
- Reconstruct bathrooms to meet ADA accessibility requirements.
- Improve wheelchair ramp access from the parking lot.
- Remove jalousie windows.
- Polish the bronze commemoration plaque.
- Develop low-maintenance fuel break behind the pavilion by grading and grassing so that the area can be easily mowed.

I. Landscape Improvements

- Preserve meadow open space and views of Kaunuohua Ridge.
- Preserve tree-lined approach to meadow on Kōkeʻe Road.
- Replace lasiandra hedge between Kōkeʻe Road and the State rental cabins with native shrub species.
- Develop orchard landscape theme based on historic CCC Camp plantings. Extend orchard plantings along the north edge of the meadow to provide a unified landscape context for the park buildings--Park Manager's House, Kōkeʻe Lodge, Kōkeʻe Museum, and Kōkeʻe Picnic Pavilion.
- Incorporate fruit trees and other native plantings into the landscape plan. Integrate plantings of native plants with expanded parking area.
- Provide covered picnic tables and cover for the public telephone.

J. Parking Improvements

- Expand parking along the edge of the Meadow between the Kōkeʻe Picnic Pavilion and tent campground. Provide a barrier to prevent through traffic between the visitor facilities at the Meadow and Kōkeʻe campground.
- Construct parking bays and driveway using grass paver cells to minimize surface runoff and maintain a natural landscape appearance.
- Continue the use of boulders for curb stops and vehicle barriers along the entire length of the driveway.
- Develop bus parking between the current Kōkeʻe Natural History Museum and picnic pavilion.
- Landscape expanded parking area with native plants.

K. CCC Camp

- Continue use as an educational center and field station for natural and historic resource research and management.
- Outsource facility and program management of the camp by lease to a nonprofit organization, such as Hui o Laka.
- Continue historic renovation of the camp facilities.

L. Kōkeʻe Campground

- Improve directional signage to campsites and surrounding trail connections.
- Repair all campsite amenities: water spigots, BBQ pits, and tables.
- Reconstruct the tent campground comfort station to meet ADA accessibility and park design standards.
- Re-landscape the ginger patch with native vegetation and develop additional campsites.
- Develop and informational kiosk and a program to interpret Kōkeʻe's history, cultural history, conservation history and cultural landscape, including the Kōkeʻe Ditch System.

M. State Rental Cabins

- Maintain an inventory of cabins for short-term rental use.
- Develop new cabins and/or a lodge complex to provide alternative living facilities for visitors.
- Outsource rental cabin operations and maintenance through lease to a private/nonprofit organization.
- Develop pedestrian pathway to connect cabins to the Lodge and Museum area.
- Replace lasiandra hedge with native shrub species.
- Create low maintenance fuel breaks behind cabins by clearing, grading and grassing so that the area can be mowed.

N. New Overnight Lodgings

- Develop a new, 40–60 room overnight lodge facility in the vicinity of the Meadow.
- Design new facilities to be subordinate to the natural landscape and landmark meadow views. Locate new structures and provide vegetative screening using native and "historic" plant types to minimize visual impact. Incorporate Kōkeʻe vernacular architectural features to reinforce park identity.
- The new lodging facility may be designed to incorporate existing park buildings.

- Provide adequate parking to meet anticipated demand and in accordance with County ordinances. Expected parking requirements include 1 stall per room, plus 1 stall per 75 square feet of retail, commercial, restaurant, and public display space.
- Outsource overnight lodging operations and maintenance through lease to a private, nonprofit organization.

2.5.4 Lookouts

A. General

- Replace all cesspools with septic systems or composting toilets as appropriate to the location.
- Develop potable water system (except at Pu'u o Kila).
- Improve informational and directional signage.
- Provide interpretive signage and/or improve signage.
- Improve landscaping.
- Upgrade railings to meet safety standards.
- Develop "Kōke'e Vernacular" design standard for all built elements.

B. Waimea Canyon Lookout

Waimea Canyon Lookout is the premier visitor destination within the two parks. The lookout is the turn-around point for many visitors and tour groups who are unaware of or unable to enjoy the Parks' other resources and attractions. The character and quality of the lookout is thus critical to the impression of Kaua'i and the State Park System that visitors will take with them when they leave. The lookout's popularity creates a strategic opportunity to inform and orient park visitors to the rich experiences waiting further up the mountains.

Planned improvements to the lookout are illustrated in **Figure 2-3**. They include:

- Redevelop visitor facilities, including viewing platforms, bathrooms, concession area, new information center, and landscaping to achieve a cohesive design.
- Develop a new parking lot and bus staging area at the lookout driveway entrance. Relocate bus parking to the new parking area.

Figure 2-3. Waimea Canyon Lookout

- Redevelop the existing parking area as a pedestrian drop-off and handicap-only parking zone. Develop a pedestrian view plaza between the view platform and comfort stations. The view plaza will provide the setting for visitor amenities including interpretive displays, information center, snack and souvenir concession, comfort stations, and landscaped rest areas. The visitor information center will include map displays and orientation materials to inform visitors about park resources and recreational opportunities further upland.
- Construct a pedestrian pathway connection between the parking lot and view plaza. The pathway should be constructed using gravel or pavers with native fill material and be designed to meet ADA accessibility standards.
- Expand and integrate the existing ADA accessible bathroom with the new visitor information center and concession space.
- Improve walkways and platform access to comply with ADA requirements. Provide ramp access to the top viewing platform.
- Construct stairway access to the top viewing platform. Design stairway to intercept the access ramp at landings. Remove the steep concrete pathway on the west side of the main viewing platform and revegetate the slope area.

- Stabilize/revegetate eroded areas around the parking lot and canyon rim. Install retaining wall to close off open eroded space west of the view platform.
- Install boulders to serve as bollards along Kōkeʻe Road and the lookout driveway to prevent shoulder parking.

Interpretive Program Content

- Develop interpretive materials about cloud formation above Mt. Waiʻaleʻale and declining rainfall contours on leeward slopes. Include description of fog belt formation at lower elevations.
- Develop interpretive materials that tell the story of the original volcanic dome's development, collapse, and subsequent in-fill. Highlight the Waimea Scarp, Alakaʻi Swamp, and the different lava layers (original Napali and later Koloa flows) revealed in the canyon walls. Illustrate the erosional forces that continue to sculpt the island.
- Develop interpretive materials on lowland mesic forests, including descriptions of the dry lowland habitat zones and resident flora and fauna.
- Highlight the contrast between the warmer, drier lowland shrublands and the wet forests at higher elevations.
- Develop interpretive materials about the watershed originating in the Alakaʻi Swamp and Mt. Waiʻaleʻale and the stream system through the canyon.
- Develop helicopter landing zone along the Canyon rim at the 12-mile marker for natural resource management activities.
- Provide dedicated pad site for truck concession within the parking area.
- Redesign and expand the scenic lookout to take full advantage of the sweeping views along the cliff face.
- Redesign the lookout guardrails to comply with Kōkeʻe vernacular design standards. Include in the guardrail design a feature to intercept trash blowing from the lookout into the valley.
- Develop a potable water system and restore the existing drinking fountain. A new well source is required for potable water at this location.

C. Puʻu Hinahina Lookout

Puʻu Hinahina Lookout is strategically situated at the apex of Waimea Canyon, directly above Halemanu and the Kumuwela recreation zone. Spectacular canyon views are available from this location, as is the opportunity to enter the park landscape on foot via Canyon Trail, which connects up to the entire Kumuwela trail system. The adjacent Puʻu Hinahina helicopter landing zone (TMK 1-4-02L04) offers more expansive views than

the existing lookout sites as well as an open park landscape setting well-suited for picnic use. For these reasons, the Master Plan recommends the future relocation of the Pu'u Hinahina Lookout facilities to the helicopter LZ site. The plans are to relocate the Pu'u Hinahina helicopter landing zone the Waimea Canyon rim at the 12 mile marker. The new facility would include parking for approximately 40 cars, ADA accessible pathways and restrooms, view platform, interpretive signage, and picnic tables. The existing lookout would be converted to a trailhead for the Canyon Trail and the canyon rim view platform would be closed. The Ni'ihau Island View platform would be maintained and an improved trail would connect the new Pu'u Hinahina Lookout and Canyon Trail trailhead facilities. Planned improvements to Pu'u Hinahina Lookout are illustrated in **Figure 2-4** and described below.

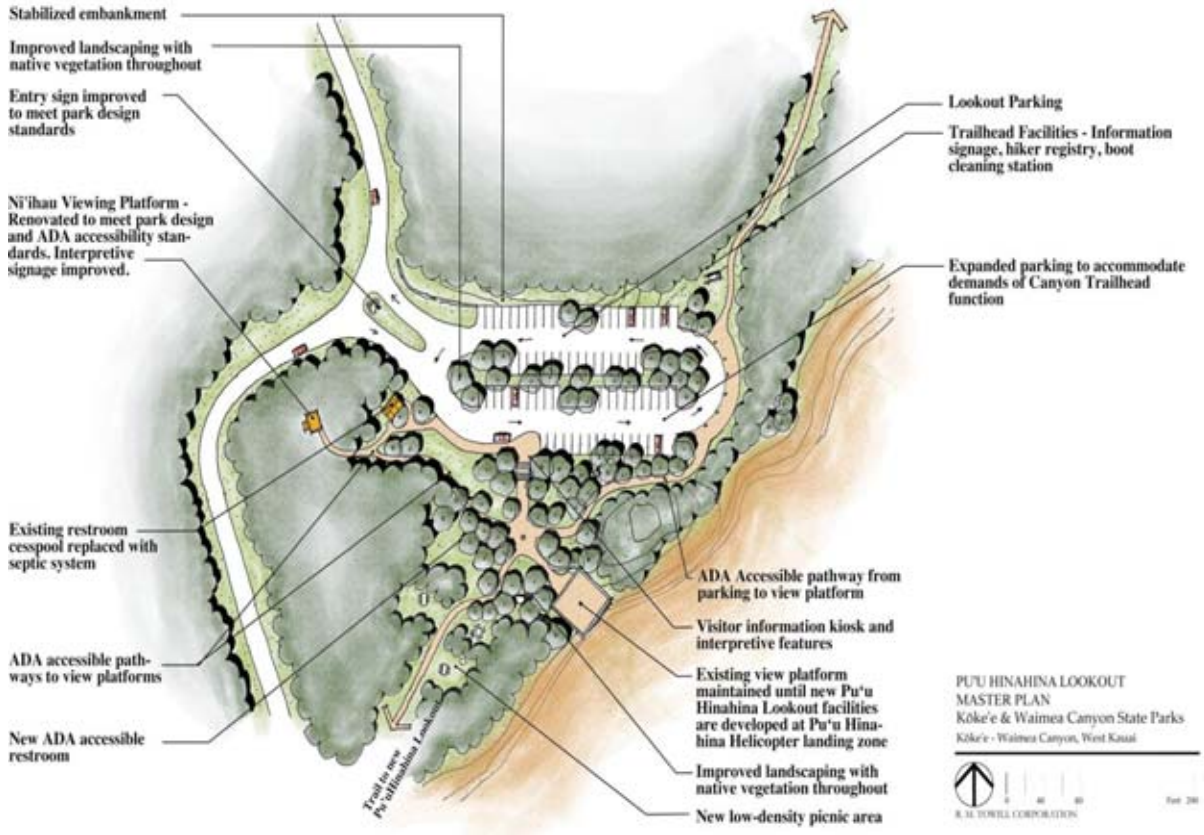


Figure 2-4. Pu'u Hinahina Lookout

- Develop a lookout plaza at the convergence of the pathways and Canyon Trail. The view plaza will provide a setting for visitor amenities, including a covered kiosk with information and orientation materials, a new ADA accessible comfort station, and interpretive displays.
- Redevelop the pathways to both the Waimea Canyon and Ni'ihau viewing platforms to comply with ADA accessibility requirements.

- Renovate lookout platform to meet park design standards and improve ADA accessibility.
- Construct a new ADA accessible comfort station in the lookout plaza between the parking lot and canyon viewing platform. Locate the new comfort station to minimize its visual impact at the lookout. Retain the existing comfort station adjacent to the parking lot.
- Develop trailhead facilities and signage for the Canyon Trail (see **Trails** section).
- Develop a new parking lot to serve the trailhead with space for a minimum of 20 cars. Layout parking lot with adequate room to serve as an emergency helicopter landing pad. Prohibit long-term parking in the main lot.
- Eradicate non-native vegetation around lookout facilities, stabilize soils and revegetate eroded areas with native plant species.

Interpretive Program Content

- At Puʻu Hinahina Lookout, redevelop the interpretive material about Niʻihau Island and its geological relationship to the development of Kauaʻi.
- Views of the Alakaʻi Plateau provide an opportunity to describe orographic rainfall process and moisture gradients.
- On the opposite canyon rim, areas of forest dieback offer visual example for discussion of dieback as a normal forest ecosystem process.
- Signs of goats are evident throughout the barren terrain of canyon. The theme of feral ungulates and their effect on native vegetation can be developed effectively at this location

D. Kalalau Lookout

Kalalau Lookout is located in a forest transition zone where the increasingly dominant native vegetation offers hints of the pre-contact upland landscape. Unreachable views to the Kalalau Valley floor and the Nā Pali Coast where distant remnants of stone terraces punctuate green and red slopes also take the imagination back in time and provide an ideal atmosphere and context to interpret the natural and cultural landscape of Kōkeʻe. The lush greenery of the valley and often wet conditions at the site are in striking contrast to the dry landscape of Waimea Canyon and well illustrate the Parks' wide range of weather conditions. Planned improvements to Kalalau Lookout are illustrated in **Figure 2-5**. They include:

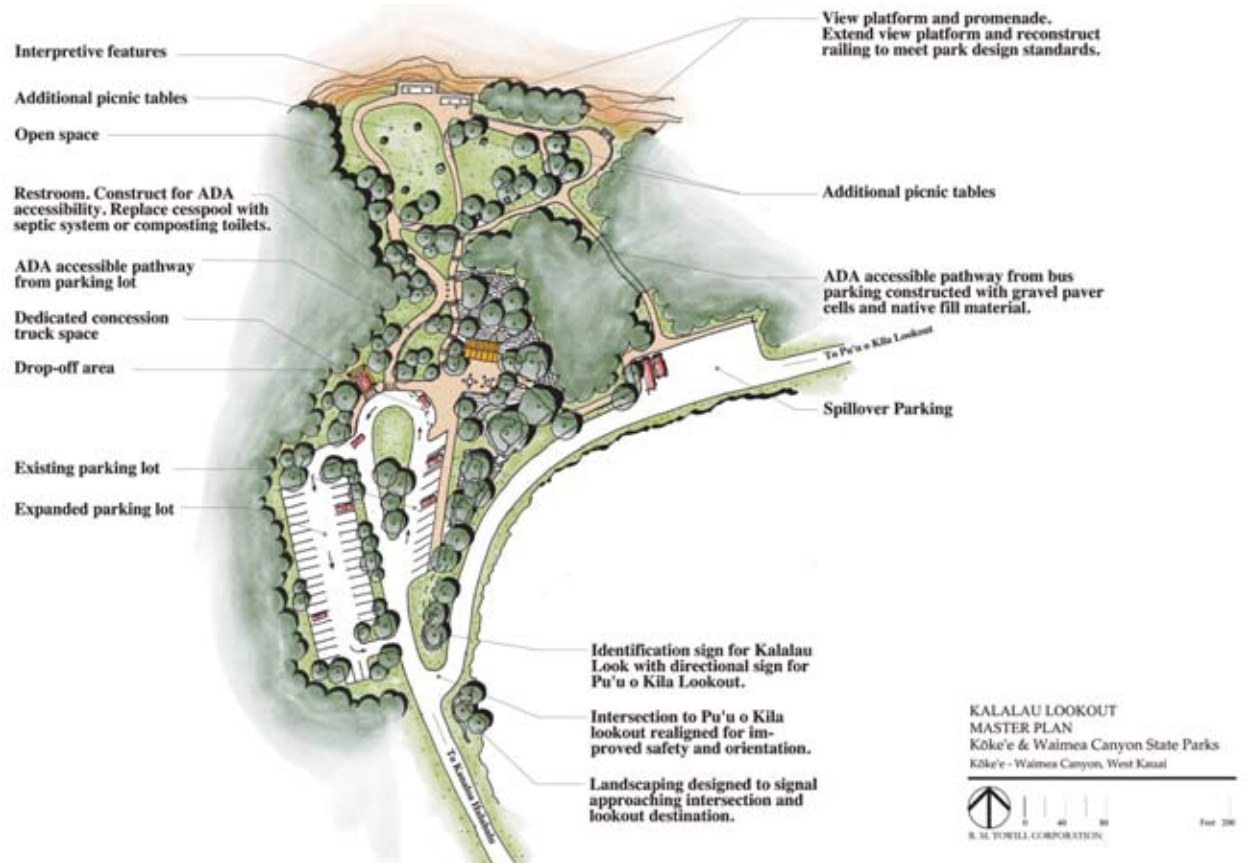


Figure 2-5. Kalalau Lookout

- Redesign and expand the scenic lookout to take full advantage of the sweeping view along the cliff face.
- Realign Kōkeʻe Road to create a stop-controlled T-intersection at the entrance to the Kalalau Lookout parking lot with a right-hand turn towards Puʻu o Kila.
- Develop a gateway feature with signage to identify arrival at Kalalau Lookout. Design gateway feature to meet park design standards.
- Redesign the lookout guardrails to comply with Kōkeʻe vernacular design standards. Include in guardrail design a feature to intercept trash blowing from the lookout into the Valley. Improve pathway system to comply with ADA accessibility requirements.
- Relocate comfort station to edge of open lawn area.
- Add covered picnic tables.
- Expand the parking lot towards the west to triple existing capacity. Resurface existing parking lot.

- Improve design of lookout turnoff from Kōkeʻe Road. Develop gateway element to distinguish parking lot from Kōkeʻe Road continuation.
- Resurface existing parking lot and expand existing parking lot towards the west to meet current and future needs.
- Identify location for package plant septic system leach field (potential in center lawn of parking area).
- Resurface the Kalalau Lookout spill-over parking area located along the side of Puʻu o Kila Road, past the T-intersection. Upgrade the trail between the parking area and lookout to comply with ADA accessibility standards.

Interpretive Program Content

- Develop interpretive materials about the role of Pacific Ocean weather patterns and their affect on Hawaiʻi's environment. Highlight the climatic changes between the Kōkeʻe uplands and the valley floor.
- Develop interpretive materials about early island development, including the original volcanic dome formation, the early erosional forces that created the deep North Shore valleys, and the undersea landslides that formed the steep cliffs of the Nā Pali Coast.
- Develop interpretive material about (1) Montane wet forests and the resident plant and animal species; (2) topographic diversity and geologic history evident in views spanning from the Kalalau Valley floor to the expanse of the Alakaʻi Plateau and Mt. Waiʻaleʻale; (3) Hawaiian settlements in Kalalau Valley and traditional mauka-makai resource use; and (4) man-made structures, particularly the Air Force Tracking Station's "golf ball".

E. Puʻu o Kila Lookout

Puʻu o Kila Lookout is the gateway into the wilderness region of the Alakaʻi Swamp and Mt. Waiʻaleʻale. It marks the end of the road and convenience. Proposed improvements to Puʻu o Kila Lookout are illustrated in **Figure 2-6**. They include:

- Renovate lookout platform to meet park design standards to take full advantage of the 360 degree views and to increase capacity. Remove barrier at end of platform and construct lateral connection to Pihea Trail.
- Provide interpretive signage at lookout platform.
- Reconstruct and restripe parking lot and correct drainage problems.
- Improve walkway from parking lot to viewing platform and Pihea Trailhead.
- Provide composting toilets in parking lot area. Locate toilets to minimize intrusion on the landscape.

- Renovate viewing platform to provide direct access to Pihea Trail along valley rim alignment.
- Resurface parking lot and correct drainage problem.
- Improve landscaping around parking lot and lookout, using appropriate native plants.
- Stabilize eroded rim area.

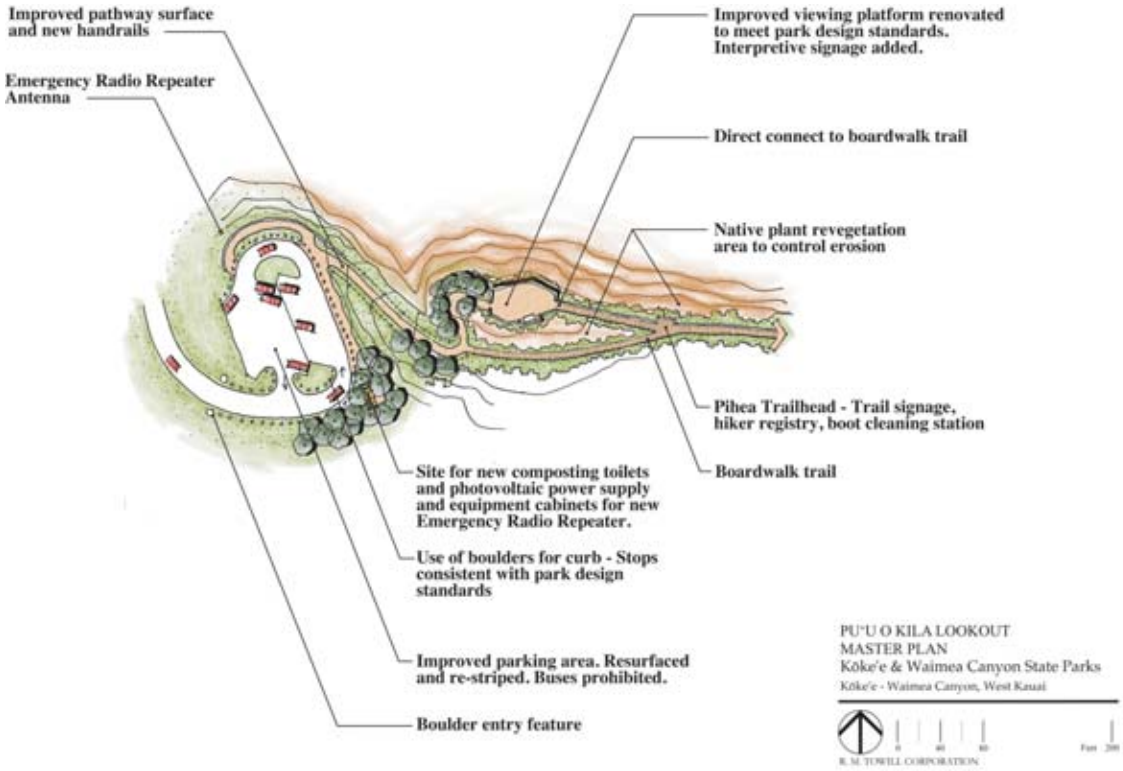


Figure 2-6. Pu'u o Kila Lookout

Interpretive Program Content

Develop interpretive materials relative to:

- Montane wet forests and the resident plant and animal species.
- The role of Pacific Ocean weather patterns and their affect on Hawai'i's environment. Highlight the climatic changes between the Kōke'e uplands and the valley floor.
- Topographic diversity and geologic history evident in views spanning from the Kalalau Valley floor to the expanse of the Alaka'i Plateau and Mt. Wai'ale'ale.

- Man-made structures, particularly the Air Force tracking station "golf ball," and the distant views of Kaua'i's south-shore settlements.
- Install lookout facility signs.
- Designate reserve stalls for short-term (30 minutes) parking for use by visitors to the lookout. Pihea Trail hikers should be directed by signed to use unreserved stalls.
- If parking use by hikers impacts parking availability for lookout visitors, DOFAW will be required to develop and maintain additional parking to support trail use.
- Revegetate erosion scars along canyon rim.

F. Lower Elevation Lookouts

Waimea Canyon Drive offers spectacular views spanning from the coastal regions, into the canyon, and on to the distant green uplands of the Alaka'i Wilderness and Mt. Wai'ale'ale. Capturing these views at a lower elevation lookout would enable the complete visual story of Kōke'e and Waimea Canyon to be told. A lower elevation lookout would also help orient visitors and build anticipation for the rich resources waiting in the parks above.

A proposed lookout to be developed at mile marker 4.5 is illustrated in **Figure 2-7** and further described below. This location was selected for attention due to the strategic views it offers of Waimea River, from the mountain watershed to the taro lo'i and on to the sea.

- Showcase taro cultivation at the edge of Waimea River below lookout.
- Develop new lookouts at lower elevation that provides a vantage of the canyon uplands, Waimea River, irrigation ditch system, and lower elevation agricultural practices.
- Develop typical amenities, including parking, ADA accessible pathways and comfort station, and interpretive signage and kiosk.
- Canyon View - Develop interpretive materials to describe:
    - Mauka-makai relationship between upland watersheds and lower elevation agricultural activities.
    - Descriptions of early development in the park lands, such as the construction of Kōke'e Ditch, roads, work camps, and hydroelectric systems.
    - Interpretation of geological features and erosional forces.
- Ni'ihau View – Develop interpretive materials to describe:
    - Agricultural history related in the foreground views of sugar cane fields.
    - Island formation and development of island of Ni'ihau.

- Hawaiian history, language, and culture related to Niʻihau.

Figure 2-7. Lower Elevation Lookout (MP 4.5)

- Hanapepe View – Develop interpretive materials to describe:
  - History of agriculture and development on Kauaʻi.
  - Coastal settlement patterns.
  - Provide introductory description of upland park features, amenities, and resources to heighten awareness and interest in the Parks.
- Extend Waimea Canyon State Park boundary to include new lower elevation lookout.
- Develop interpretive materials to describe:
  - Irrigation and agriculture.
  - Taro cultivation, traditional and current, taking place along the stream bank.
  - Cultural and economic importance of taro.

- Kaua'i's ethnic/cultural history.

2.5.5 Outdoor Recreation Facilities

A. Trails

General recommendations and improvements planned for the trail system include (see **Figure 2-8. Hiking Trails Map):**

- Improve identity and directional signage at all trailheads and junctions.
- Update trail guide materials and trailhead signs to inform visitors of trail conditions, length, amenities (comfort stations, picnic and camping facilities) environmental characteristics (forest, canyon, ridge, and scenic), features (water features, archaeological and historic sites, and significant trees), and uses (horse trail, hunter access, interpretive trail, and ADA accessible).
- Install hiker registry boxes at all trailheads.
- Install boot cleaning stations at certain trailheads and at trail junctions leading to primitive recreation zones.
- Update informational and interpretive materials for Awa'awapuhi Trail, Iliau Nature Loop, and Nature Trail.
- Restrict equestrian access within all primitive recreation zones.
- Prohibit mountain biking on all hiking and interpretive trails within the parks. Allow mountain biking on trails designated by DSP for that activity.

Canyon-Ditch Trail System

- Establish a major trailhead at Pu'u Hinahina Lookout. New trailhead facilities should include parking, signage, and drinking fountain.
- Prohibit trail access from Halemanu intersection. Block parking and revegetate shoulders. Provide signage to direct visitors to Pu'u Hinahina and Kanaloahuluhulu Meadow.

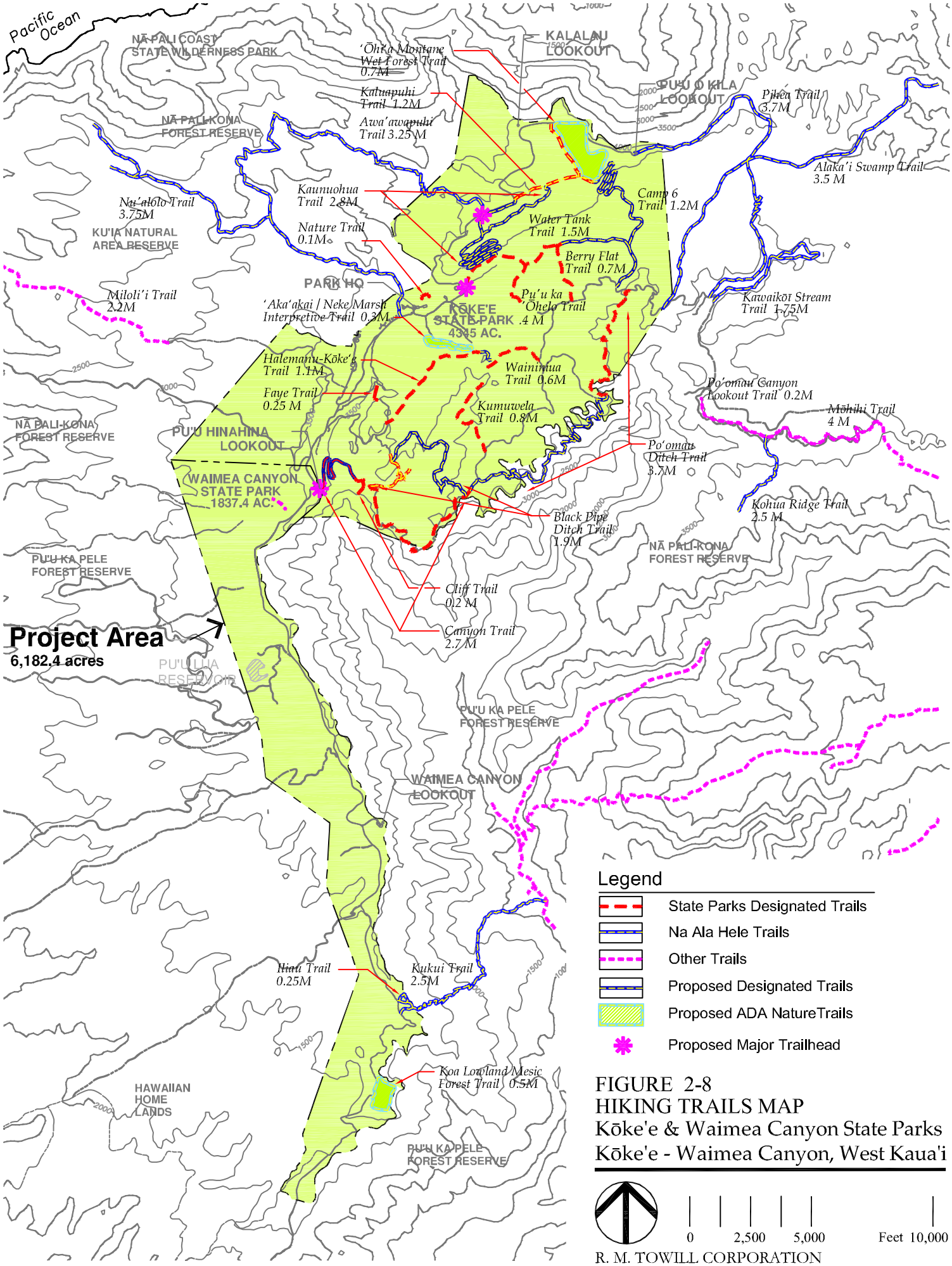


FIGURE 2-8
HIKING TRAILS MAP
Kōke'e & Waimea Canyon State Parks
Kōke'e - Waimea Canyon, West Kaua'i

R. M. TOWILL CORPORATION

Kukui/Iliau Nature Trail

- Develop new, off-street parking area at the Hawaii Air National Guard microwave antennae station turnout (mile marker 9). See **Figure 2-8**. The site is currently under lease to the U.S. Air Force.
- Install shoulder barriers to prohibit shoulder parking at the trailhead.
- Connect new parking area to Kukui Trail and Iliau Nature Loop via a new trail segment along the canyon side of Kōkeʻe Road.
- Provide identification sign on Kōkeʻe Road.
- Provide an informational/interpretive kiosk at the trailhead.
- Provide composting toilets at the trailhead. Locate toilets to minimize intrusion on the landscape.
- Restore and expand plant signage on Iliau Nature Trail.

Awaʻawapuhi Trail

Awa'awapuhi Trail is maintained by DOFAW. The proposed improvements to trailhead facilities described below are to be developed by DOFAW.

- Restore and expand plant signs and guide map guide for the trail.
- Install shoulder barriers and curb stops around parking area to direct parking.
- Improve trailhead facilities per general trail comments.
- Install composting toilet at trailhead.

Nuʻalolo Trail

Nuʻalolo Trail is maintained by DOFAW. The proposed improvements to trailhead facilities described below are to be developed by DOFAW.

- Improve existing parking area. Surface parking area with grass pavers.
- Re-grade, gravel, and improve drainage on the parking lot driveway.
- Improve trailhead facilities per general trail comments. No composting toilet will be developed at this location.

Pihea Trail

- The Pihea Trail trailhead is located at Puʻu o Kila Lookout within Kōkeʻe State Park. The trail and trailhead are maintained by DOFAW. The lookout is maintained by DSP. The proposed improvements to trailhead facilities described below are to be developed by DOFAW in coordination with DSP improvements to the lookout.
- Improve trailhead facilities per general trail comments

- Install boardwalk / steps along the valley rim between Pu‘u o Kila Lookout and Pihea Overlook to control erosion and prevent hikers from wandering off trail.
- Stabilize and re-vegetate eroded areas with native plant species.
- Provide composting toilet at the edge of the lookout parking lot.
- Provide signage denoting time limits on select parking stalls.
- Develop separate parking lot for hikers and signage denoting time limits on select parking stalls.
- Coordinate trailhead improvements with proposed improvements to Pu‘u o Kila Lookout.

Halemanu-Kōke‘e Trail

- Extend Halemanu-Kōke‘e Trail across Kōke‘e Stream to Maluapopoki Road

Kaunuohua Ridge Trail System

Kaunuohua Ridge Trail System will establish major trailheads along Kōke‘e Road to provide easy access to Kaunuohua Trail, Kaluapuhi Trail, Water Tank Trail, and Camp 6 Trail. When complete, the connecting trails will offer pedestrian access linking Kanaloahuluhulu Meadow with Kalalau Lookout.

Proposed improvements include:

- Establish major trailhead for Water Tank Trail on Kōke‘e Road at entrance to the DOE Discovery Center (mile 15.6). Trailhead facilities will include parking for 50 to 75 vehicles, directional signage, and landscaping to screen parking from Kōke‘e Road.
- Establish major trailhead for Kaluapuhi Trail on Kōke‘e Road across from Awa‘awapuhi Trailhead (mile 17). Trailhead facilities will include parking for approximately 50 vehicles, composting toilet, directional signage, and landscaping to screen parking from Kōke‘e Road and to screen the DOFAW facility from hikers.
- Re-open Camp 6 Trail and Kaunuohua Trail.
- Connect Water Tank Trail to Camp 6 Trail.
- Provide informational and interpretive signage throughout the trail system to orient and educate hikers.

B. Picnic Facilities

Kanaloahuluhulu Meadow

Kanaloahuluhulu Meadow is the most popular picnic destination within the two parks. Proposed improvements to the existing picnic facilities were described in Section 2.5.3 H. Kōkeʻe Picnic Pavilion.

Puʻu ka Pele Picnic Area/Waipoʻo Falls Viewpoint

Proposed improvements to the Puʻu ka Pele Picnic Area/Waipoʻo Falls Viewpoint includes:

- Improve walkway and viewpoint to comply with ADA requirements.
- Replace existing railing with fencing that meets current safety standards and conforms to park design guidelines. Design railings to intercept trash blown towards the canyon.
- Pave driveway and parking area.
- Provide landscape planting to screen parking lot and picnic facilities from Kōkeʻe Road.
- Expand open lawn area adjacent to large picnic pavilion for use as a play area.
- Provide identification and pedestrian crossing signage on Kōkeʻe Road.
- Develop interpretive signage about the legends of Puʻu ka Pele and Kāʻana in order to enhance site identity.

Long-term improvements should consider realignment of Kōkeʻe Road to create room for a small picnic area adjacent to the viewpoint. Additional topographic study is required to assess the feasibility of road realignment.

C. Lookouts

New and expanded picnic facilities are proposed for three of the four major lookouts: Waimea Canyon Lookout, Puʻu Hinahina Lookout and Kalalau Lookout. New picnic facilities are also proposed as part of the development of new, lower elevation lookouts along Waimea Canyon Drive. Proposed improvements are described in the sections detailing proposed lookout improvements.

D. Hunting

- Retain current boundaries and regulations.
- Relocate the Hunter Check-in Station out of sight from Kōkeʻe Road.
- Provide temporary kennels at the Hunter Check-in Station or Park HQ for lost dogs.

- Develop educational material and programming to inform hunters about interactions with hikers and other park users. Incorporate materials into hunting license program.
- Develop educational materials to inform park visitors about hunting as a significant cultural, recreational, and subsistence activity, and an integral part of the Kōkeʻe experience.

E. Fishing

- Expand fish stocking program at Puʻu Lua Reservoir.
- Amend Title 13, Subtitle 4, HAR – Fisheries, Chapter 64 – Kōkeʻe Public Fishing Area, Kauaʻi, to expand the fishing season year-round.
- Develop amenities for fishermen at Puʻu Lua Reservoir, including composting toilets, parking, trash containers and fire rings.
- Improve the Puʻu Lua Reservoir access road.

F. Gathering

- Develop monitoring and management plan for resources targeted by gatherers, such as mokihana, maile, ferns, etc.
- Regulate gathering activities within the park by zones and seasons.
- Develop outplanting program for select native plant species, such as mokihana and maile.
- Replace plum trees as existing plantings cease productivity. Limit new plantings to areas where plum trees currently exist, and Kanaloahuluhulu Meadow.
- Consolidate DSP and DOFAW gathering permits into a single permit.
- Depend on natural regeneration.

2.5.6 Natural Resources

A. Significant Trees/Forestry

- Identify, map, and monitor locations of significant tree stands within the Parks.
- Incorporate significant trees and tree stands into park design as landmarks and directional features.
- Develop a timber management plan for all park lands and surrounding forest areas.
- Replace all harvested timber stands with native tree plantings (Koa, ʻŌhiʻa, Sandalwood, Kauila, Mokihana).
- Map and monitor the spread of invasive plants and organisms that pose a threat to significant trees. Identify priority areas for control efforts.

- Develop best management practices plan to control discharges and noise, dust, exhaust, and other impacts from timber harvesting and processing operations.
- Restrict heavy equipment operations on improved park roads to non-peak visitor hours.
- Revise DLNR Administrative Rules to allow for a road maintenance fee assessment from commercial timber operations.

B. Animal Control

- Eradicate jungle fowl.
- Develop controlled hunting program within the park.
- Install fences against pigs, deer, and goats around sensitive native plant habitats and around individual plant specimens or clusters that require protection.

C. Natural Areas

- Regulate access to sensitive native habitats to avoid human impacts from trampling, noise, trash, unauthorized collecting, and transport of seeds in hair, clothing, and shoes.
- Work with Hui o Laka, the Kōkeʻe Leaseholders Association, and other groups to coordinate volunteer invasive plant control program.

2.5.7 Historical and Cultural Resources

There are four recorded archaeological sites in Waimea Canyon State Park and one recorded site in Kōkeʻe State Park. The archaeological evidence recorded to date tends to support the idea that the upland area contained within the two parks was used largely as a resource gathering zone with limited habitation. Archaeological surveys conducted in the region include:

- In 1906, Thomas Thrum conducted an island-wide survey of heiau sites. Two sites were recorded in Kōkeʻe: Ahuloulu Heiau and Kaunuʻaiea Shrine.
- In 1928-29, Wendell Bennett recorded two house site complexes on or near Puʻu ka Pele crater (Bennett, 1931).
- In 1993, State archaeologist Nancy McMahon conducted reconnaissance survey along Ridge Road in the Kōkeʻe Uplands. She recorded a single site (State No. 50-30-05-499) during the survey, interpreted to be a sweet potato planting area, at the end of Polihale Ridge Road outside of the project area.
- In 1993, Alan Carpenter recorded a site near the Waimea Canyon Lookout interpreted to be a temporary habitation likely associated with canoe-making. The uplands of Waimea Canyon were known for harvesting and working logs for canoes.

- In a 1994 survey of Kahuamaʻa Flat in Kōkeʻe State Park, archaeologists Alan Carpenter and Martha Yent noted few archaeological sites. The area surveyed is generally thought to have been a resource gathering zone rather than an area of permanent habitation. Their report cites legends that suggest this type of use.
- In 1994, Martha Yent conducted a reconnaissance survey of the Kukui Radio Communication Facility in Waimea Canyon State Park and discovered no archaeological sites or features.
- In 1994, Martha Yent conducted an archaeological reconnaissance survey of the former Army camp site near the Awa'awapuhi Trailhead. The survey identified one abandoned, standing concrete building and two concrete foundation slabs associated with the Army Camp, circa 1940-1950s. No other significant features were recorded.

Other archaeological surveys conducted in the study area include:

- 1978 reconnaissance of Kukui Trail by Francis Ching.
- 1982 reconnaissance of the Kōkeʻe Hydropower Project by Martha Yent.
- 1990 survey of USN Radio Telescope Project Area in Waimea by Paul H. Rosendahl.

These surveys did not result in the discovery of previously unidentified archaeological sites. Sites within the two parks that are listed on the National and State Register of Historic Places are presented in **Table 2-1**. In addition to these sites, numerous historic sites throughout the two parks have potential value for preservation and interpretation. These include:

Table 2-1

National and State Register of Historic Places at Kōkeʻe and Waimea Canyon State Parks

Site Number	Site Name	Tax Map Key	Hawai'i Register	National Register
30-01-19	Ahuloulu Heiau Complex, Puʻu ka Pele	1-2-01: 03	6/3/81	–
30-06-9392	Civilian Conservation Corps Camp, Kōkeʻe	1-4-01: 13 (por.)	9/3/96	12/20/96
30-06-9395	Camp Sloggett, Kōkeʻe	1-4-04: 33	8/31/91	8/5/93
Outside Park Boundaries				
30-06-33	Taro Terrace and House Sites	1-5-01: 02	6/3/81	–
30-06-35	Waimea Valley Complex	1-5-01: 02, 17	6/3/81	–

Source: State Historic Preservation Division

A. Park Buildings

Civilian Conservation Corps (CCC) Camp

The CCC Camp, located at Kanaloahuluhulu Meadow, played a significant role in the development of Kōkeʻe and Waimea Canyon State Parks. The CCC Camp originally consisted of nine wooden buildings situated around a grassed quadrangle. Outside of this compound were a garage facility, a cook's house, a maintenance complex, and a ranger's house. Seven of the wooden buildings around the compound remain. The camp facilities are currently being restored by Hui o Laka.

Kōkeʻe Lodge and Natural History Museum

These two wooden structures were developed in the early 1950s from relocated buildings moved from the former Army camp at Awa'awapuhi Trailhead (described below).

Kanaloahuluhulu Ranger Station

The Kanaloahuluhulu Ranger Station is a small wooden building located at the western end of the Meadow. It was built in 1954 for park purposes and is currently used as housing for the Kōkeʻe Lodge Manager.

WWII Army Camp

(Survey conducted by Yent in October, 1994.) This camp was built in the early 1940s on Kaunuohua Ridge and was dismantled in the 1950s. The camp site is approximately 1.5 miles northeast of the CCC Camp site. The Army Camp consisted of five major buildings along a dirt roadway off the paved Kōkeʻe Road, with an additional four outlying buildings. One concrete building remains along with the slabs of two other buildings. One of the wooden buildings was relocated and now houses the Kōkeʻe Natural History Museum at Kanaloahuluhulu Meadow. No subsurface archaeological deposits or features other than those associated with the camp have been identified at this site.

Camp Sloggett - YWCA

In 1925, Henry Digby Sloggett and his wife, Etta Wilcox Sloggett, obtained one of the original recreation residence lease lots in the Kōkeʻe area on which they constructed a family cabin. Etta's sister, Elsie Wilcox, started the YWCA of Kauaʻi in 1922; so it was appropriate that after Henry Sloggett's death in 1938, the Sloggett children donated the camp to the YWCA for use as a camp.

The camp is comprised of three main buildings: administration/ commissary building with dormitory, and an outdoor, covered pavilion for gatherings. The original Sloggett family cabins have been integrated into the camp facilities, housing the commissary, administrator office, counselor sleeping quarters, and caretaker's cottage. A screened and covered mess hall is constructed between the original main residence and the caretaker's cottage. A large dormitory

building of recent construction is located on the west side of the complex across a large open lawn area.

Ditch and Tunnel Irrigation System

The Kōkeʻe-Waimea Ditch System area has three ditch irrigation water systems: the Kōkeʻe, Kekaha, and Waimea Ditch Systems. Each system played an important role in the development of agriculture, and in particular, the sugar industry, in the lowland regions surrounding Waimea and Kekaha.

Towards the end of the nineteenth century, the pioneering days of sugar cane planting were drawing to a close. The streams and artesian wells that supported initial cultivation could not meet the demands of the growing acreage envisioned by the nascent industry. As planting expanded and additional lands close to Waimea and Kekaha were claimed for sugar, additional sources of water were required.

Early sugar enterprises in the region, including the Waimea Sugar Mill Company (founded 1876), began constructing a series of ditches to transport irrigation water from Waimea Valley to the dry Mānā area. In 1898, Hans P. Faye, nephew of Valdemar Knudsen, incorporated the Kekaha Sugar Company and began operations on lands leased from the Territory of Hawaiʻi. Faye turned his eyes towards the uplands of Kōkeʻe and the Alakaʻi and saw the water he needed to grow sugar. His ideas were translated by Kekaha Sugar Company engineers into the Kōkeʻe-Waimea Ditch System.

In 1901, the first ditch segment, the Kekaha Ditch, was completed. The Kekaha Ditch diverts water from the Waimea River, 1 mile downstream from the Waiʻalae Stream in Waimea Valley, and conveys the water to the network of fields in the Mānā Plain. In 1907, the Waimea Ditch System was completed. The Waimea System diverts portions of the flow of the Waimea River from an elevation of approximately 200 feet and travels through open ditches to the west side of the River for approximately 3 miles to the coastal plains north of Waimea town, and for another 4 miles to the west.

The real push into Kōkeʻeʻs uplands began in 1923 when Kekaha Sugar acquired the Waimea Sugar Mill Company and started construction of the Kokee Ditch System. Over the next four years, roads were built by hand across Kōkeʻe to the headlands of Mōhihi Stream deep in the Alakaʻi Swamp. When completed in 1927, an elaborate system of small dams, ditches, and tunnels was in place to intercept flows from the Mōhihi, Waikoali, Kawaikōī, Kauaikanānā and Kōkeʻe Streams and to convey the irrigation water to Kekaha Sugar Company fields around the towns of Waimea and Kekaha.

For additional discussion on the historic significance of the Kōkeʻe and Kekaha Ditch Systems, see the ***Significance Determination and Treatment for Cultural Landscapes, Criteria F,*** in Section 5.2.4.

B. Recreation Residences

The heritage of Kōke'e State Park as a valued retreat from the urban environment is exemplified by the recreation residences. The recreation residences are loosely clustered into three forested neighborhoods and represent the "residential villages" of the Parks. The neighborhoods are picturesque, consisting of wooden cabins with weathered facades, metal roofs, wide porches and chimneys. They are strung together along meandering dirt roads with narrow dirt driveways.

Kōke'e and Waimea Canyon State Parks contain 114 recreation residences leased to private parties. Some of these structures date back to the 1920s. The State Historic Preservation Division evaluated and ranked the historic value of each of the recreation residences in 1983 and again in 2001. A full inventory of the individual recreation residences and description of the historic ranking criteria and findings is provided in the Appendix. See **Figure 2-9**, Original 47 Rec. Res. Lots, and **Figure 2-10**, Existing Recreation Residence Lease Lots.

The recreation residence lots will remain in recreational use following the expiration of the current leases in 2006. The Division of State Parks examined a number of lease disposition alternatives to the public bidding process conducted in 1985. Four (4) alternatives for the disposition of the recreation residences were considered. The first alternative is to issue a master lease for recreation residences in Kōke'e and Waimea Canyon State Parks. An analysis of the financial feasibility study was conducted to compare the impacts, costs, and benefits of (a) disposing of the recreation residence lots to individual lessees or disposition to a master lessee, and (b) different management options of the recreation residences. The terms of the master lease will be determined by the Board of Land and Natural Resources based on the findings of the financial feasibility study. The master lease terms may stipulate that the recreation residences be allocated to both short-term rental and long-term lease arrangements, the proportion of each to be determined by demand, market conditions, and other factors.

The second alternative considered was the designation or consideration of the recreation residences to be historic preservation and restoration properties in a "historic district" as prescribed by Chapter 171-36.2 (HRS). This designation would allow State Parks to directly negotiate with current lessees for the issuance of new leases, if they so desire. This alternative led State Parks to formulate rules for defining the historic district and the methodology to continue the integrity of the historic structures. Maintenance and improvement guidelines will be formulated and will be a condition of the new leases. Current lessees that decide not to continue their leases under this program will have their cabins leased via a lottery with rents set by appraisal.

The third method of disposition was the implementation of the provision of Chapter 171-43 and 171-43.1 which allows the BLNR to negotiate directly with eleemosynary or religious organizations. Similar maintenance and preservation requirements will be imposed on these leases.

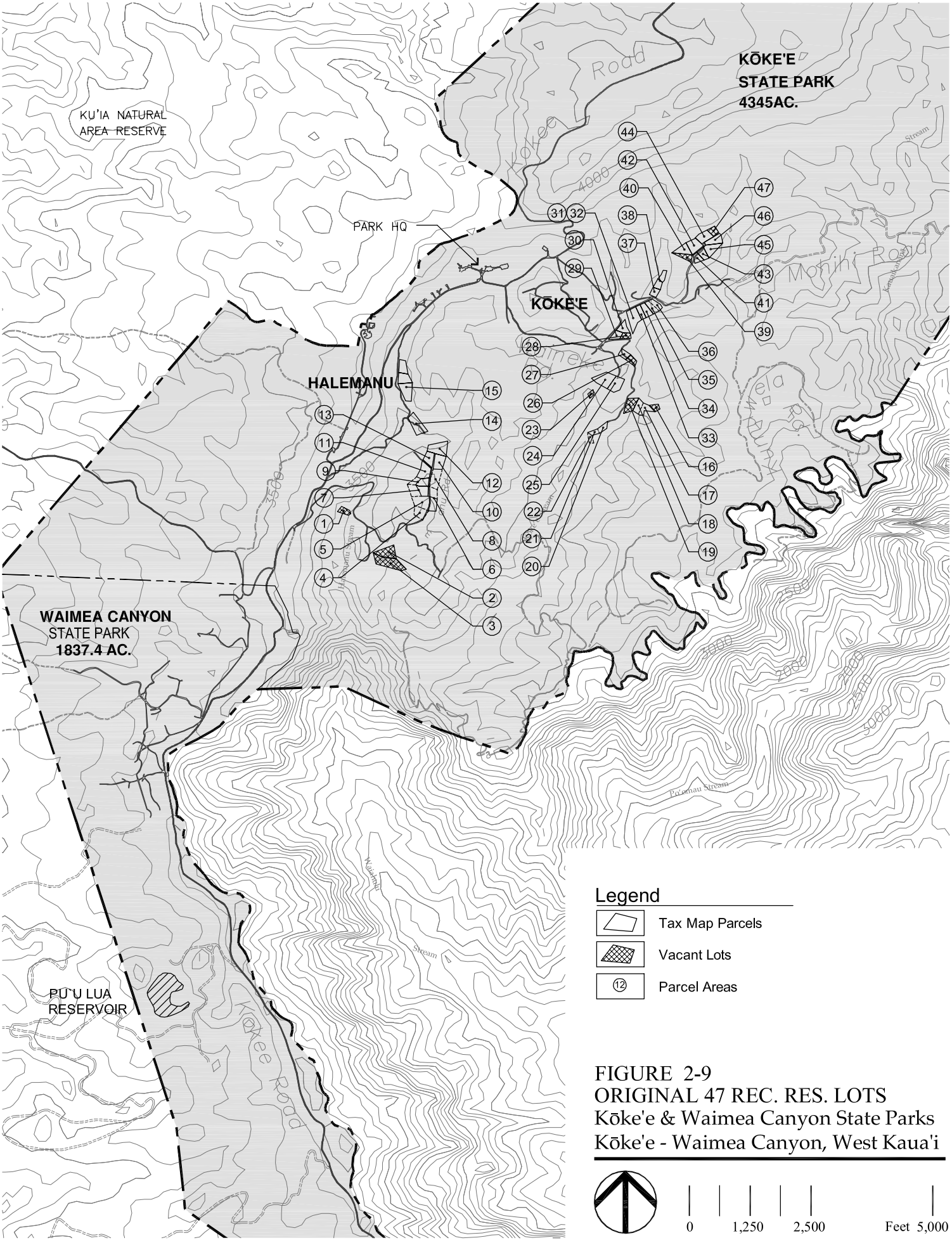


FIGURE 2-9
ORIGINAL 47 REC. RES. LOTS
Kōke'e & Waimea Canyon State Parks
Kōke'e - Waimea Canyon, West Kaua'i

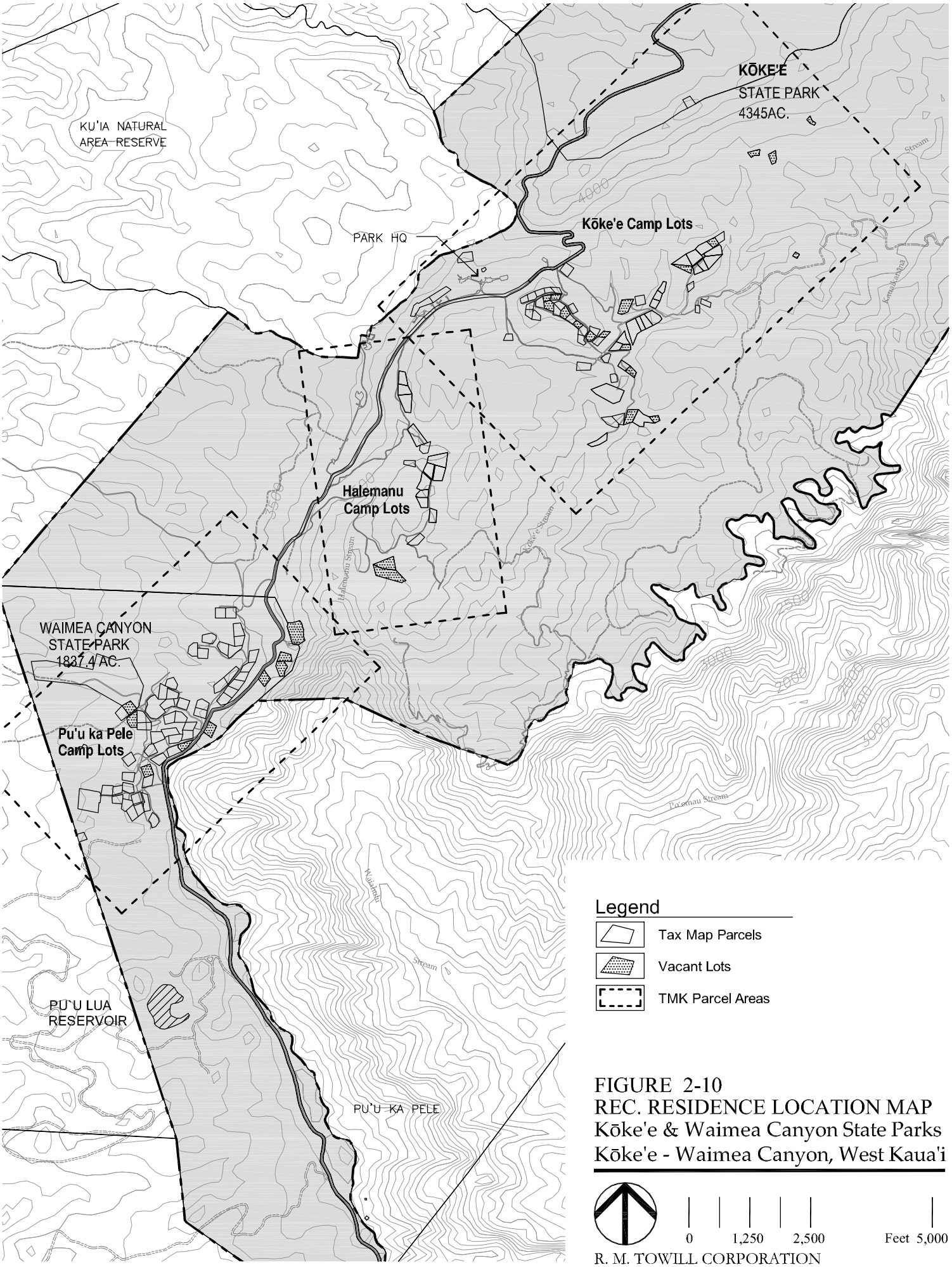


FIGURE 2-10
REC. RESIDENCE LOCATION MAP
Kōke'e & Waimea Canyon State Parks
Kōke'e - Waimea Canyon, West Kaua'i

R. M. TOWILL CORPORATION

The fourth method of lease disposition was to implement the public auction method utilized in 1985.

After hearing testimony from the public, the BLNR ruled on September 9, 2005, the following (Note that this decision was superseded by the action of the BLNR on February 10, 2006, below):

1. Designate the area as a historic preservation and restoration project to allow direct negotiation with current lessees.

2. Conduct lease negotiations with current lessees with cabins that were evaluated as having a historic rating of 4 or 5 (see Duensing 2003) under the provision of Chapter 171-36-2 (HRS). If the current lessee chooses not to re-lease his property, the property will be put up for general auction as described below.

3. Conduct lease negotiations with current nonprofit organizations within the Parks pursuant to Chapter 171-34 and 171-43.1 (HRS).

4. Retain eight (8) cabins for use by DLNR divisions.

5. Auction seven (7) vacant lots.

6. Conduct an auction of remaining cabins or lots based on the following:

    a. Auction to be conducted in three (3) rounds.
    b. Kaua'i residents to be given preference as follows: 60 percent of the lots in round one, 30 percent in round two, and 10 percent in round three.
    c. If an existing lessee is outbid during the auction, the existing lessee can maintain his property if he matches the winning bid.
    d. If a current lessee does not match the highest bid, the successful bidder shall compensate the current lessee the appraised value of the improvements.
    e. The value of the leases will be determined by appraisal.

The method of disposition accomplishes the following objectives:

1. Insures preservation of the cabins that have retained their integrity.

2. Provides for the continuation of the nonprofit organizations in meeting camping needs on the island.

3. Provides for the compensation of the improvements to existing lessees.

4. Provides a method and opportunity for expanding the number of individuals and families that can lease a recreation residence in the Parks.

5. Provides an opportunity for the construction of a new recreation residence in the

Parks on vacant lots.

Persons wishing to participate in this program will need to pre-qualify. Terms and conditions of such leases are to be developed and approved by the BLNR.

On February 10, 2006, the BLNR rescinded their approval of September 9, 2005, and approved:

1. Entering into an auction for the disposition of the recreation residences.
2. Approved entering into direct negotiations at a nominal rent for the lease of recreation residences to nonprofit organizations holding current leases, in accordance with HRS, Section 171-43 or Section 171-43.1.
3. Approved the Department's retention of nine (9) cabins for State use.
4. Other terms and conditions as may be prescribed by the Chairperson.
5. All disposition processes are subject to review and approval of the Department of the Attorney General.

C. Impacts

Increases in recreation residence occupancy as a result of new lease arrangements, if any, would place additional burdens on infrastructure and utilities. Under current conditions, recreation residence lessees are permitted to occupy their lots no more than 6 months per year. Assuming the typical lessee uses their residence only half that amount of time, current cabin occupancy is assumed to be 25 percent year-round.

An increase in short-term rental cabins would increase average year-round occupancy and require increased infrastructure maintenance and expansion of utility services, notably water and sewer. A long-term monitoring program for recreation residence use should be implemented regardless of the management arrangement in order to track impacts and develop necessary mitigation measures.

D. General Recommendations

- Develop additional short-term rental capacity to meet existing demand either via the concession lessee alternative or via the construction of new or additional cabins through an enhanced "lodge" program.
- Develop an interpretive program for the historic recreation residences in Kōkeʻe and Waimea Canyon State Parks, including providing an opportunity for public access and/or tours of existing residences.
- Replace existing water mains and distribution lines serving the recreation residences, as required.

- Recreation residences within 1,000 feet of the potable water wells are required to connect up to a sewer system with septic or package plant treatment located outside of the groundwater protection area (identified by the Waimea scarp fault line).
- Maintenance terms set forth in the lease agreement and building permit requirements should be enforced.
- Leaseholder use and maintenance fees for water, roads, drainage, and sewer should reflect actual costs.

2.6 PARK MANAGEMENT

2.6.1 Park Management/Operations

- Create a Kōkeʻe Regional Authority under DLNR that incorporates the functions of all of the divisions which operate in Kōkeʻe and Waimea Canyon State Parks and the surrounding forests and natural areas.
- Coordinate DSP and DOFAW road maintenance operations under a single entity.
- Create a single DLNR interface through which the public can obtain permits for camping, hunting, fishing, gathering, and commercial uses.
- Review park services, including utility, maintenance, and visitor services, to determine which services can be privatized.
- Work with Hui o Laka, Kōkeʻe Leaseholders' Association, and other groups to develop volunteer programs for park maintenance and restoration projects.
- Establish a visible ranger/docent presence in the Parks to provide an identifiable information source and authority figure.
- Develop an environmental education and certification program for eco-tour operators to ensure that operations are compatible with park values and goals. Certification can be used as a marketing tool.

The DSP will need the following positions to be approved and filled in order to carry out the Master Plan recommendations:

- General Construction and Maintenance Supervisor
- Construction and Maintenance Worker
- Mechanic
- Heavy Equipment Operator
- Equipment Operator
- Arborist
- Laborers (4)

- Park Caretaker II (4)
- Resource Management Technicians (3)
- Park Interpretive Coordinator
- Park Interpretive Technicians (2)
- Volunteer Coordinator
- Clerk Typist (2)
- Cashiers (3)
- Nurseryman
- Parks District Superintendent I

2.6.2 Monitoring Program/Limits of Acceptable Change

- Develop a monitoring program to record changes to park conditions over time.
- Develop a database of indicators to be used to measure conditions of natural resources, facilities, infrastructure, and levels of use.
- Support private research within the Parks and surrounding natural areas as a means of building up the resource monitoring program.
- Develop a monitoring program to determine impacts of public and commercial 4-WD vehicle use on unimproved park roads, notably the Camp 10 Road. Assess the number and type of vehicles using the road, conditions under which the road is used, and corresponding wear and damage to the road.
- Develop monitoring and management plan for resources targeted by gatherers. Regulate gathering activities within the park by zones and seasons.

2.6.3 Educational/Interpretive Programs

- Develop a coordinated information program among the DLNR divisions to ensure that visitor information and materials are consistent.
- Develop a park-wide Archaeological and Historic Resource Management Plan to set priorities, establish standards for interpretive materials, and ensure consistency of information.
- Conduct a study of the cultural landscape of Kōke'e and Waimea Canyon. Develop a management plan to sustain the built and natural resources that contribute to the continued understanding and existence of cultural practices within the Parks.
- Conduct a program to record the oral histories of individuals with first-hand knowledge of the early days of the Parks' development.

- Use the CCC Camp facilities to conduct interpretive programs on the CCC program and the Job Corps program at Kōkeʻe.
- Develop interpretive/educational materials and programs to inform the public about forest management goals and methods. Locate materials at trailheads or locations where park visitors have views of timber growth and harvest.
- Develop five new ADA accessible nature trails to interpret the major native forest types and plant associations found within the Parks: ʻAʻaliʻi Lowland Dry Shrubland; Koa Lowland Mesic Forest; Koa/ʻŌhia Montane Mesic Forest; ʻŌhiʻa Montane Wet Forest; and ʻAkaʻakai/Neke Marsh. Trail facilities will include parking and interpretive signage. See: Trails, Section 2.5.5 A. for additional description.
- Develop a Children's Nature Center near Kanaloahuluhulu Meadow in the recreation residence located on TMK: 1-4-4: 24 (lot was formerly leased to Waimea Garage). The Center is to be maintained and operated by the Division of State Parks or a nonprofit organization.
- Develop an interpretive program for the Puʻu ka Pele canoe builder's site. The site is reported to contain remnants of a heiau, an ahu (shrine), and two house sites. A portion of the site is currently occupied by the Hawaiian Telcom communication tower, which operates under a lease with the State. If the site is to be developed as a visitor interpretive site, the lease on the Verizon facilities will be terminated, the built facilities removed, and the area revegetated with native plantings. Interpretive program content may include signage and guided tours to explain traditional Hawaiian silviculture, canoe building practices and the role of upland resources in the Hawaiian community.
- Develop an interpretive program related to the Kōkeʻe Irrigation Ditch System, including the Puʻu Lua Reservoir, Puʻu Lua Ditchman's cabin, Black Pipe Ditch Trail, and Poʻomau Ditch Trail. The interpretive program should include the history of the ditch system and development of Kōkeʻe's cultural landscape, the role of the ditch in West Kauaʻi's agricultural economy, and individuals associated with the ditch history. Program elements may include signage, restoration of ditch facilities, and self-guided and docent-guided interpretive hiking trails along segments of the ditch.
- Develop an interpretive program for the CCC Camp to be run by DSP or a nonprofit organization. Coordinate program content with Hui o Laka's CCC Camp restoration program. Program elements may include signage, guided tours and DSP staff presentations.
- Develop an interpretive program for the historic Kōkeʻe Ranger Station located near Camp Sloggett. The historic cabin is currently used by DOCARE as a base of operations for officers patrolling Kōkeʻe. Interpretive program content may include

signage at the cabin and inclusion of the cabin's history in park-wide literature and signage proposed as part of a new visitor's center.

- Develop an interpretive program for the proposed new visitor center at Kanaloahuluhulu Meadow. The interpretive program will include the history of Kōkeʻe and Waimea Canyon State Parks, including the cultural and natural history, as well as information on the Kōkeʻe cultural landscape with a guide to significant landmark sites and features.

2.6.4 Public Services

- Continue to provide State support for annual cultural events, such as the Emalani Festival and Banana Poka Roundup.
- Establish a uniformed ranger/docent presence in Kōkeʻe and Waimea Canyon State Parks to reinforce the Parks' identity.
- Establish mail service at Kōkeʻe Lodge with a Kōkeʻe State Park postmark.

2.6.5 Natural Resources Protection - Management Programs

- Conduct a geological and physiographic survey to identify the significant resources with management and interpretive recommendations.
- Develop and implement recovery plans for threatened and endangered species.
- Develop and implement restoration plans for natural plant communities.
- Site and construct plant nurseries at mid-elevation and in the lowlands within the Parks to support recovery and restoration efforts.
- Site, design, and construct plant preserves to contain all the habitats found within the two parks.
- Continue and expand invasive species control, including control of jungle fowl.
- Expand and maintain fuel breaks around buildings and along selected roads.
- Continue encouraging and facilitating scientific research within the Parks and adjoining lands managed by DLNR.
- Provide volunteer housing and other incentives to encourage volunteering in the Parks.
- Develop and implement an educational program to promote knowledge of the Parks' natural and historic resources, and the important role the park lands continue to play in the life of the island and state.
- Update and improve administrative rules and lease conditions to protect natural resources and improve enforcement of the rules.

2.7 MASTER PLAN TIMING AND PHASING

The phasing plan is used to establish priorities for proposed master plan capital improvement projects and park management programs. Priority is given to projects based on their importance to:

- Safety & Protection
- State Parks Mission – projects and programs that are essential to fulfilling the State Parks mission to manage Hawai'i's outdoor resources for preservation, recreation, and education, e.g., monitoring natural resources, controlling invasive species.
- Revenue Generation
- Primary Visitor Attractions – park facilities and programs which attract and receive the greatest number of visitors, e.g., Waimea Canyon Lookout, seasonal fishing and plum picking.

Table 2-2 presents a summary of estimated development costs by phase for Master Plan improvements.

2.8 COSTS

2.8.1 Capital Improvement Costs

Estimated capital costs for Master Plan improvements total $28.3 million over the 20-year plan period. This amount does not include costs to upgrade the recreation residences buildings, but does include the cost of infrastructure improvements to support the recreation residences.

2.8.2 Recreation Residence Improvement Costs

The estimated cost of improvements to recreation residences is $4,325,000. This amount does not include infrastructure costs.

It is assumed that capital improvement costs for recreation residence structures will be borne by either individual lease holders or a master lessee and will not be a State expense.

Twenty-four lots known as the "Water Tank Lots" are being considered for use as overnight rental cabins. Nine of these lots are currently vacant. Costs associated with redeveloping the water tank lots for overnight rental are estimated at $1.5 million for construction of 9 new cabins, equipping and furnishing cabins, road paving, and sewer connection.

2.8.3 Personnel Costs

The Division of State Parks will require twenty-eight new positions to be approved and filled in order to implement proposed Master Plan programs. New personnel costs are listed in **Table 2-3**. In the first Master Plan phase, labor costs represent a 230 percent increase over the current labor cost of approximately $150,000.

2.8.4 Operational and Material Costs

Based on the current DSP budget, non-labor operational and material costs comprise approximately 50 percent of the total park budget. Based on this rate, operating expenses for the first four years of the Master Plan are projected in **Table 2-4**.

Table 2-2
Summary of Master Plan Costs & Phasing
(2004 Dollars)

PROGRAM	PHASING 2007-2010	2011-2015	2016-2020	2021-2025	REC RES	TOTAL
CIRCULATION						
Entry Gate	$357,500	$0	$0	$0		$357,500
Arterial Roads	$3,630,688	$625,000	$1,250,000	$625,000	$0	$6,130,688
Collector Roads	$299,300	$333,333	$333,333	$333,333	$0	$1,299,299
Local Roads	$183,840	$155,000	$150,000	$150,000	$630,000	$1,268,840
Service Roads	$25,000	$106,500	$25,000	$25,000	$0	$181,500
Parking	$416,000	$2,173,610	$507,000	$1,372,700	$0	$4,469,310
Trails	$444,700	$301,808	$613,853	$560,973	$0	$1,921,334
Subtotal Circulation	**$5,357,028**	**$3,695,251**	**$2,879,186**	**$3,067,006**	**$630,000**	**$15,628,471**
OPEN SPACE						
Natural Resources	$45,000	$5,000	$0	$0	$0	$50,000
LAND USE						
Recreation Residences	$0	$0	$0	$0	$165,000	$165,000
Kanaloahuluhulu Meadow / Park HQ	$71,800	$2,370,500	$1,725,300	$325,000	$0	$4,492,600
Lookouts	$44,000	$2,191,000	$1,644,000	$1,183,500	$0	$5,062,500
Picnic Facilities	$0	$0	$367,000	$663,500	$0	$1,030,500
Utilities	$589,900	$400,000	$450,000	$350,000	$110,000	$1,899,900
Subtotal Land Use	**$705,700**	**$4,961,500**	**$4,186,300**	**$2,522,000**	**$275,000**	**$12,650,500**
TOTAL	**$6,107,728**	**$8,661,751**	**$7,065,486**	**$5,589,006**	**$905,000**	**$28,328,971**

Table 2-3
Proposed Personnel Costs

Phase		New Staff	Cost
I	2007 -2010	9	$354,100
II	2011-2015	10	$346,400
III	2016-2020	5	$182,800
IV	2021-2025	4	$175,200
Total		28	$1,058,500

Table 2-4
Estimated Operating Budget – Master Plan Phase I (2007-2010)

Expense	2007	2008	2009	2010
Previous year's budget	$300,000	$390,000	$490,000	$750,200
Labor Increase	$45,000	$50,000	$130,100	$129,000
Non-Labor O&M Increase	$45,000	$50,000	$130,100	$129,000
Total O&M Budget	$390,000	$490,000	$750,200	$1,008,200
% Increase over previous year	30%	26%	53%	34%

Source: DSP 2004

SECTION 3

ALTERNATIVES CONSIDERED

3.1 OVERVIEW

This section presents the alternatives considered for the Master Plan for the Kōkeʻe and Waimea Canyon State Parks. The alternatives are based on available information, issues, problems and opportunities identified by government agencies and the public, and other areas of concern relating to the Kōkeʻe and Waimea Canyon State Parks, the adjoining game management areas, the forest reserves, and the Natural Area Reserve. The information in this section formed the basis for the Master Plan.

Four (4) alternatives were developed for the management, enhancement and development of the Parks. The alternatives considered land use from a regional perspective. Site-specific programming based on the Recreation Opportunity Zones (ROZ) methodology was used to test various types and intensities of use at key locations, such as lookouts, trailheads, Kanaloahuluhulu Meadow, exemplary ecological communities, and other locations.

The development of the alternatives included the following tasks:

- Establishment of development themes. The alternatives express a range of development options from status quo and low-intensity development to expanded development of park facilities and recreational resources.
- Identification of Recreation Opportunity Zones (ROZ). Geographical framework for park programming based on ROZ establishes levels of access, facility development, and ecological factors.
- Identification of park activities, programs, and use intensities that can be accommodated in different plan alternatives.
- Development of a methodology for evaluating the alternatives based on costs, public and agency comments, park resources and recreation goals.

The alternative plans represent a range of development options that include:

- Alternative 1. No Action Alternative (Existing Conditions)
- Alternative 2. Remedial Improvement Plan
- Alternative 3. Limited Access Conservation Plan
- Alternative 4. Enhanced Park Facility Development Plan

The main features of the alternative plans are described in the sections that follow.

3.2 ALTERNATIVE 1. NO ACTION ALTERNATIVE (EXISTING CONDITIONS)

3.2.1 Vision

"Facilities, activities, and programs are administered on a case-by-case basis at the two parks. No new facilities or park programs are developed. Current activities and programs will be continued with existing revenues and management resources."

3.2.2 Objectives:

- Continue existing programs at current levels.
- Continue existing visitor services at current levels (e.g. museum and lodge).
- Monitor park use and users to establish park resource limits.
- Establish revenue enhancement program (e.g. user entrance fee).
- Protect the park resources (natural and man-made).
- Establish design guidelines for the protection of historic structures.
- Maintain existing roads and utilities.

3.2.3 Features Summary

The features of this Alternative include:

- Continue existing programs and management structure.
- Re-lease existing recreation residences.
- Establish recreation residence maintenance fees for infrastructure.
- Renovate and/or replace utilities and infrastructure as necessary to maintain existing levels of service.

3.3 ALTERNATIVE 2. REMEDIAL IMPROVEMENT PLAN

3.3.1 Vision

"Preserve the existing character of the park with upgrades to visitor amenities, infrastructure, and utilities in a manner that reinforces the Parks' historic character and avoids intensifying development. A fundamental goal of the remedial plan is to enhance revenue generation sufficiently to sustain park operations, maintenance, and routine program upgrades. Improvements to facilities, activities, and programs are to be administered on a case-by-case basis."

3.3.2 Objectives

- Achieve sustainable operations with 35 percent of park revenues.
- Upgrade existing park facilities such as lookouts, trails, and access roads with improvements to and, if appropriate, minor expansion of lookouts, trails, and roads to enhance the visitor experience.
- Develop design guidelines to protect the historic value and rustic character of the recreation residences and other park structures.
- Continue existing programs at current levels.
- Enhance park identity and visitor orientation through interpretive and directional signs.
- Monitor park use and users to establish resource limits.
- Renovate and/or repair utilities and infrastructure to meet existing levels of service.

3.3.3 Features Summary

The features of this Alternative are depicted in **Figure 3-1**. Highlights include:

- Enhance park revenue generation. Collect entry fee from non-residents. Expand user fees for operations and maintenance.
- Repair and resurface entire length of Kōkeʻe Road. Repair and re-gravel collector and local roads serving recreation residences. Repair Camp 10 Road for public access.
- Retain water tank lots for short-term rental. Select limited number of Kōkeʻe lots for park use. Re-lease all remaining lots in 2007. Enforce "Kōkeʻe Vernacular" design guidelines for all recreation residences with historic rating of 3, 4, and 5. Establish maintenance fees for infrastructure.
- Park HQ: Relocate existing Park HQ building closer to lodge and develop as visitor service center.
- Continue CCC Camp renovation for use as interpretive, educational, and research center.
- Repair existing trails and improve directional and informational signage at trailheads. Complete Ditch Trail and Cliff Trail segments, and Pihea Trail boardwalk.
- Improve pathways and visitor amenities at all lookouts. Add visitor orientation and interpretive signage.

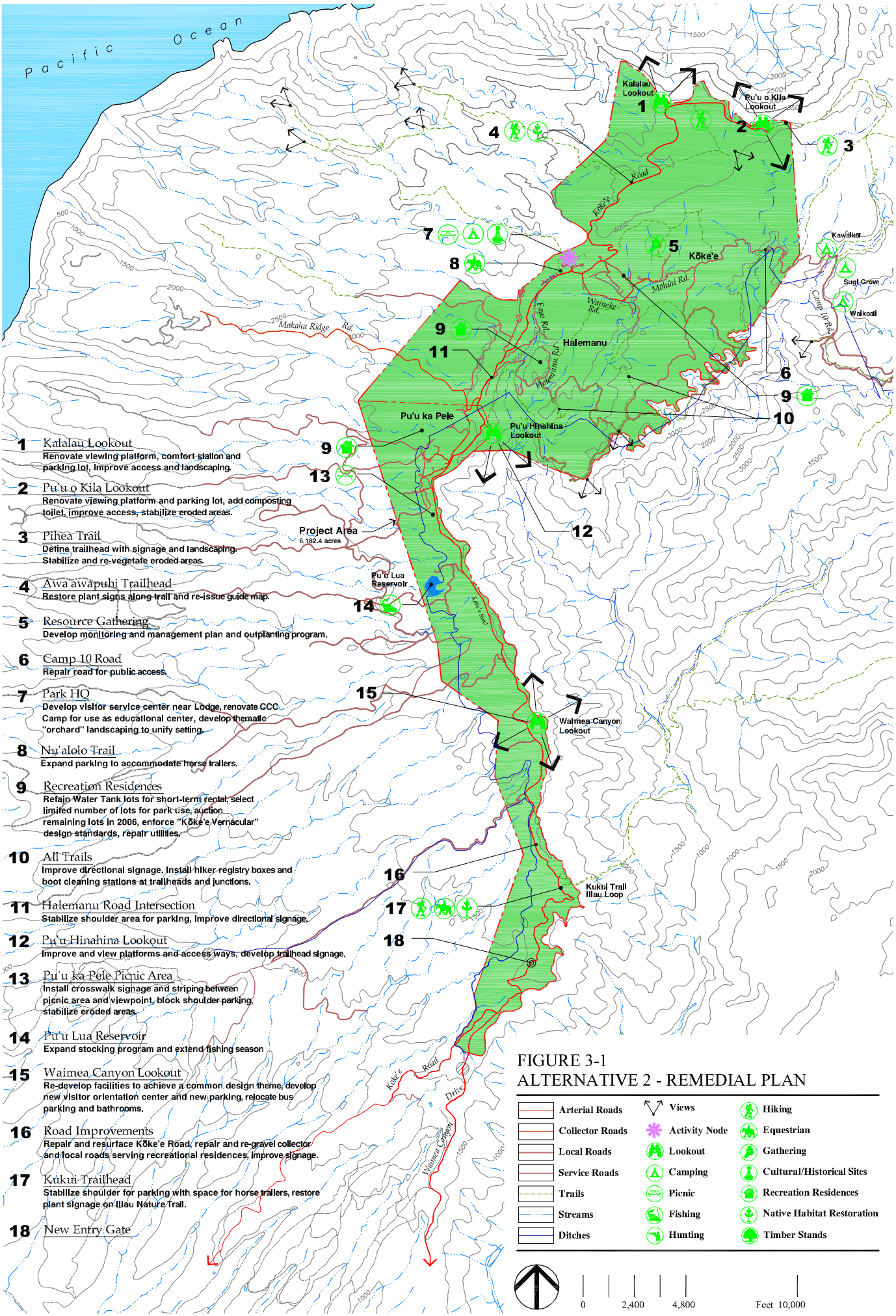


FIGURE 3-1
ALTERNATIVE 2 - REMEDIAL PLAN

3.4 ALTERNATIVE 3. LIMITED ACCESS CONSERVATION PLAN

3.4.1 Vision

"Restore the Parks to a more natural state by scaling back existing development. The Conservation Plan seeks to create a destination in which visitors can experience the area's unique native ecosystem and historic-cultural landscape through education and interpretive programs and personal immersion in the environment."

3.4.2 Objectives:

- Achieve sustainable operations with 35 percent of park revenues.
- Establish revenue enhancement programs, e.g., user fees and entrance fees from non-residents.
- Protect and restore the native flora, fauna, and habitats in the Parks and surrounding natural areas.
- Educate park visitors about the ecological values of the region and the need for protection and restoration efforts.
- Enhance park identity and visitor orientation through interpretive and directional signs.
- Establish design guidelines for the protection of historic structures.
- Limit vehicle access on park roads and centralize pedestrian access in remote areas.
- Remove structures that do not contribute to the historic character of the area and revegetate the cleared area with native plants.
- Reduce the "footprint" of developed visitor facilities.
- Eliminate introduced flora and fauna.

3.4.3 Features Summary

The features of this Alternative are depicted in **Figure 3-2**. Highlights include:

- Establish revenue enhancement program. Collect entry fee for non-residents. Expand user fees for operation and maintenance.
- Re-lease all lots with historic rating of 3, 4, and 5. Remove all structures with historic rating of 1 or 2. Enforce "Kōke'e Vernacular" design guidelines. Establish maintenance fees for infrastructure.

- Allow no new recreation residence construction. Restore vacant lots to natural conditions.
- Prohibit vehicles past Kalalau Lookout. Prohibit back country vehicle access on Camp 10 Road.
- Remove built facilities from Pu'u o Kila Lookout.
- Repair and resurface Kōke'e Road up to Kalalau Lookout. Repair and re-gravel collector and local roads serving recreation residences.
- Connect Faye Road and Halemanu Road across Kōke'e Stream.
- Develop new Park HQ/visitor service building near Lodge. Develop thematic "orchard" landscaping and covered walkways to unify setting.
- Redevelop CCC Camp as a natural resource research and education center with residential facilities for staff and researchers.
- Develop backcountry "gateway" trail hubs at Camp Sloggett, Awa'awapuhi Trailhead, and Kalalau Lookout. Reduce number of trails in Kahuama'a Flats.
- Develop interpretive facilities at Waimea Canyon Lookout, Park HQ, Camp Sloggett, Awa'awapuhi Trailhead, and Kalalau Lookout.
- Conduct habitat restoration program in Kahuama'a Flats.
- Monitor park use and users to establish resource limits.
- Renovate and upgrade utilities and infrastructure.

3.5 ALTERNATIVE 4. ENHANCED PARK FACILITY DEVELOPMENT PLAN

3.5.1 Vision

"To optimize recreational opportunities and facilities and to expand interpretive programs that allow park visitors to experience the natural, cultural, and historic resources. The plan seeks to create a destination that enhances the wildland experience that visitors of all physical skill levels can enjoy and appreciate while engaging in a variety of outdoor recreation and educational activities."

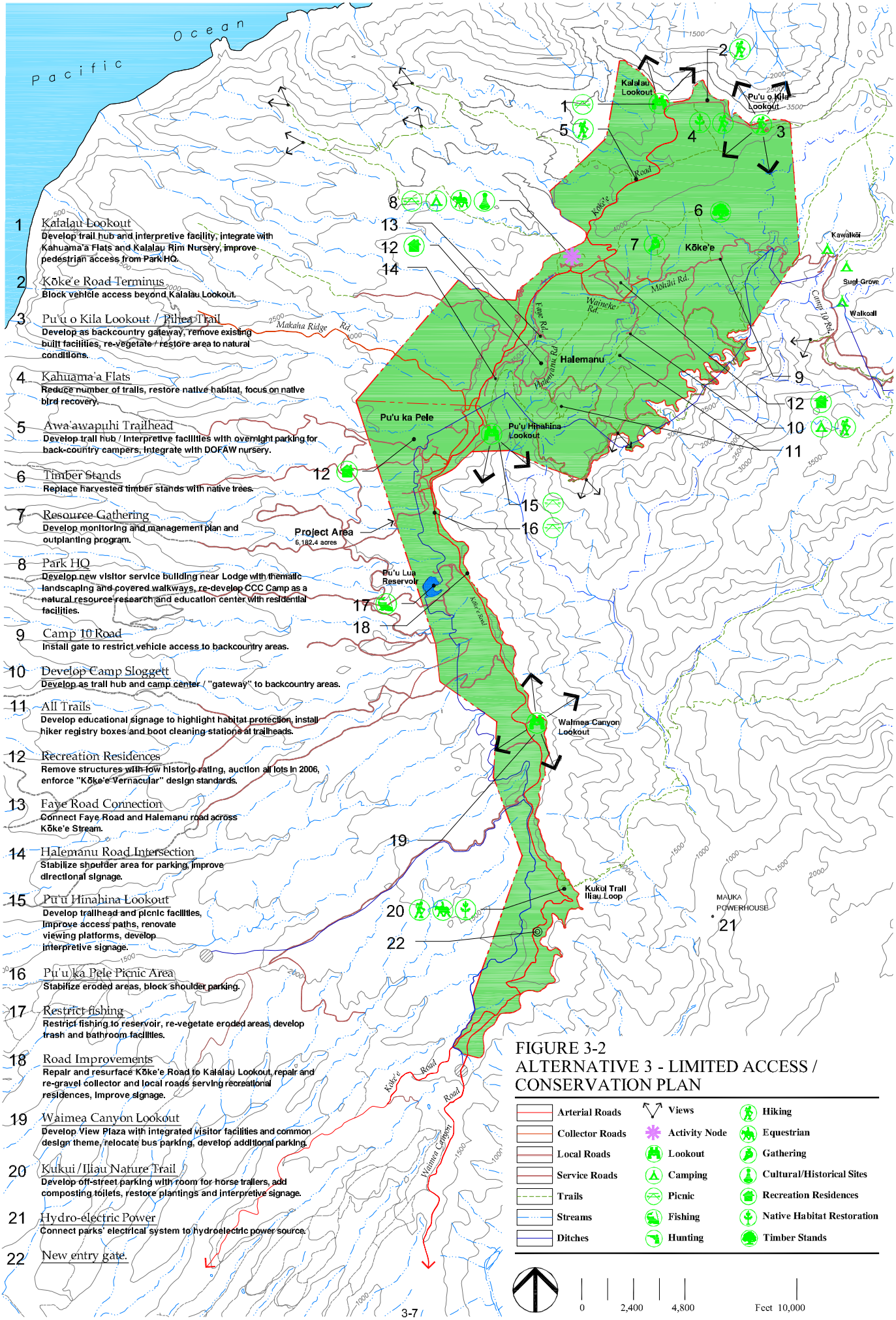


FIGURE 3-2
ALTERNATIVE 3 - LIMITED ACCESS / CONSERVATION PLAN

3.5.2 Objectives:

- Achieve sustainable operations with 35 percent of park revenues.
- Enhance park identity and visitor orientation through interpretive and directional signs.
- Protect and restore the historic and cultural resources in the Parks and surrounding areas.
- Enhance recreational opportunities for park visitors by increasing trail mileage, creating new trail hubs and camping facilities, and providing interpretive hikes/tours, etc.
- Focus development at lookouts and along the roadway corridor between Pu'u ka Pele and Kanaloahuluhulu Meadow.
- Integrate the Parks and adjacent forest reserves by means of an enhanced trail system of nodes and hubs and trailhead kiosks.
- Protect and restore the native flora, fauna, and habitat in the Parks and surrounding natural areas.
- Educate park visitors about the ecological values in the region and protection and restoration efforts.
- Establish design guidelines for the protection of historic structures and in the construction of new structures.
- Remove structures that do not contribute to the historic character of the area and revegetate the cleared area with native vegetation.
- Expand opportunities to learn about the Parks' history and cultural landscape through interpretive facilities and tours, (both guided and self-guided, vehicles and walking tours) and kiosks.
- Design and construct a visitor center that orients visitors to the Parks and shows the resources and history of the Parks through audio-visual programs, exhibits, and displays.
- Develop "satellite" interpretive facilities at lookouts and trail hubs.
- Develop tours around themes, e.g., native forests, bird-watching, historic cabins (for architectural history).
- Expand concession and management leases to provide interpretive and visitor services.
- Develop interpretive (nature) trails at locations that are ADA accessible.

3.5.3 Features Summary

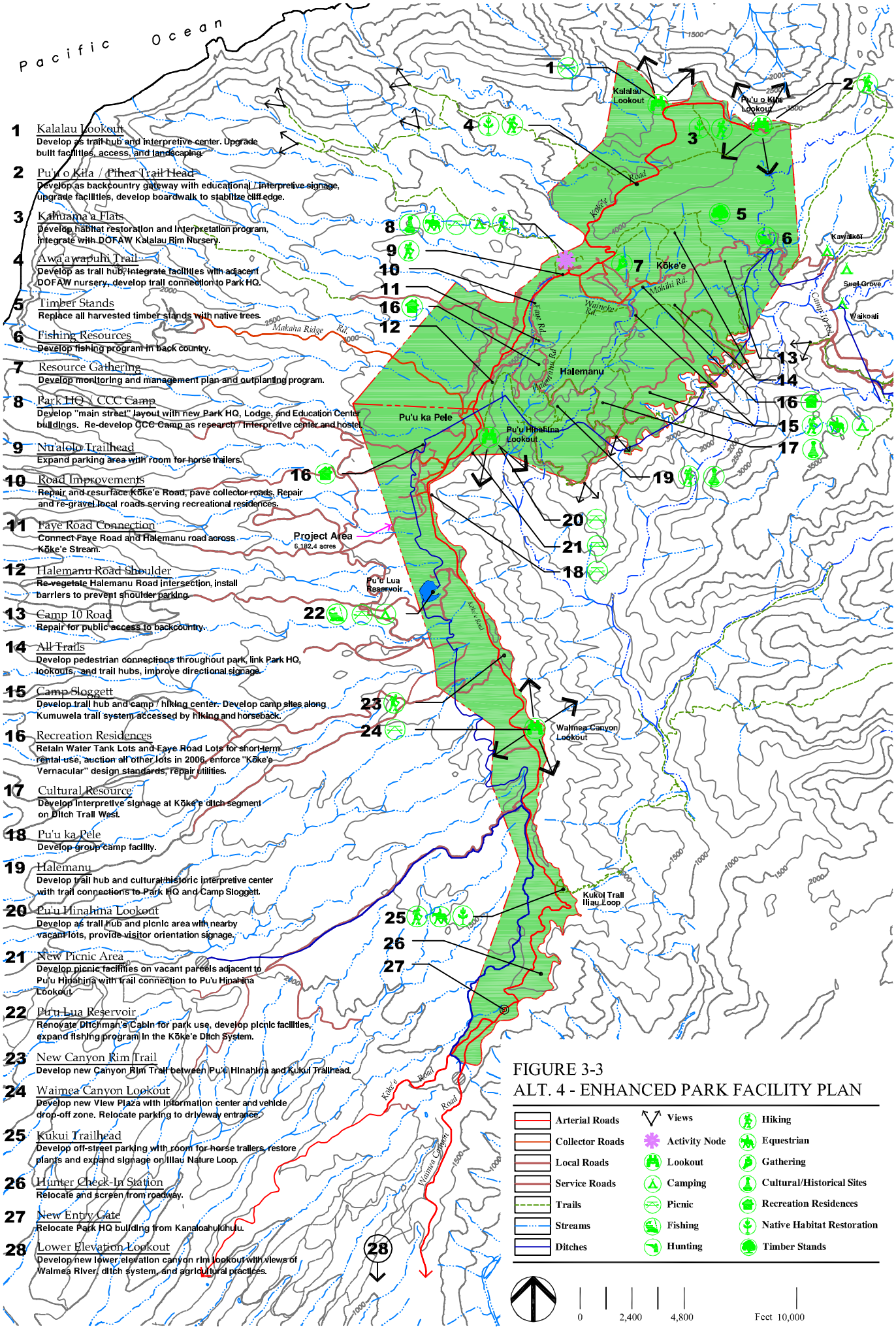
The features of this Alternative are depicted in **Figure 3-3**. Highlights include:

- Re-lease all existing recreation residences that contribute to the historic character of the area. Houses in the "tank lots" and Faye Road to be reserved for short-term rentals. Enforce "Kōke'e Vernacular" design guidelines. Establish maintenance fees for infrastructure.
- Develop new homes on vacant lots. Follow "Kōke'e Vernacular" design guidelines.
- Repair and resurface Kōke'e Road. Pave collector roads. Repair and re-gravel local roads serving recreation residences. Repair Camp 10 Road for backcountry access. Connect Faye Road and Halemanu Road across Kōke'e Stream.
- Enhance park identity and visitor orientation. Develop lodge area as a "main street" layout with new Park HQ, Lodge, and Education Center buildings separated by landscaped spaces, and served by store-front parking and covered boardwalk connection.
- Redevelop CCC Camp for use as research/interpretive center and hostel.
- Develop trail hubs at Halemanu, Camp Sloggett, Awa'awapuhi Trailhead, Pu'u Hinahina and Park HQ with interconnecting trail system.
- Develop new, lower elevation canyon lookout.
- Establish revenue enhancement program, including entry fee and improved concession facilities at lookouts and Kanaloahuluhulu Meadow.
- Renovate and upgrade utilities and infrastructure.
- Monitor park use and users to establish resource limits.

3.6 ALTERNATIVE EVALUATION

The selection of a preferred alternative plan was based upon an evaluation process that considered the range of opportunities presented by the project site. Within the two parks, the range of opportunities is limited by the resources' ability to sustain itself. Limitations when imposed, however, are more discrete and are related to the resources available--some natural and some man-made. In this way, resource limits were kept at the forefront of the alternative development process.

The evaluation of the alternatives was conducted on a qualitative basis. Decisions were required to be made on the basis of "best fit" with the overall theme or approach to the development of the park. Specific measures used are described below.


Pacific Ocean
1 Kalalau Lookout
Develop as trail hub and interpretive center. Upgrade built facilities, access, and landscaping.
2 Pu'u o Kila / Pihea Trail Head
Develop as backcountry gateway with educational / interpretive signage, upgrade facilities, develop boardwalk to stabilize cliff edge.
3 Kahuama'a Flats
Develop habitat restoration and interpretation program, integrate with DOFAW Kalalau Rim Nursery.
4 Awa'awapuhi Trail
Develop as trail hub, integrate facilities with adjacent DOFAW nursery, develop trail connection to Park HQ.
5 Timber Stands
Replace all harvested timber stands with native trees.
6 Fishing Resources
Develop fishing program in back country.
7 Resource Gathering
Develop monitoring and management plan and outplanting program.
8 Park HQ / CCC Camp
Develop "main street" layout with new Park HQ, Lodge, and Education Center buildings. Re-develop CCC Camp as research / interpretive center and hostel.
9 Nu'alolo Trailhead
Expand parking area with room for horse trailers.
10 Road Improvements
Repair and resurface Kōke'e Road, pave collector roads. Repair and re-gravel local roads serving recreational residences.
11 Faye Road Connection
Connect Faye Road and Halemanu road across Kōke'e Stream.
12 Halemanu Road Shoulder
Re-vegetate Halemanu Road intersection, install barriers to prevent shoulder parking.
13 Camp 10 Road
Repair for public access to backcountry.
14 All Trails
Develop pedestrian connections throughout park, link Park HQ, lookouts, and trail hubs, improve directional signage.
15 Camp Sloggett
Develop trail hub and camp / hiking center. Develop camp sites along Kumuwela trail system accessed by hiking and horseback.
16 Recreation Residences
Retain Water Tank Lots and Faye Road Lots for short-term rental use, auction all other lots in 2006, enforce "Kōke'e Vernacular" design standards, repair utilities.
17 Cultural Resource
Develop interpretive signage at Kōke'e ditch segment on Ditch Trail West.
18 Pu'u ka Pele
Develop group camp facility.
19 Halemanu
Develop trail hub and cultural/historic interpretive center with trail connections to Park HQ and Camp Sloggett.
20 Pu'u Hinahina Lookout
Develop as trail hub and picnic area with nearby vacant lots, provide visitor orientation signage.
21 New Picnic Area
Develop picnic facilities on vacant parcels adjacent to Pu'u Hinahina with trail connection to Pu'u Hinahina Lookout.
22 Pu'u Lua Reservoir
Renovate Ditchman's Cabin for park use, develop picnic facilities, expand fishing program in the Kōke'e Ditch System.
23 New Canyon Rim Trail
Develop new Canyon Rim Trail between Pu'u Hinahina and Kukui Trailhead.
24 Waimea Canyon Lookout
Develop new View Plaza with information center and vehicle drop-off zone. Relocate parking to driveway entrance.
25 Kukui Trailhead
Develop off-street parking with room for horse trailers, restore plants and expand signage on Iliau Nature Loop.
26 Hunter Check-In Station
Relocate and screen from roadway.
27 New Entry Gate
Relocate Park HQ building from Kanaloahulihulu.
28 Lower Elevation Lookout
Develop new lower elevation canyon rim lookout with views of Waimea River, ditch system, and agricultural practices.
Project Area
6,182.4 acres
Kalalau Lookout
Pu'u o Kila Lookout
Kōke'e
Halemanu
Pu'u ka Pele
Pu'u Hinahina Lookout
Pu'u Lua Reservoir
Waimea Canyon Lookout
Kukui Trail
Iliau Loop
Kawaikōi
Sugi Grove
Waikoali
Kōke'e Road
Mohihi Rd.
Waineke Rd.
Faye Rd.
Halemanu Rd.
Makaha Ridge Rd.
Camp 10 Rd.
Waimea Canyon
FIGURE 3-3
ALT. 4 - ENHANCED PARK FACILITY PLAN
Arterial Roads
Collector Roads
Local Roads
Service Roads
Trails
Streams
Ditches
Views
Activity Node
Lookout
Camping
Picnic
Fishing
Hunting
Hiking
Equestrian
Gathering
Cultural/Historical Sites
Recreation Residences
Native Habitat Restoration
Timber Stands
0
2,400
4,800
Feet 10,000

3.6.1 Measures of Evaluation

The following measures were used as the basis of the evaluation:

- Thematic Approach
- Plan Components
- Conflict Evaluation
- Costs and Revenues
- Management and Administration

A. Thematic Approach

The evaluation process began with a decision about fundamental park values. The four alternatives described above provide a starting point for identifying the park themes, or values that will ultimately be advanced in the Master Plan. They represent a range of development intensities, from "return to nature" to maximum enhancement of built amenities. In their individual compositions of program elements, each places different emphasis on essential park functions of resource protection, recreation, education, and revenue generation.

Comments forwarded by four groups were evaluated. See **Table 3-1**. Based on responses received, Alternative 2, the remedial approach, was the plan most favored and would be the thematic approach used for the development of the Master Plan.

TABLE 3-1`

THEMATIC APPROACH EVALUATION

	Alt-1	Alt-2	Alt-3	Alt-4
Consultant	☐	■	▣	▣
Kōke'e TF	☐	■	▣	▣
Public Comments	☐	■	▣	▣
State Parks Staff	☐	■	▣	▣

■= Favorable approach

☐= Undesirable approach

▣= Somewhat favorable approach

B. Plan Components

Selection of compatible plan components was the next stage of the evaluation process. Components that support the overall goal of the thematic approach were selected from the range of options available. Table 3-2 presents a menu of plan components from which a preferred plan can be constructed. Plan components are organized under the heading of land use, circulation, and open space. The preferred plan can be constructed from components of a single alternative or can be a composite of discrete components selected from each of the four alternatives.

If discrete components are selected from several alternatives, then a new plan is created and evaluated. The components selected are to be evaluated against their ability to "meet" the requirements or development goals of that particular plan. If plan components are judged to be out of character with the overall goal, then they may be revised or replaced as necessary to correspond with the desired values and outcomes.

The plan components were also shared with the four groups identified above. Their choices are recorded in the table below.

TABLE 3-2

PLAN COMPONENT EVALUATION

Development Theme	Alt-1	Alt-2	Alt-3	Alt-4
Natural Resources	○	●	⊙	○
Historic & Cultural Resources	○	⊙	●	⊙
Scenic Resources,	○	●	⊙	●
Outdoor Recreation	○	●	⊙	●
Recreation Residences	○	⊙	○	⊙
Interpretation	○	●	●	●
Infrastructure	○	●	⊙	●
Organizational Development & Mgmt.	○	●	⊙	⊙

○ = Not favored component

⊙ = Somewhat favored component

● = Favored component

C. Recreation Residences

Five alternatives for the disposition of the recreation residences were initially presented at public information meetings on the Master Plan. The alternatives were presented independently from the four main alternatives described above. The range of options for the recreation residences included:

- Alt-1: Maintain the status quo.
- Alt-2: Re-lease recreation residences except for 19 lots which are to be used for short-term (day, overnight rentals).
- Alt-3: Re-lease recreation residences except for some lots in the Kōkeʻe and Halemanu area.
- Alt-4: Re-lease recreation residences except for some lots in the Kōkeʻe area and the removal of non-historic structures.
- Alt-5: Lease all of the lots to a third party concession for disposition as day-rentals, medium-term rentals, and long-term rentals.

At an October (2004) public information meeting where the alternatives were presented, members of the public expressed their desire to choose "none of the above" from a range of options for the disposition of the recreation residences.

TABLE 3-3

RECREATION RESIDENCE EVALUATION

	Alt-1	Alt-2	Alt-3	Alt-4	Alt-5	Non of the Above
Consultant	☐	▣	▣	▣	■	☐
Kōkeʻe TF	☐		▣	▣	▣	☐
Public Comments	☐	☐	☐	☐	☐	■
State Parks Staff	☐	▣	▣	▣	■	☐

■= Favorable approach

☐= Undesirable approach

▣= Somewhat favorable approach

Subsequent to the January 2005 meeting of the Board of Land and Natural Resources, State Parks proceeded to examine the creation of a historic preservation and restoration properties within the two Parks. Designation of a historic preservation and restoration project will allow for direct negotiations with current leaseholders in accordance with Chapter 171, Section 36.2 (HRS).

D. Conflict Evaluation

During the public comment period the use of the trails within the Waimea Canyon and Kōkeʻe State Parks by mountain bicycle enthusiasts was raised as an issue. The members of the Kōkeʻe Task Force evaluated this use and concluded that the bicyclists were not to be excluded from the Parks, however, they were to be limited to the unpaved roads in the Parks. Reasons for this decision included the potential for conflicts between hikers and hunters on the trail, and the damage to trails and sensitive natural areas caused by mountain bikes. The use of off-road vehicles was also considered by the Task Force, and they concluded that liability and maintenance concerns outweigh the public benefits of allowing this type of activity within the Kōkeʻe area at this time. Further, if proposals are received for the use of the roads by commercial ventures, they will be evaluated on a case-by-case basis based on the road conditions.

E. Cost and Revenue

The costs associated with each plan were calculated and are shown below in Table 3-4 and in the Appendix. Costs were estimated for each plan component recommended. The costs were evaluated separately to ensure that they do not influence initial selection of the preferred plan theme and components. Cost considerations will eventually shape the plan content, however they should not dictate overall plan direction.

Revenue generation was examined for each plan to ascertain if the total revenue to be generated can sustain the activities and programs planned for the Parks.

Operations and maintenance costs were also estimated to project income and revenue requirements.

TABLE 3-4

IMPROVEMENT COST EVALUATION

Alternative	Cost*	Ranking
Alt. 1**	$5.23 Mil	1
Alt. 2	$6.64 Mil	3
Alt. 3	$5.84 Mil	2
Alt. 4	$ 10.24 Mil	4

*Cost is based on 2003 dollars.

** Costs include repair to selected items.

Potential revenues that could be generated from the alternative plan components were identified for each plan. Existing revenues were used as the baseline for revenue generation. Charging an entry fee was new for the plans. For purposes of this evaluation, a fee of $2 per non-resident visitor entering the park was assumed.

TABLE 3-5

PRELIMINARY REVENUE* EVALUATION

Alternative	Income	Ranking
Alt. 1	$0.40 Mil	4
Alt. 2	$1.30 Mil	2
Alt. 3	$1.20 Mil	3
Alt. 4	$1.46 Mil	1

*Estimated revenue based on 2003 dollars.

Revenues were assumed for leases of the recreation residences, concessions, additional daily rentals, and collection of a maintenance fee.

F. Management and Administration

Management and administration issues address how the recommendations of the Master Plan will be implemented and by whom.

Kōkeʻe Administrative Agency – Consideration should be given to establishing a "super" agency that would consolidate resources and manage the various DLNR divisions having jurisdiction in the Waimea-Kōkeʻe region. The functions of this agency would include:

- Maintenance of facilities, trails, roads, utilities, etc.
- Manage real estate resources.
- Manage natural resources.
- Provide program and visitor services.
- Manage commercial interests.
- Provide services to the public.

G. Program Support

Program support services have been provided by Hui o Laka in the form of interpretive material distributed at the Kōkeʻe Museum, and natural history and cultural programs provided to the public. Recent efforts to restore the CCC Camp facilities are an important contribution made by Hui o Laka. The lease granted to Hui o Laka will expire along with the service they have provided in 2006 unless their lease is renewed.

It is recommended that the DLNR continue the leasing of such activities to a non-profit or for-profit organization to continue the provision of information, programs, and facilities to service the public.

In order to enhance the Parks' identity and improve customer services, the renovation of existing buildings and/or construction of new facilities in the Kanaloahuluhulu Meadow and CCC Camp should be undertaken. Facility improvements would include the development of a staffed visitor service desk and orientation center.

H. Commercial Uses

Commercial activities in the Parks have provided a valuable service to park visitors by providing food and retail merchandise not normally provided by the State. At Kōkeʻe the vendor provides food service, retail merchandise, and rental of twelve cabins for overnight visitors. Revenue derived from the services and sales further provides income to the State to operate the Parks. The current lease to operate the Kōkeʻe Lodge terminates in 2006.

The following are recommended:

- A commercial lease be offered to a qualified vendor for a period not to exceed 10

years, with a re-opening after the fifth year.

- Provide retail services at the Waimea Canyon Lookout.
- Continue the overnight rental of cabins.
- Provide for investment by the commercial vendor into the facilities at the Park.

3.7 PREFERRED ALTERNATIVE

A preferred alternative was selected based on the evaluation of the alternatives. As cited previously, the alternatives that were developed provide a range of development options. Further, components from each of the alternatives served as a menu of options which could be combined into the preferred alternative.

Comments received from the public, interested parties, and DLNR staff members all provided a basis for the development of the preferred alternative. As components were included or deleted, how they related to each other and how they "fit" together was examined.

Major components of the preferred alternative are described below.

3.7.1 Thematic Approach

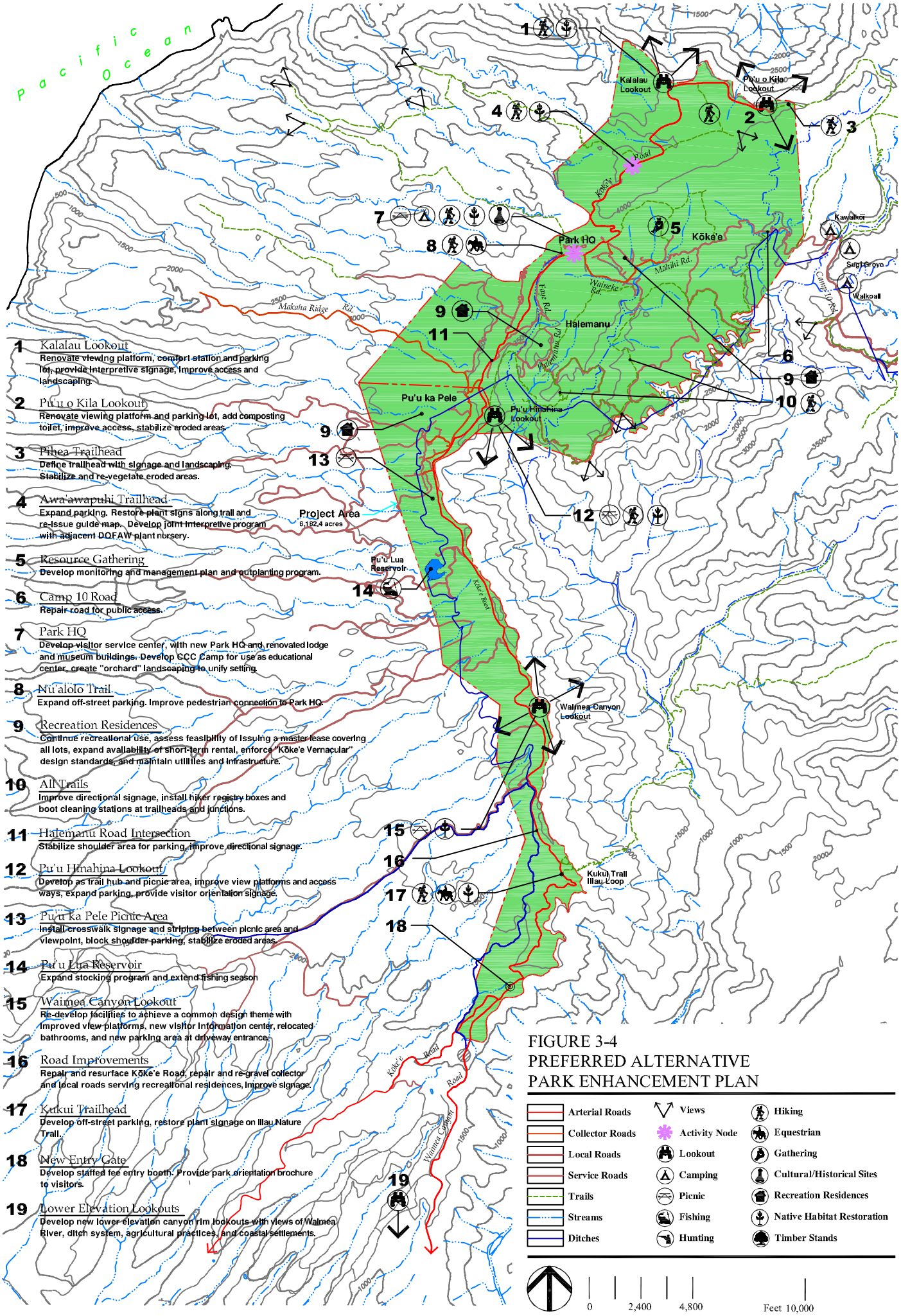
Preserve the existing character of the park with upgrades to visitor amenities, infrastructure, and utilities in a manner that reinforces the Parks' historic character and avoids intensifying development. A fundamental goal of the preferred plan is to enhance revenue generation sufficiently to sustain park operations, maintenance and routine program upgrades. Improvements to facilities, activities, and programs are to be administered on a case-by-case basis.

On November 5, 2003, the Board of Land and Natural Resources approved the following recommendation:

"Approve the Objectives of Alternative #2 and direct the Division of State Parks to continue the planning and environmental impact statement process for Kōkeʻe and Waimea Canyon State Parks."

3.7.2 Features of the Plan

Components selected to be in the preferred alternative include: **See Figure 3-4**.


Pacific Ocean
Kalalau Lookout
Pu'u o Kila Lookout
Park HQ
Kōke'e
Halemanu
Pu'u ka Pele
Pu'u Hinahina Lookout
Project Area
6,182.4 acres
Pu'u Lua Reservoir
Waimea Canyon Lookout
Kukui Trail
Illau Loop
Kawaikoi
Surf Grove
Walkoali
Makaha Ridge Rd.
Kōke'e Road
Waimea Canyon Road
Mohihi Rd.
Waineke Rd.
Camp 10 Rd.
1 Kalalau Lookout
Renovate viewing platform, comfort station and parking lot, provide interpretive signage, improve access and landscaping.
2 Pu'u o Kila Lookout
Renovate viewing platform and parking lot, add composting toilet, improve access, stabilize eroded areas.
3 Pihea Trailhead
Define trailhead with signage and landscaping. Stabilize and re-vegetate eroded areas.
4 Awa'awapuhi Trailhead
Expand parking. Restore plant signs along trail and re-issue guide map. Develop joint interpretive program with adjacent DOFAW plant nursery.
5 Resource Gathering
Develop monitoring and management plan and outplanting program.
6 Camp 10 Road
Repair road for public access.
7 Park HQ
Develop visitor service center, with new Park HQ and renovated lodge and museum buildings. Develop CCC Camp for use as educational center, create "orchard" landscaping to unify setting.
8 Nu'alolo Trail
Expand off-street parking. Improve pedestrian connection to Park HQ.
9 Recreation Residences
Continue recreational use, assess feasibility of issuing a master lease covering all lots, expand availability of short-term rental, enforce "Kōke'e Vernacular" design standards, and maintain utilities and infrastructure.
10 All Trails
Improve directional signage, install hiker registry boxes and boot cleaning stations at trailheads and junctions.
11 Halemanu Road Intersection
Stabilize shoulder area for parking, improve directional signage.
12 Pu'u Hinahina Lookout
Develop as trail hub and picnic area, improve view platforms and access ways, expand parking, provide visitor orientation signage.
13 Pu'u ka Pele Picnic Area
Install crosswalk signage and striping between picnic area and viewpoint, block shoulder parking, stabilize eroded areas.
14 Pu'u Lua Reservoir
Expand stocking program and extend fishing season
15 Waimea Canyon Lookout
Re-develop facilities to achieve a common design theme with improved view platforms, new visitor information center, relocated bathrooms, and new parking area at driveway entrance.
16 Road Improvements
Repair and resurface Kōke'e Road, repair and re-gravel collector and local roads serving recreational residences, improve signage.
17 Kukui Trailhead
Develop off-street parking, restore plant signage on Illau Nature Trail.
18 New Entry Gate
Develop staffed fee entry booth. Provide park orientation brochure to visitors.
19 Lower Elevation Lookouts
Develop new lower elevation canyon rim lookouts with views of Waimea River, ditch system, agricultural practices, and coastal settlements.
FIGURE 3-4
PREFERRED ALTERNATIVE
PARK ENHANCEMENT PLAN
Arterial Roads
Collector Roads
Local Roads
Service Roads
Trails
Streams
Ditches
Views
Activity Node
Lookout
Camping
Picnic
Fishing
Hunting
Hiking
Equestrian
Gathering
Cultural/Historical Sites
Recreation Residences
Native Habitat Restoration
Timber Stands
0
2,400
4,800
Feet 10,000

Kalalau Lookout

Renovate viewing platform, comfort station, and parking lot; provide interpretive signage; improve access and landscaping.

Pu'u o Kila Lookout

Renovate viewing platform and parking lot, add composting toilet, improve access, and stabilize eroded areas.

Pihea Trailhead

Define trailhead with signage and landscaping. Stabilize and revegetate eroded areas.

Awa'awapuhi Trailhead

Expand parking. Restore plant signs along trail and reissue guide map. Develop joint interpretive program with adjacent DOFAW plant nursery.

Resource Gathering

Develop monitoring and management plan and outplanting program.

Camp 10 Road

Repair road for public access.

Park HQ

Develop visitor service center, with new Park HQ and renovated lodge and museum buildings. Develop CCC Camp for use as an educational center, and create "orchard" landscaping to unify setting.

Nu'alolo Trail

Expand off-street parking. Improve pedestrian connection to Park HQ.

Recreation Residences

Issue a master lease for all lots, with requirement for portion in short-term rental, enforcement of "Kōkeʻe Vernacular" design standards, and maintenance of utilities and infrastructure.

All Trails

Improve directional signage and install hiker registry boxes and boot cleaning stations at trailheads and junctions.

Halemanu Road Intersection

Stabilize shoulder area for parking and improve directional signage.

Pu'u Hinahina Lookout

Develop as a trail hub and picnic area, improve view platforms and access ways, expand parking, and provide visitor orientation signage.

Pu'u ka Pele Picnic Area

Install crosswalk signage and striping between picnic area and viewpoint, block shoulder parking, and stabilize eroded areas.

Pu'u Lua Reservoir

Expand stocking program and extend fishing season.

Waimea Canyon Lookout

Redevelop facilities to achieve a common design theme with improved view platforms, new visitor information center, relocated bathrooms, and new parking area at driveway entrance.

Road Improvements

Repair and resurface Kōke'e Road, repair and re-gravel collector and local roads serving recreation residences, and improve signage.

Kukui Trailhead

Develop off-street parking and restore plant signage on the Iliau Nature Trail.

Park Entry Station

Develop staffed entry booth to provide park information and orientation brochure to visitors.

Lower Elevation Lookouts

Develop new lower elevation canyon rim lookouts with views of Waimea River, ditch system, agricultural practices, and coastal settlement.

3.7.3 Preliminary Budgetary Improvement Costs

Table 3-6 summarizes development costs associated with the preferred alternative.

3.7.4 Recreation Residences

Table 3-7 summarizes details relating to the recreation residences. In summary, there are currently 112 recreation residence lots with structures on them. There are another 21 lots that are vacant.

TABLE 3-6

BUDGETARY IMPROVEMENT COSTS

Cost Item	Amount (mil.)
1. Roads	$4.40
2. Parking	$0.32
3. Trails	$0.06
4. Park HQ	$0.45
5. Utilities	$0.40
6. Lookouts	$0.50
Total	$6.13

TABLE 3-7

RECREATION RESIDENCE STATISTICS

Location	No. of Lots	Current Recreation Residences Leases	Vacant Parcels (No Imprvmts.)	Non-profit Group Managed Parcels /1	State Managed Parcels /3	Excluded Parcels (Not a designated Rec. Residence) /2
Pu'u ka Pele	57	57	2	5	6	5
Halemanu	16	14	2	0	0	0
Kōke'e Lots	61	41	17	2	17	4
Kanaloahuluhulu	5	0	0	0	5	0
Totals	139	112	21	7	28	9

/1 Non-profit Groups include: Honpa Hongwangi, Hawai'i Association of 7th Day Adventists, Hawai'i United Methodist Center, Hui o Laka, Ka 'Imi Na'auao of Hawai'i Nei, and Kaua'i Christian Fellowship at Pu'u ka Pele; YWCA and the Hawai'i Conference of the United Church of Christ at Kōke'e Lots. The Boy Scouts were previously considered in this group, but the land was sold to the Boy Scouts and is no longer part of State Parks assets.

/2 Excluded parcels include: 1-4-02: 4,5,7,16, 93; 1-4-04: 73,74, 75, 76.

/3 State managed parcels include: 1-4-01: 02, 13, 15, 18, 19; 1-4-04: 32; 1-4-02: 34, 42,48,66.

The majority of the leases had an expiration date in 2005, with a small percentage expiring in 2006. The State issued a one-year holdover to give all existing leases an expiration date of December 31, 2006, the purpose of which was to address the future disposition of the recreation residences all at the same time.

3.7.5 Guiding Principles

During the course of deliberations regarding the disposition of the recreation residences, it became evident that:

- Direct negotiations with the current lessees was not possible in accordance with Chapter 171, Hawai'i Revised Statutes.
- Disposition of the leases after the termination of the lease was prescribed by Chapter 171, Section 44, which prescribes that leases of public lands for recreation purposes be awarded through a public auction process.
- Disposition by direct negotiations with current leaseholders was allowed only in accordance with Chapter 171, Section 36.2 (HRS), provided that a historic district was created and rules adopted.
- Disposition by direct negotiations with current non-profit organizations was allowed in accordance with Chapter 171, Section 43 (HRS).

Further, the mission and goals of the Division of State Parks were revised and restated:

- Mission: "The Mission of the Division of State Parks is to properly manage and protect Hawai'i's natural and cultural heritage values found within the State Park System, provide a broad range of outdoor recreation opportunities, promote a safe, high-quality park experience for Hawai'i's residents and visitors and preserve Native Hawaiian gathering and cultural access rights."
- Goals and Objectives: "To preserve and protect fragile and delicate resources, while providing for their use by the general public."

The following guiding principles were adopted by the planning team in concurrence with the DLNR:

- Public Benefit – The resources of Kōke'e and Waimea Canyon State Parks are available as a public benefit, open and accessible to all.
- Open Process – The disposition of the recreation residences will be conducted in the open.
- Protection of the Resource – The natural and historic resources of the Parks should be protected and preserved.

3.7.6 Recommendations

The Division of State Parks recommended to the Board of Land and Natural Resources (BLNR) at their November 5, 2003, meeting, the following:

"Authorize the Issuance of an RFQ/RFP for a master lease for the recreation residence lots for cabin rental use in Kōkeʻe and Waimea Canyon State Parks to a non-profit or for-profit entity, subject to provisions of Chapter 171 and conditions to be developed. This option will be explored during the next calendar year. If it does not appear viable, the issue will be revisited with the Board."

The BLNR amended their recommendation to read as follows:

"1. The Division of State Parks is directed to further analyze the concept of issuing a master lease for recreation residences in Kōkeʻe and Waimea Canyon State Parks through the planning and environmental impact statement process, financial feasibility study, solicitation of letters of interest from potential master lessees, or such other studies as the Division deems appropriate. The analysis shall include (but not be limited to) a comparison of the impacts, costs, and benefits of (a) disposing of the recreation residence lots to individual lessees or disposition to a master lessee, and (b) different management options for the recreation residences."

"2. Determine that the recreation residence lots will remain in recreation use following the termination of the current leases, provided, however, that the method for future disposition of the recreation residence lots shall be determined after the Division reports to the Board as to the results of the studies and analyses set forth above. Direct the Chairperson to notify the current lessees of this determination in accordance with HRS § 171-33(9)." Approved Nov. 5, 2003.

On January 14, 2005, the Board of Land and Natural Resources provided additional recommendations based on the Draft Master Plan for the Kōkeʻe and Waimea Canyon State Parks. The recommendations along with actions taken on the Board's recommendations are provided below:

1. Kōkeʻe and Waimea Canyon State Parks Draft Master Plan, Page 6-4 "Features Summary" add the following:

   Elements of Testimony of the Green Heart Conservation Company

2. Kōkeʻe and Waimea Canyon State Parks Draft Master Plan, Page 6-16 "Mission"

   Action Taken: Feasibility of implementing the action described in the Section 2.

   "The Mission of the Division of State Parks is to properly manage and protect Hawaiʻi's natural and cultural heritage values found within the State Parks

System, provide a broad range of outdoor recreation opportunities, promote a safe, high-quality park experience for Hawai'i's residents and visitors, and preserve Native Hawaiian gathering and cultural access rights."

Action Taken: Revised mission statement included in this document.

3. Kōke'e and Waimea Canyon State Parks Draft Master Plan, Page 7-10 "Entry Gate"

   The Board recommended not having a physical gate and asked staff and the consultants to take into consideration Juan Wilson's proposal and see how it can be worked into the Master Plan.

   Action Taken: Entry into the Parks revised as an entry feature and information booth.

4. Kōke'e and Waimea Canyon State Parks Draft Master Plan, Page 7-19 "General Recommendations"

   Work with nonprofit organizations that rent cabins and provide a substantial amount of public service and consider them separately from individual cabin leases.

   Action Taken: A list of non-profit organizations compiled and rules for nonprofit status being evaluated.

5. Kōke'e and Waimea Canyon State Parks Draft Master Plan, Page 7-20

   Explore the possibility of creating a lodge with short-term rentals.

   Action Taken: A conceptual plan for locating a "lodge" in Kōke'e State Park included in proposed Master Plan.

6. Kōke'e and Waimea Canyon State Parks Draft Master Plan, Page 7-39 "Entry Fees" second paragraph

   "An entry fee may be assessed on a per person or per vehicle basis. A per vehicle fee may encourage visitors to car pool, thus reducing the number of vehicles within the park and correspondingly reduce road and parking congestion, and maintenance requirements. Any person holding a Hawai'i's driver's license would be exempt from paying any fees."

   Staff and consultants should look at alternate ways of collecting entry fees.

   Action Taken: Entry fees will not be assessed of Hawai'i residents, however, assessing visitor will be examined further. If fees are to be assessed, the recommendation will be forwarded to the Board for action.

7. Kōke'e and Waimea Canyon State Parks Draft Master Plan, 7-40 "Recreation Residence Lease Rents"

   Take at heart the testimony received on this issue and evaluate it and come up with a workable solution for everyone.

   Action Taken: The terms and conditions for the disposition of the recreation residences were addressed by a special working group (State Parks staff and current lessees).

8. Look at and evaluate the "Juan Wilson" plan in the Environmental Impact Statement process as well as the comments from Hui O Laka, Wayne Jacintho and Frank Hay with regards to the leasehold issue

   Action Taken: The terms and conditions for the disposition of the recreation residences were addressed by a special working group (State Parks staff and current lessees). A recommendation to be considered is the direct negotiation with current lessees based on the creation of a "historic district."

9. The Board encouraged staff and the consultants to increase the number of public meetings at various locations around the island with times convenient for the public. (BLNR, 1-14-05)

   Action Taken: Two additional public meetings were held on Kaua'i on March 22 and 23, 2005. In addition, a working group comprised of State Parks staff and lessees have had several meetings to discuss the recommendations of the BLNR and issues and concerns raised at the public information meetings.

On September 9, 2005, the BLNR provided further guidance on the disposition of the recreation residences by adoption of the following:

1. Conduct lease negotiations with current lessees with cabins that were evaluated as having a historic rating of 4 or 5 (see Duensing 2003) under the provision of Chapter 171-36-2 (HRS), designation of the area as a "historic preservation and restoration project." If the current lessee chooses not to re-lease his property, the property will be put up for general auction as described below.
2. Conduct lease negotiations with current nonprofit organizations within the Parks pursuant to Chapter 171-34 and 171-43.1 (HRS).
3. Retain eight (8) cabins for use by DLNR divisions.
4. Auction seven (7) vacant lots.
5. Conduct an auction of remaining cabins or lots based on the following:

Auction to be conducted in three (3) rounds where Kaua'i residents to be given preference as follows: 60 percent of the lots in round one, 30 percent in round two; and 10 percent in round three.

a) If an existing lessee is outbid during the auction, the existing lessee can maintain his property if he matches the winning bid.

b) If a current lessee does not match the highest bid, the successful bidder shall compensate the current lessee the appraised value of the improvements.

6. The value of the leases will be determined by appraisal.

On February 10, 2006, the BLNR took the following actions which amended the September 9, 2005 action by the Board for the disposition of the recreation residence leases at Kōke'e and Waimea Canyon State Parks as follows:

1. The Board approves entering into an auction for disposition of the recreation residence.
2. The Board approves entering into direct negotiations at a nominal rent for the lease of recreation residences to nonprofit organizations holding current leases, in accordance with HRS §171-43, or 171-43.1.
3. The Department will retain approximately nine (9) cabins for State use.".
4. That the Board approves such other terms and conditions as may be prescribed by the Chairperson to best serve the interests of the State.
5. All disposition processes are subject to review and approval of the Department of the Attorney General.

SECTION 4

NATURAL ENVIRONMENT: EXISTING CONDITIONS, POTENTIAL IMPACTS AND PROPOSED MITIGATION MEASURES

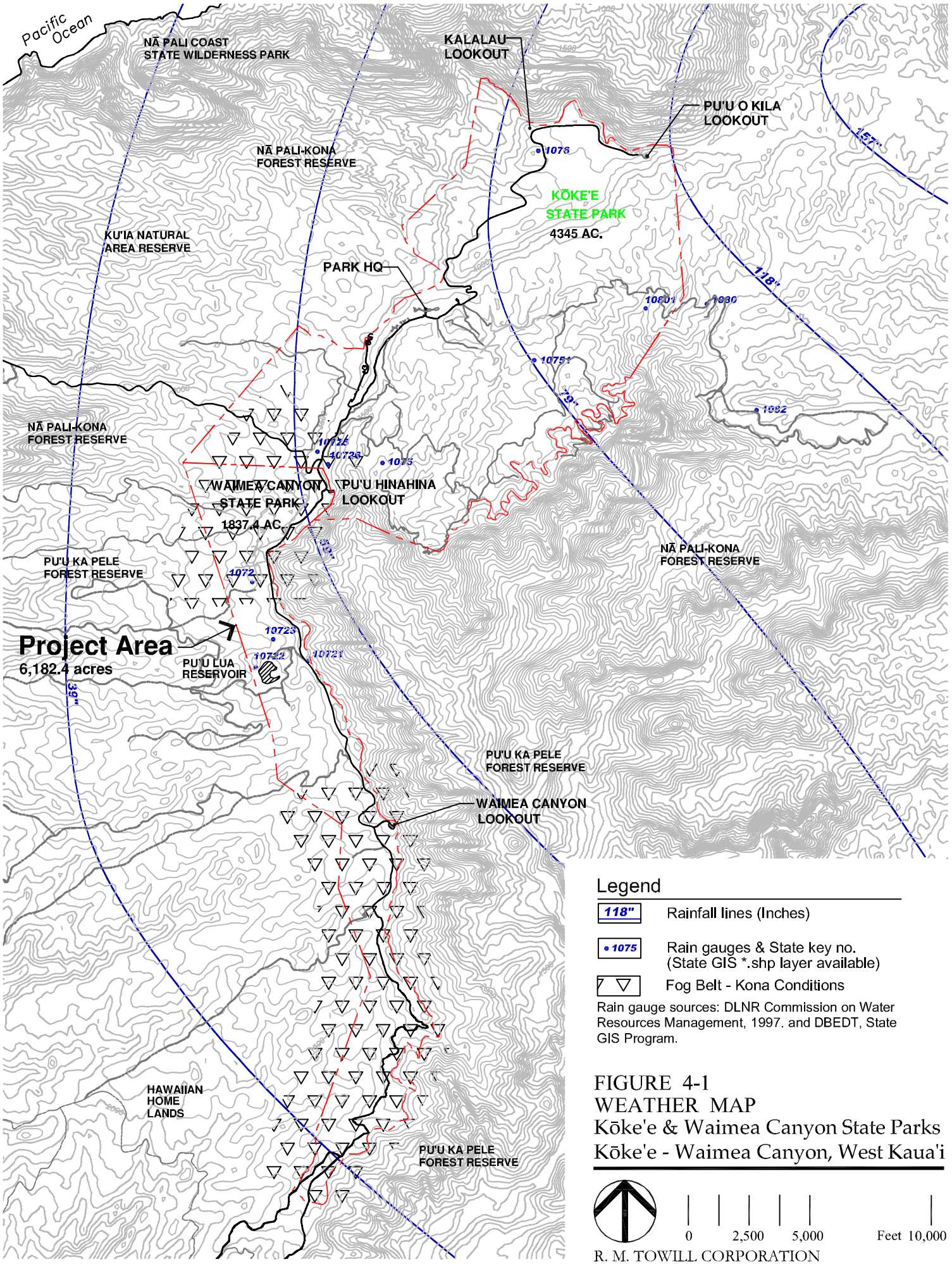
4.1 CLIMATE

The climate in Kōkeʻe and Waimea Canyon State Parks varies significantly with location, elevation, and topography. Climate throughout the Hawaiian Islands is predominantly influenced by ocean-born trade winds, the effects of which are displayed dramatically on Kauaʻi. The steep windward slopes of Mt. Waiʻaleʻale and Wainiha Ridge force the moisture-laden winds upward, where changes in temperature and pressure cause rapid condensation, cloud formation, and heavy rain. This effect produces an annual average rainfall of 433 inches on Mt. Waiʻaleʻale (elevation 5,148 feet), and generated a record high of 666 inches in 1982. (www.soest.hawaii.edu; TNCH, June 1996). See **Figure 4-1. Weather Map.**

Moisture is quickly lost as the wind and clouds progress over the mountain top. On the leeward slope, reduced moisture levels and changes in temperature and pressure diminish cloud formation and result in a rapid decline in rainfall levels. In the approximately 8 miles between Mt. Waiʻaleʻale and Kanaloahuluhulu Meadow in Kōkeʻe State Park, the rainfall contour drops from 433 inches to 69 inches. Within the park boundaries, average rainfall varies from 118 inches at Puʻu o Kila Lookout (elevation 4,160 feet), to 59 inches at the Kōkeʻe State Park entrance (elevation 3,600 feet), to 39 inches at the entrance to Waimea Canyon State Park (elevation 2,100 feet).

Moisture gradients within the two parks are some of the most extreme in the world. Within a single scenic vista can be seen montane and wet forest covered ridges as well as dry, desert-like canyons and cliffs. Mt. Waiʻaleʻale and the wet interior of the Alakaʻi Plateau are visible from Kōkeʻe and Waimea Canyon State Parks, as are the dry lowlands of Waimea Canyon.

Temperatures in Kōkeʻe and Waimea Canyon State Parks also vary greatly. The cool upland regions of Kōkeʻe regularly measure in the 60°s F (degrees Fahrenheit). The average recorded temperature in Kōkeʻe during the hottest month (August) is 67° F; during the coldest month (February) it averages 51° F. The highest temperature recorded at Kanaloahuluhulu Meadow is 90° F, and the lowest 29° F (DBEDT, 2001). **See Table 4-1**. Frost formation is common during the cooler months in the upper elevations of the park.



Legend

- 118" — Rainfall lines (Inches)
- • 1075 — Rain gauges & State key no. (State GIS *.shp layer available)
- Fog Belt - Kona Conditions

Rain gauge sources: DLNR Commission on Water Resources Management, 1997. and DBEDT, State GIS Program.

FIGURE 4-1
WEATHER MAP
Kōke'e & Waimea Canyon State Parks
Kōke'e - Waimea Canyon, West Kaua'i

0 2,500 5,000 Feet 10,000

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TABLE 4-1
TEMPERATURE AND RAINFALL AVERAGES
KANALOAHULUHULU, STATION 1075

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Min °F	47.3	46.9	48.7	50.4	51.3	53.2	55.0	55.4	53.4	52.9	51.3	48.6	51.3
Avg. °F	55.0	55.4	56.8	58.1	59.9	61.9	63.1	63.9	63.0	61.5	59.0	56.1	59.5
Max °F	62.8	63.7	64.9	65.8	68.4	70.7	71.2	72.3	72.1	70.3	66.7	63.7	67.6
Rainfall Avg (inches)	12.1	8.8	7.5	5.3	3.2	1.8	2.4	2.7	2.4	4.6	7.4	10.4	68.5

Source: Temperatures derived from NOAA National Climactic Data Center (NCDC) *TD 9641 Clim 81, 1961-1990 Normals*. 30 years between 1961 and 1990. Rainfall data derived from NCDC Cooperative Stations. 46 complete years between 1931 and 1995.

Temperatures in Waimea Canyon are warmer than the uplands and canyon rim. In the lower reaches of the Canyon, temperatures average in the mid-70°s F annually, with average maximum temperatures in the mid-80°s F and average lows in the mid-60°s F (DBEDT, 2001). Temperatures within the canyon exhibit a great deal of local variation, affected by floor elevation, canyon-channeled winds, shading, heat absorption in the rocks, and other factors.

During Kona wind conditions, fog belts commonly develop in two localized regions of the park:

- Starting at the 5-mile marker on Kōkeʻe Road and extending just past Waimea Canyon Lookout.
- Starting approximately at the 12.5-mile marker and extending to the intersection of Kōkeʻe Road and Halemanu Road.

The fog typically appears in the early morning hours, lifts by mid-morning, then reappears before noon, frequently lasting through the afternoon. Approximately 30-40 instances of Kona weather fog conditions occur each year.

Solar insolation gradients indicate the amount of solar energy that reaches the earth's surface in a given area. Solar gradients are necessary in planning for the parkland use of solar-powered devices, such as emergency phones, lighting, and water heating. Some of these technologies

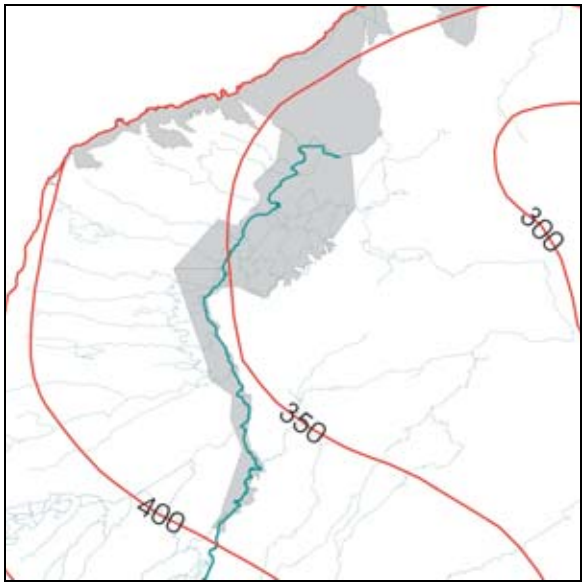
have proven very effective in remote areas where other energy sources are difficult to construct and maintain.

To attain best results, most devices for harvesting sunlight require solar insolation of greater than 130 calories/square centimeter/day (ca/sqcm/d). Solar insolation levels in Kōkeʻe and Waimea Canyon State Parks range between 300 and 400 ca/sqcm/d (between 8.5 and 11.5 kilowatts per square meter per hour). All of the areas within Kōkeʻe and Waimea Canyon State Parks receive sufficient solar energy to facilitate the use of solar-powered devices, as illustrated in **Figure 4-2.**

Potential Impacts and Proposed Mitigation

No short- or long-term impacts are anticipated and therefore, no mitigation is proposed.

FIGURE 4-2
SOLAR INSOLATION GRADIENTS IN
KŌKEʻE AND WAIMEA CANYON STATE PARKS



(CALORIES / SQUARE CENTIMETER / DAY)

Source: DBEDT, State GIS Program, from State Department of Planning and Economic Development, Energy Division "Sunshine Maps," 1985.

4.2 TOPOGRAPHY, PHYSIOGRAPHY, GEOGRAPHY, AND SOILS

4.2.1 Physiography

Waimea Canyon State Park is linear in shape, occupying a narrow ridge along the western rim of Waimea Canyon beginning at the 2,100-foot elevation, approximately 6.3 miles from the Kaumualiʻi Highway. It continues up-slope for approximately 7.4 miles past the Puʻu ka Pele cabin lots and abuts the Kōkeʻe State Park near the 3,600-foot elevation.

Waimea Canyon State Park lies within the Puʻu ka Pele Dissected Uplands physiographic division. This division is characterized by its irregular and rolling topography and numerous erosional gullies which drain primarily in a westerly direction. The eastern edge of the park is defined by the Waimea Cliff and Valley division, a highly-eroded land form that drops abruptly and dramatically to the canyon floor, forming the western wall of Waimea Canyon.

The most distinctive land form within Waimea Canyon State Park is Puʻu ka Pele. It is a sharp pinnacle perched along the upper edge of the canyon, though modest in stature when compared to the breadth of the canyon.

The adjoining Kōkeʻe State Park begins at an elevation of approximately 3,600 feet and continues for 4 miles in a mauka direction to the edge of Nā Pali overlooking the Kalalau Valley, at an elevation of approximately 4,200 feet. Most of Kōkeʻe State Park lies within the Alakaʻi High Plateau physiographic division. In Kōkeʻe State Park, this division is characterized by a diverse network of small ridges and streams which flow in a southerly direction towards Waimea Canyon. See **Figure 4-3. Physiographic Types,** and **Figure 4-4. Major Land Forms.**

General Physiographic Types within the Project Area include:

- Cliff and Valley – Area showing little evidence of former slope; with high, nearly vertical cliffs and amphitheater-headed valleys; some valley floors may be gently sloping.
- Dissected Uplands – Slopes cut by numerous major valleys; master drainage patterns established.
- High Plateau – High-elevation remnants of a large area of low relief formed by ponded lavas which filled the main caldera of the Kauaʻi volcano.
- Plain – Large area of low relief.

Distinct topographic and physiographic characteristics in Kōkeʻe State Park occur along two of its borders. The first occurs along Nā Pali, where the park overlooks Kalalau Valley. Steep cliffs dramatically separate the Alakaʻi High Plateau from the Nā Pali Coast and valleys.

The second physiographic feature occurs along the southern edge of Kōkeʻe State Park where the Waimea Canyon abuts Kumuwela Ridge, marking the separation between the Alakaʻi High Plateau and the Waimea Cliff and Valley formation. The Puʻu Hinahina Lookout and the Puʻu Hinahina Observation Point provide excellent opportunities to view this feature.

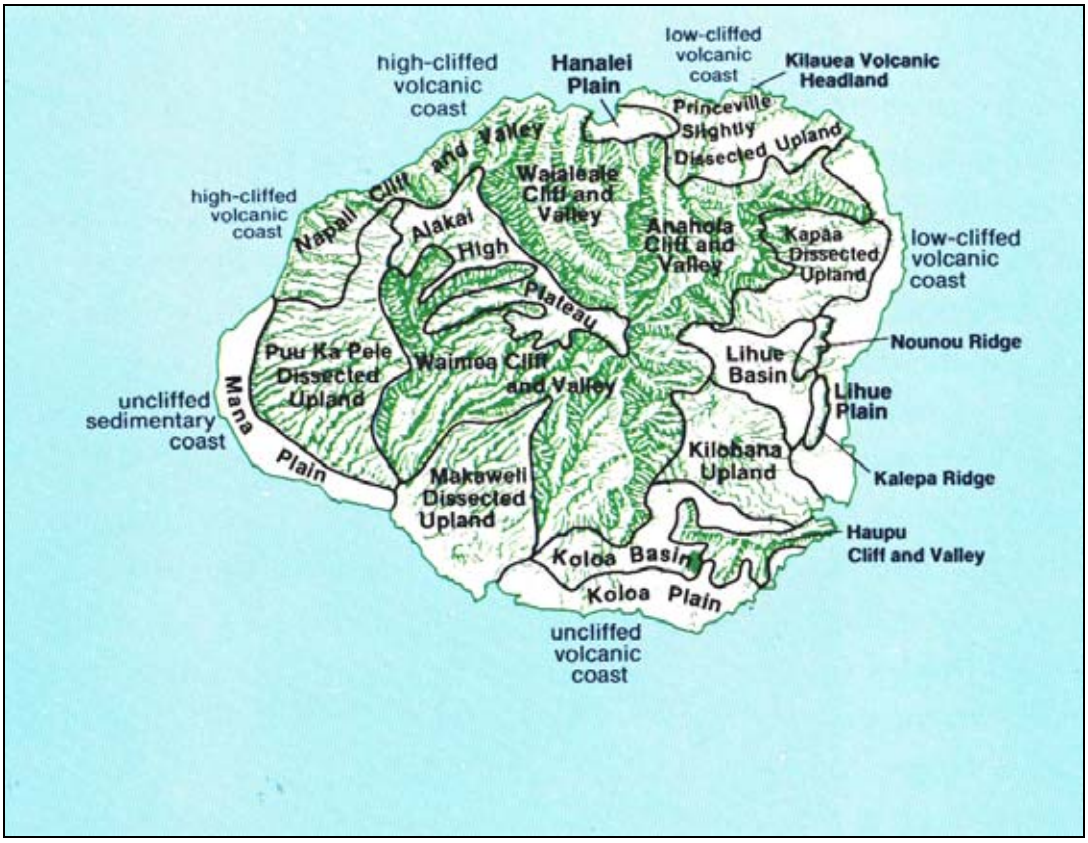


FIGURE 4-3. PHYSIOGRAPHIC TYPES

Source: Atlas of Hawaiʻi, 2nd Edition, University of Hawaiʻi Press, 1983; and, MacDonald, Davis, and Cox, 1960.

Less dramatic, but important land forms within Kōkeʻe State Park include Kaunuohua and Kumuwela Ridges. These ridges frame the major use areas of the park on the west and east sides, respectively, and mark key geologic stages in the formation of the island. The Kaunuohua Ridge is a moderately-pronounced land form, on which are developed several utility installations, including a NASA tracking station, Pacific Missile Range tracking station, and a DLNR baseyard. Kumuwela Ridge is parallel to the Kaunuohua Ridge but of minor visual

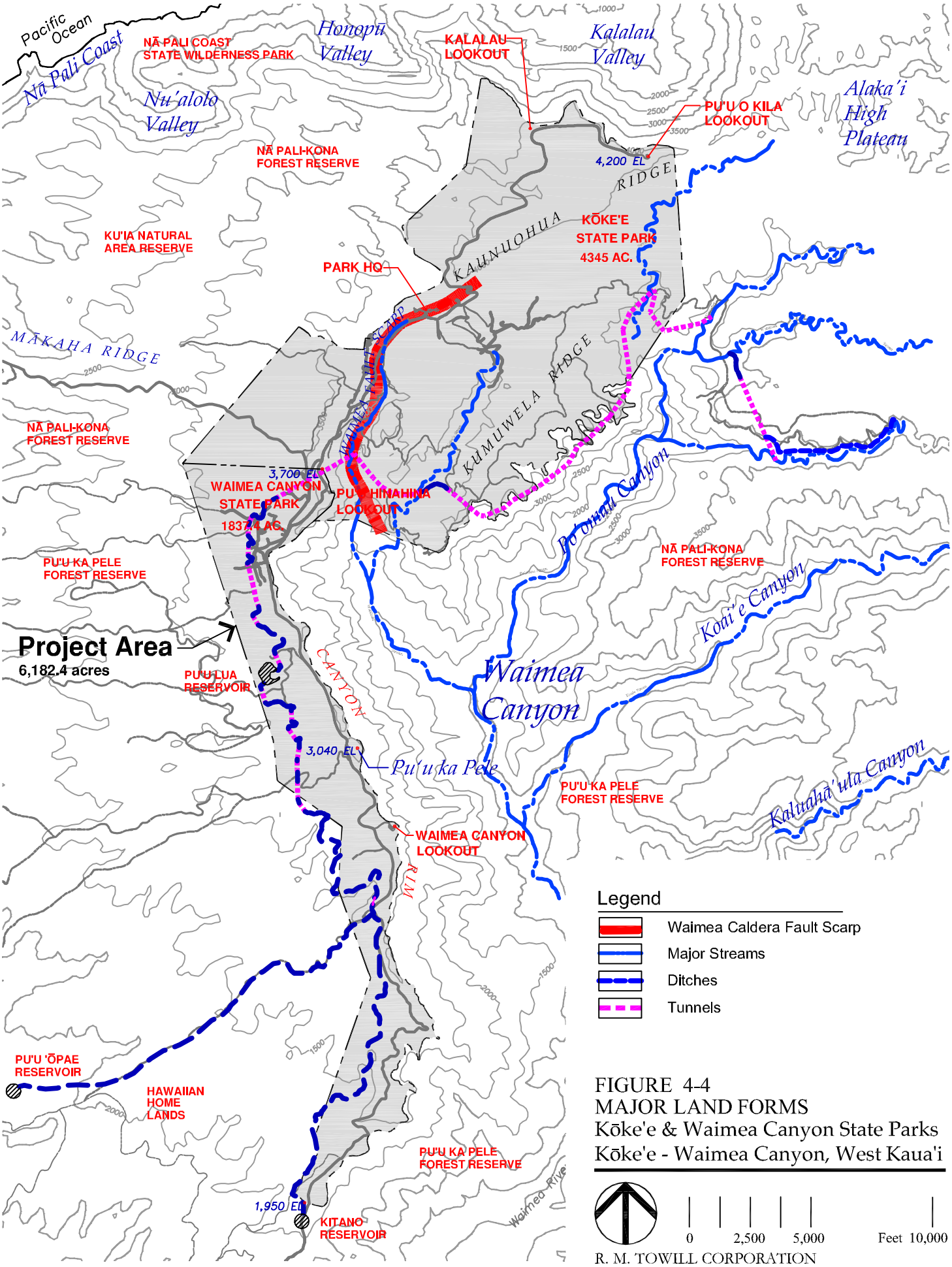


FIGURE 4-4
MAJOR LAND FORMS
Kōke'e & Waimea Canyon State Parks
Kōke'e - Waimea Canyon, West Kaua'i

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significance. The area between these two ridges contains the Kōkeʻe and Halemanu cabin lots, as well as the main park facilities and most of the infrastructure improvements within the park (Chu, May 1998).

4.2.2 Geology

Kauaʻi is one of the oldest of the Hawaiian Islands, and one of the most complicated geologically. It developed as a huge, circular shield volcano, gradually rising from the sea floor through the accumulation of thousands of thin basaltic lava flows. The eruptions giving rise to Kauaʻi are estimated to have begun late in the Tertiary period and finished before the end of the Pliocene (2 to 4 million years ago) (MacDonald, 1960; Logan 1966).

Lavas that compose the island are divided into two main groups:

- Waimea Canyon Basalts – older basalts that formed the original shield volcano and caldera infill. Includes Nāpali, Olokele, Makaweli, and Hāʻupu basalts.
- Koloa Lavas – later stage lavas that in-filled the eastern and southeastern sides of the island following a period of volcanic quiescence and erosion activity. Includes Koloa lavas and Palikea Breccia.

The summit of the original shield volcano formed a single, central dome, referred to as the Waimea Dome, from which radiated numerous, deep, valleys carved by erosional forces. These original drainages are still evident in the valleys of Wainiha, Lumahai, Hanalei towards the northeast; Kalalau, Honopū, Nuʻalolo, Mākaha towards the northwest; Waimea, Makaweli, Olokele, and Hanapēpē on the south.

The Waimea Dome, composed of Nāpali basalts, eventually collapsed to form the largest caldera found in the Hawaiian Islands (approximately 12 miles wide). The west wall of Waimea Canyon forms the Waimea Scarp, marking one edge of this ancient caldera.

Subsequent Waimea basalt flows filled in the major caldera-collapse with thick layers of erosion-resistant basalt rock to create the Olokele formation under the present-day broad summit regions of Mt. Waiʻaleʻale, the Alakaʻi Swamp, and portions of Kōkeʻe State Park. The Waimea Scarp is buried in these flows through the Kanaloahuluhulu Meadow area. The collapsed side of the fault lies to the east of the meadow and includes the area occupied by the Kōkeʻe and Halemanu cabin lots.

A later flow of Waimea basalt also partly in-filled the Makaweli Depression within the collapsed caldera. By redirecting the drainage from Mt. Waiʻaleʻale and the Alakaʻi, the Makaweli Depression was responsible for the erosion of Waimea Canyon (MacDonald, Abbott & Peterson, 1983; Reiners, Nelson, & Izuka, 1998).

Recent research (Blay & Siemers, 1997) has advanced an alternative theory to explain the geological formation of Kauaʻi and Niʻihau:

- Kauaʻi was formed by two, separate shield volcanoes, not one dome.
- Kauaʻi and Niʻihau were once a single island.
- The Nā Pali coast was largely formed by the collapse of a mile-wide section of the island into the ocean.

Kōkeʻe and Waimea Canyon State Parks are uniquely situated to tell the geologic story of the formation of Kauaʻi. The Parks contain examples of all of the key geologic stages of the island's formation:

- Kalalau Valley and the western slopes are remnants of the original Waimea Dome and first-stage erosional period.
- The Waimea Scarp, Alakaʻi Swamp and Kanaloahuluhulu tell the story of the dome's collapse and subsequent in-fill.
- The eroded walls of Waimea Canyon reveal the layers of geologic history, from the earliest Nāpali basalt flows, to the post-collapse infill, to the last volcanic period of the Koloa lavas. Drainage from Mt. Wai'ale'ale and the Alakaʻi display daily the erosional forces that continue to shape the island.

These geologic stories and opportunities to interpret them are visible from the lookouts at Puʻu o Kila, Kalalau, Puʻu Hinahina, and Waimea Canyon.

4.2.3 Soils

Information on soils comes primarily from the Soil Survey of Kauaʻi, conducted by the U.S. Department of Agriculture Natural Resources Conservation Service, and the University of Hawaiʻi, Agricultural Experiment Station (1972).

A. Soil Associations

Three general soil associations occur within the Kōkeʻe and Waimea Canyon State Parks, as shown in **Figure 4-5**. These include:

Rough Broken Land/Mahana /Kōkeʻe Association: This soil association is characterized by shallow to deep, very steep, rough broken land and deep, moderately sloping to very steep, well-drained soils that have a medium-textured to fine-textured subsoil.

Wai'ale'ale/Alakaʻi Association: This soil association is characterized by moderately deep, very steep, somewhat poorly-drained soils over moderately fine textured subsoil; and level to

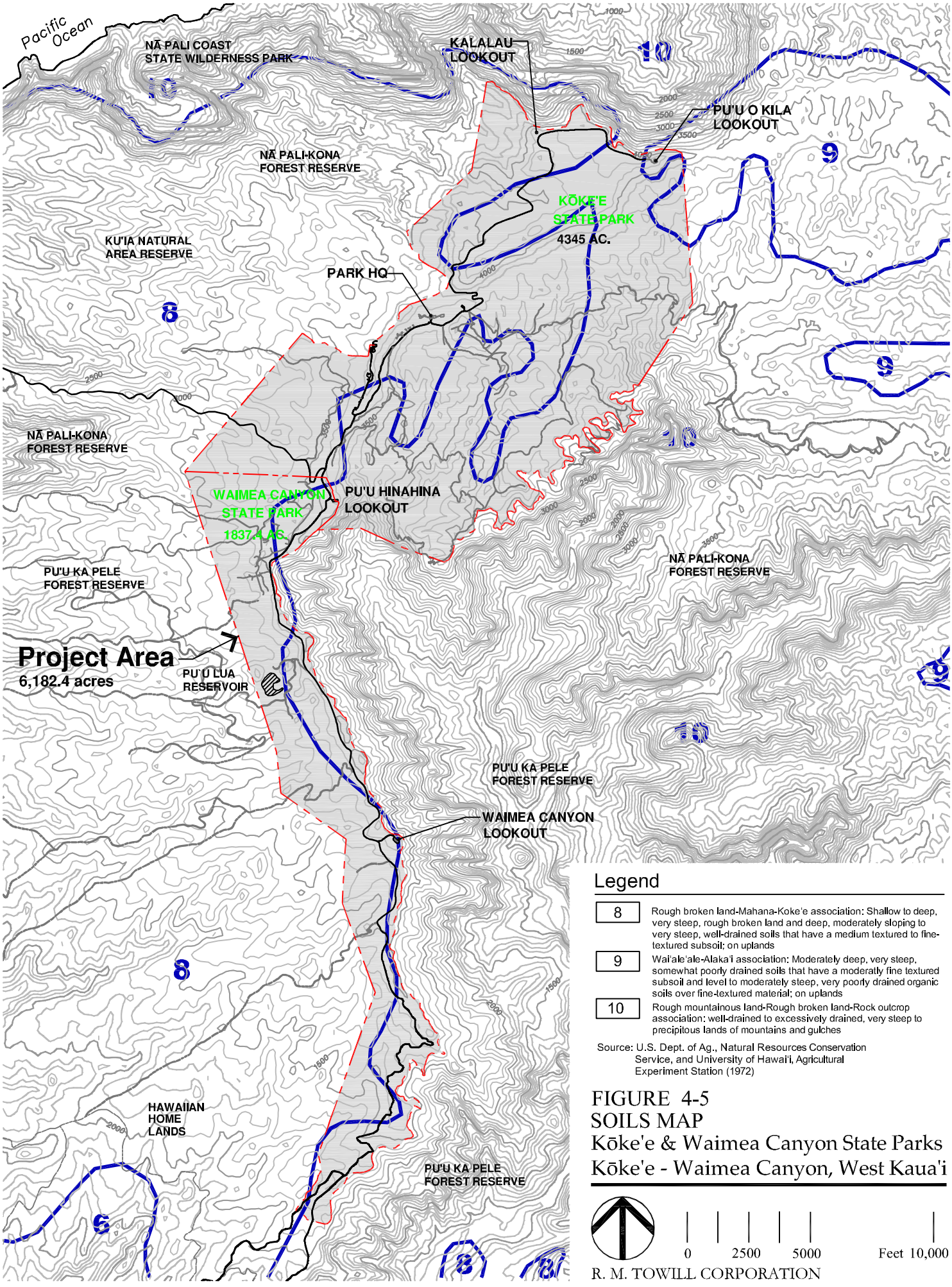

FIGURE 4-5
SOILS MAP
Kōke'e & Waimea Canyon State Parks
Kōke'e - Waimea Canyon, West Kaua'i

moderately steep, very poorly-drained organic soils over fine-textured material.

Rough Mountainous Land/Rough Broken Land/Rock Outcrop Association: This soil association is characterized by well-drained to excessively drained, very steep to precipitous lands on mountains and gulches.

B. Soil Types

A complex landscape of soil types occurs within the Kōkeʻe and Waimea Canyon area, with each constituent providing evidence of Kauaʻi's volcanic origin and the natural forces that ultimately shaped the unique terrain. Dominant soil types include the following.

Kōkeʻe Silty Clay Loam (KSKE, KSKF)

This is the predominant soil type within Kōkeʻe State Park. It is present from Kaunuohua Ridge to Kumuwela Ridge, from Kahuamaʻa Flat to Puʻu Hinahina, and underlies Kanaloahuluhulu Meadow. This soil type is composed of material weathered from igneous rock mixed with volcanic ash. It developed through geologic erosion as infill in the crenulated ridge and valley terrain of the collapsed Waimea Dome.

The soil type is typically found, as at Kōkeʻe State Park, within elevation ranges of 3,400 to 4,200 feet in areas receiving 60 to 70 inches of annual rainfall. It is characterized by well-drained, strongly acidic clay loam and silt loam soils on gently rising (0 to 35 percent) to very steep (35 to 70 percent) slopes. The subsoil is typically silty clay loam and silty clay underlain by soft weathered rock. Permeability of these soils is moderately rapid, runoff is medium to rapid, and the erosion hazard is slight to severe depending on slope. Kōkeʻe soils support water supply, woodland growth, and wildlife habitat, with natural vegetation typical of montane forest types (ʻōhiʻa, koa, pūkiawe).

Kunuweia Very Gravelly Clay Loam

This soil type is geographically associated with Kōkeʻe Soils and are likewise formed of material weathered from basic igneous rock. Where Kōkeʻe Soils typically represent valley infill material, Kunuweia soil types are identified on ridge tops in nearly level to strongly-sloping conditions. They are typically found at elevations ranging from 3,500 to 4,000 feet in areas with an annual rainfall of 70 to 150 inches.

Kunuweia soils are characterized as well-drained, strongly acidic soils consisting of very gravelly clay loam containing fragments of ironstone. They are underlain by soft, weathered rock. Permeability is moderately rapid, runoff is slow and the erosion hazard is slight. Like Kōkeʻe soils, Kunuweia soils are identified with water bearing properties, and woodland growth.

Oli Silt Loam

Oli soils typically occur on the side of gulches. In Kōkeʻe and Waimea Canyon State Parks, they are found along the upper rim of Waimea Canyon from the area of Mōhihi and Kumuwela Ridge down approximately to mile marker 10. Oli soils are also present along the edges of the ridges that slope westward from the Waimea Scarp, including the entire Puʻu Lua Reservoir area. This soil type is formed from volcanic ash deposited over igneous rock. It is typically found at elevations from 1,000 to 2,250 feet in areas with annual rainfall of 30 to 40 inches.

Oli soils are characterized as well-drained, strongly acidic, deep silt loam and loam underlain by slightly-weathered hard rock. In Kōkeʻe, Oli soils typically occur on steep slopes (30 to 70 percent slope) punctuated by rock outcrops. Permeability is moderately rapid, runoff is very rapid, and the erosion hazard is very severe.

Paʻaiki Loam

Paʻaiki soils are primarily found within Waimea Canyon State Park, alternating with Oli soils along the westward sloping crest of the Waimea Scarp. Paʻaiki soils underlie the Puʻu ka Pele cabin lots and major portions of the mesic forests that skirt the canyon rim down to Waimea Canyon Lookout.

Paʻaiki soils are formed from material weathered from igneous rock, volcanic ash, and ejected magma, and are geographically associated with Kōkeʻe and Oli soils. They are characterized as well-drained loam and silty clay-loam over clay subsoil, underlain by hard saprolite (weathered remains of intrusive igneous rock). Permeability in this soil is moderately rapid. Runoff is slow to rapid and the erosion hazard is slight to severe depending on the slope, which can be as steep as 70 percent.

Rock Outcrop and Rough Broken Land

Rock Outcrop refers to areas of predominantly exposed bedrock formed of basalt and andesite. It is found in conditions from gently sloping to precipitous and is the primary soil type identified within Waimea Canyon.

Rough Broken Land is characterized by very steep land broken by numerous, intermittent gullies located on steeply sloping (40 to 70 percent) mountainsides and in gulches. It is identified in Waimea Canyon State Park around the Kukui Trailhead area and other localized areas along the canyon rim. The soil type is variable, but generally not stony, although small areas of rock outcrop are common. Runoff is rapid and geologic erosion is active with associated colluvium and alluvium along gulch bottoms.

Soil characteristics are one of the keys to understanding fundamental environmental processes

in the park region. They are of particular importance to water quality and water development issues.

The strong acidity of the volcanic soils is imparted to ground water sources and subsequently contributes to the deterioration of water lines and degradation of water supplies by dissolving heavy metals from the pipes.

Ground water quality is affected by soil permeability and other conditions, the underlying geology, and the location of potential pollutant sources (e.g., cesspools, leach fields, and industrial runoff).

Where soil conditions or terrain are unfavorable for proposed park land uses, planning objectives must be balanced against the costs of special design mitigation, soil reclamation, maintenance, and limitations on use.

Slope

In addition to soil type, slope percentage must be considered when defining an area for developing recreation or sanitation facilities. In Kōkeʻe and Waimea Canyon State Parks, slopes from 0 to 35 percent and from 35 to 70 percent occur, the former creating a condition for medium runoff and slight to moderate erosion hazard; the latter creating a condition for rapid runoff and severe erosion hazard. Most of the areas with developed facilities, including the Kōkeʻe Lodge, CCC Camp, recreation residences, and lookouts, fall into the 0 to 35 percent slope range.

Potential Impacts and Proposed Mitigation

Because Kōkeʻe and Waimea Canyon State Parks are located in areas subject to soil erosion, care must be taken during construction to mitigate runoff from construction sites. Generally, exposed soils should be re-vegetated as soon as practicable to prevent soil loss. Another method to prevent soil loss is to minimize the area that is opened at any given time. Further, the best management practices and good housekeeping at the work site should be observed. Long-term impacts are not anticipated.

4.3 SURFACE AND GROUND WATER

4.3.1 Surface Water Resources

Surface water run-off from Nā Pali-Kona Forest Reserve, Alakaʻi Wilderness Preserve and Kōkeʻe State Park are the principal contributors to the Waimea River watershed. There are three primary streams that originate from the Kōkeʻe State Park area. They include Halemanu, Kōkeʻe and Kauaikanānā Streams. All three streams flow into the Waimea Canyon. Halemanu and

Kōkeʻe Streams merge to become the Waiahulu Stream, which in turn joins with other streams to form the Waimea River. See **Figure 4-6.**

The Halemanu Stream flows without interruption from Halemanu Valley into Waimea Canyon. The Kōkeʻe Stream is fed by four tributary streams: Waineke, Noe, ʻElekeniiki and ʻElekeninui which originate near the Kaunuohua Ridge.

Flows from the Kauaikanānā Stream, located towards the eastern edge of Kōkeʻe State Park, are partially dammed and diverted into an old irrigation ditch system that runs together with other streams originating outside the park. The ditch system consists of concrete channels, open earth ditches, tunnels, underground pipes and reservoirs. The system transports water to the Kekaha Agricultural Park, and to Mānā Plain, where it is used to irrigate sugar cane fields. Diversion of water from the Kauaikanānā and Kōkeʻe Streams poses a potential environmental problem to the overall Waimea River watershed by reducing aquifer recharge in those areas and reducing flows through dependent stream ecosystems.

Surface water resources in Waimea Canyon State Park are limited to the Kōkeʻe irrigation ditch system and Puʻu Lua Reservoir. The ditch system leaves the park near the southern entrance and connects with Kitano Reservoir, before it is used to irrigate the sugar and other agricultural crops. Seasonal stream flows also occur in the valley drainages on the westward-facing slope during incidents of heavy rain, but these flows are intermittent and do not contribute to the Waimea River watershed.

Spring sources occur throughout the Parks, with flows responding to rainfall levels. The Kōkeʻe Air Force Station (AFS) has developed one such spring as a potable water source. The AFS water system is shared with the comfort station facility at Kalalau Lookout. Other small and privately-operated water sources utilizing spring water are located in the Halemanu lease lot area.

Administering the water system to the Kōkeʻe community is the responsibility of the DLNR, DSP. DSP operates, in essence, a mini "department of water" within Kōkeʻe and Waimea Canyon State Parks. This water management feature is unique to Hawaiʻi's State parks. A licensed operator is required to monitor filtration systems daily if surface water is used as the source of potable drinking water. This position is not required if potable-quality ground water can be developed as a drinking source. DLNR efforts to locate additional well sources are ongoing.

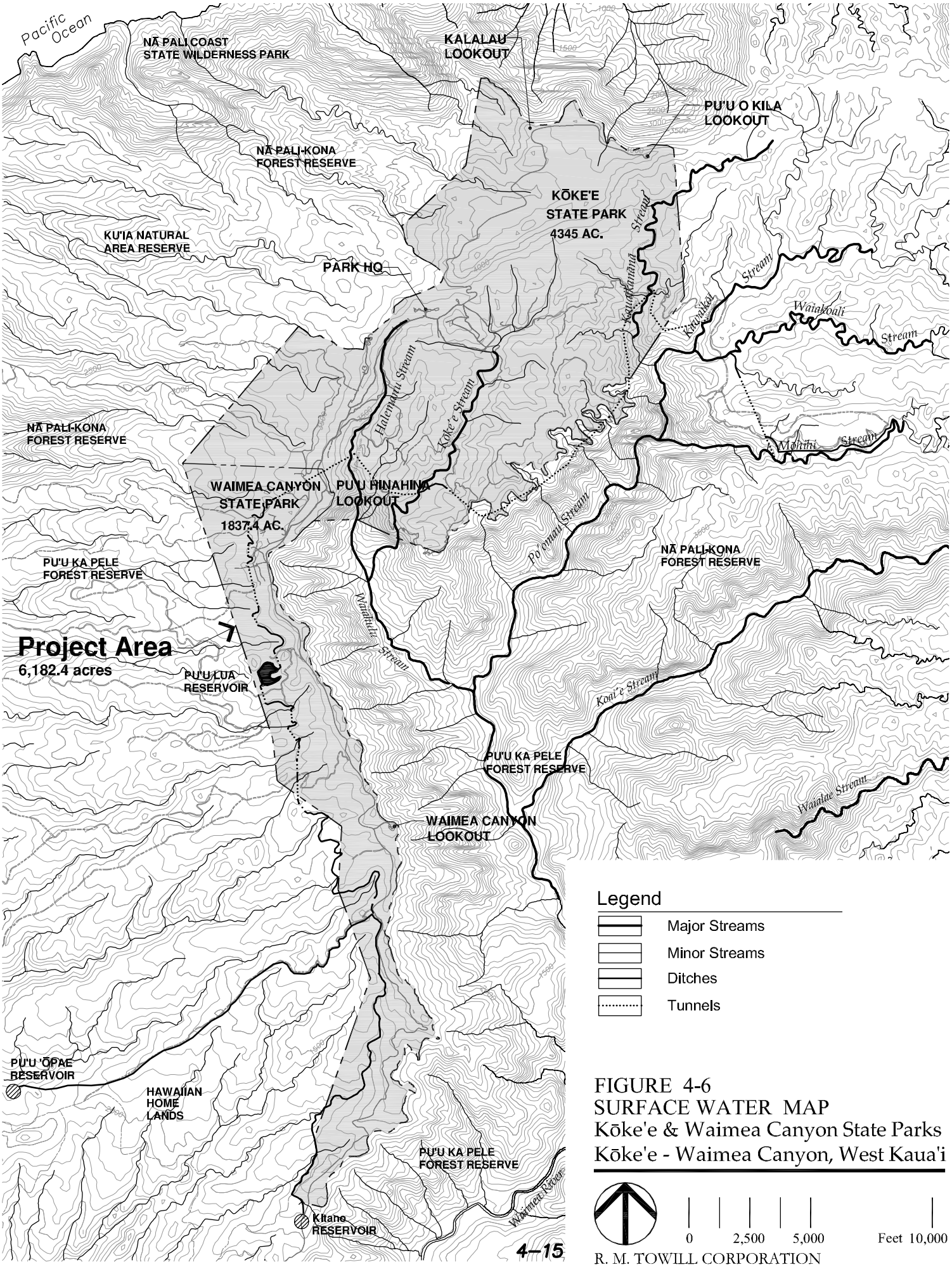

FIGURE 4-6
SURFACE WATER MAP
Kōke'e & Waimea Canyon State Parks
Kōke'e - Waimea Canyon, West Kaua'i

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4.3.2 Groundwater Resources

Kōkeʻe and Waimea Canyon State Parks are uniquely situated to tell the geologic story of the formation of Kauaʻi. The parks contain examples of all of the key geologic stages of the island's formation:

- Kalalau Valley and the western slopes are remnants of the original Waimea dome and first stage erosional period.
- The Waimea Scarp, Alakaʻi Swamp and Kanaloahululu tell the story of the dome's collapse and subsequent in-fill.
- The eroded walls of Waimea Canyon reveal the layers of geologic history, from the earliest Nāpali basalt flows, to the post-collapse in-fill, to the last volcanic period of the Koloa lavas. Drainage from Mt. Waiʻaleʻale and the Alakaʻi display daily the erosional forces that continue to shape the island.

These geologic stories and opportunities to interpret them are visible from the lookouts at Puʻu o Kila, Kalalau, Puʻu Hinahina, and Waimea Canyon.

Aquifer Systems

Aquifers in Hawaiʻi have been identified and classified according to location, geology, and potential for development (Mink & Lau, 1992). Three different aquifer systems are identified underlying the two parks (see **Figure 4-7**).

Kōkeʻe State Park lies within two different aquifer systems:

- Hanalei aquifer sector/Nāpali System
- Waimea aquifer sector/Waimea System

Waimea Canyon State Park lies within three different aquifer systems:

- Hanalei aquifer sector/Nāpali System
- Waimea aquifer sector/Waimea System
- Waimea aquifer sector/Kekaha System

All three aquifer systems are characterized as:

- High-level - fresh water not in contact with sea water.
- Unconfined - the water surface is in the upper surface of a saturated aquifer.
- Dike-contained - aquifers are confined in basaltic dike compartments.

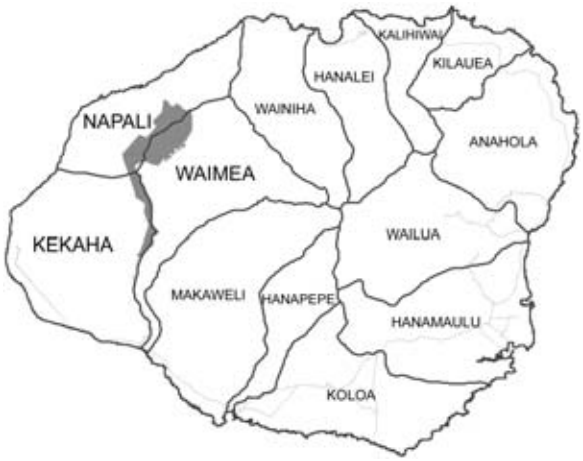

FIGURE 4-7. AQUIFER SYSTEMS OF KAUA'I

Source: (Mink & Lau, 1992)

All three aquifer systems have also been assigned a groundwater status code 21111. The five-digit code corresponds to five evaluation criteria: development status, useful purpose, salinity, uniqueness, and vulnerability to contamination. The code 21111 indicates that the groundwater has potential for development, is a source of drinking water, has a low salinity content (is fresh), is irreplaceable, and has high vulnerability to contamination (Mink & Lau, 1992).

Nāpali System - Aquifer Code 20204212

The numerous high-level dike compartments of the Nāpali formations are drained by springs and short, steep streams. Upland areas are cut by a number of short, stream valleys. High-level groundwater is impounded by basalt dikes which supply springs along the valley walls. In addition, perched water may exist in conditions where downward flow is restricted by less permeable strata. Although numerous dikes exist to capture groundwater, basal groundwater is not present in the high-level aquifer system. Groundwater flow is believed to follow the surface topography (CH2M Hill, 1996).

Waimea System - Aquifer Code 20302212

The Waimea aquifer system consists solely of the Waimea River drainage above the confluence of the Makaweli River. In the narrow, lower valley, groundwater occurs as a basal lens in sediments. Most groundwater, however, fills high-level dike aquifers further inland. Groundwater discharges into springs, streams and the river. Waimea Canyon occupies the middle portion of the aquifer. Kōke'e State Park lies at the upper limit.

Kekaha System - Aquifer Code 20301212

The Kekaha system is defined on its eastern boundary by the west wall of Waimea Canyon, which forms the drainage divide between the Kekaha and Waimea systems. Within Waimea Canyon State Park, high-level dike aquifers occur in Nāpali lavas that are part of the southwest flank of the original Waimea Dome. At lower elevations, the groundwater occurs as a basal lens.

4.3.3 Water Quality

The potable water system serving most of the two parks is developed from within the caldera-fill Olokele formation. Some cabins in Halemanu utilize private wells and/or spring water, which also draw from within the caldera. A potential health concern is created by the use of cesspools which drain into the caldera formation. An understanding of the geology underlying the park is, thus, important for planning wastewater systems and water source development.

The existing potable water system wells are located in a basin along the Mōhihi Road in the vicinity of ʻElekeninui Stream. The wells are at a depth of approximately 39 +/- feet below ground level. The existing aquifer is a perched system. Water quality monitoring includes:

- Coliform monitoring program.
- Lead and copper monitoring program.
- Chemical monitoring by the Safe Drinking Water Branch (DOH).
- Phase II and Phase V monitoring program.
- Water quality parameters sampling.

The quality of the water from the wells is much better than the surface catchment system previously used and currently meets DOH standards based on monthly data. Further, traces of lead have been detected in the system and an optional corrosion control treatment plan was developed and implemented to correct this problem.

Potential Impacts and Proposed Mitigation

Surface and groundwater resources of the Parks are an essential element of the area. The streams provide habitat for the native flora and fauna as well as providing the nourishment the plants in the area require to survive. Groundwater resources provide drinking water for the park users. In order to protect the surface water resource from being lost to contamination and degradation, the following actions are proposed:

- Cesspools should not be located along streams.

- Cesspools should not be allowed within 1,000 feet of an existing drinking water well.
- Grading should not occur along stream, or if required, berms and silt fences should be installed to prevent runoff from entering the stream.

The potable water system should be protected and monitored by a private contractor as follows:

- Coliform monitoring program.
- Lead and copper monitoring program.
- Chemical monitoring by the Safe Drinking Water Branch (DOH).
- Cesspools should not be allowed within 1,000 feet of an existing well.
- Phase II and Phase V monitoring program.
- Water quality parameter sampling program.

4.4 NATURAL HAZARDS

4.4.1 Earthquake

The Uniform Building Code (UBC) provides minimum design criteria to address potential for damages due to seismic disturbances. The UBC scale is rated from Seismic Zone 0 through Zone 4, with 0 the lowest level for potential seismic induced ground movement. Kaua'i has been designated within Seismic Zone 1. Assigning seismic hazard zones to the island is difficult because ground shaking during a strong earthquake may vary within a small area. This variation is due to the nature of the underlying ground and local topographic conditions.

4.4.2 Hurricanes

The Hawaiian Islands are seasonally affected by Pacific hurricanes from the late summer to early winter months. The island of Kaua'i is infrequently hit by severe storm events. Kōke'e and Waimea Canyon State Parks still show signs of damage caused by Hurricane Iniki, which struck the island September 11, 1992. It is difficult to predict these natural occurrences, but it is reasonable to assume that future events will occur. The project site is, however, no more or less vulnerable than the rest of the State to the destructive winds and torrential rains associated with hurricanes. During a significant storm or hurricane event, direct wind pressure, wind driven debris, and flooding all pose potential hazards to the proposed park facilities. These hazards, however, are not unique to the Parks.

4.4.3 Flood Zones

The Federal Emergency Management Agency has not designated any flood zones within Kōkeʻe and Waimea Canyon State Parks. Proposed Master Plan improvements are not expected to exacerbate conditions that would contribute to flooding.

4.4.4 Forest Fires

Forest fires are a constant potential hazard in Kōkeʻe and Waimea Canyon State Parks, especially during the dry summer months. Kōkeʻe and Waimea Canyon State Parks are designated as a Fire Management Co-Response area. Under this designation, primary responsibility for fighting fires within the park boundaries falls to the Kauaʻi Fire Department (KFD). DOFAW will respond to fires within the Parks only at the direct request of the KFD, but retains primary fire-fighting responsibility for Conservation lands outside the Parks, including the forest reserves, natural area reserves, and wilderness preserve.

Water resources for fighting fires are currently inadequate. Fire fighting response relies primarily on the fire engine stationed at the town of Waimea. The fire engine has a water carrying capacity of 750 gallons and pump rate of 1,500 gallons per minute. To provide 30 minutes of fire fighting capacity for the engine, a 45,000-gallon tank is required. Additionally, aside from Puʻu Lua Reservoir, the Parks lack dip tanks for use by helicopters in fighting fires.

Potential Impacts and Proposed Mitigation

Each of the hazards identified, earthquakes, hurricanes, floods, and forest fires, will impact the Parks in different ways. Mitigating actions proposed, however, can only lessen the overall impact by minimizing property damage and the loss of life. Mitigating action proposed include:

- Earthquake - require structures to be built according to current building codes for the appropriate seismic zone.
- Hurricane - require structures to be built according to current building codes for wind loads. Provide adequate warning system for evacuation, if required.
- Floods - require structures to be setback away from streams to prevent flood damage.
- Forest fires - require fire breaks between structures and vegetated areas.
- Utilizing the roads as fuel breaks.
- Minimizing of fuel loading along roadways by removal or chipping of pruned branches or trees cut down.

4.5 PLANTS

Note: Plant names follow *Manual of the Flowering Plants of Hawai'i* (Wagner et al., 1990). Place names follow *Place Names of Hawai'i* (Pukui et al. 1974).

The two parks overlay and are surrounded by large tracts of forest, wilderness, and reserve areas containing some of the most pristine examples of native ecology in the State. Designated forest reserves, preserves, and natural areas within and adjacent to the Parks include:

- Ku'ia Natural Area Reserve
- Hono o Nā Pali Natural Area Reserve
- Alaka'i Wilderness Preserve
- Nā Pali-Kona Forest Reserve
- Pu'u ka Pele Forest Reserve
- Mokihana Game Management Area

Ku'ia Natural Area Reserve occupies 1,636 acres of forest land ranging in elevation from 2,000 to 3,900 feet. The reserve contains one of the best examples of mesic forest remaining in the Hawaiian Islands, as well as excellent examples of dry forest and shrubland environments. Rare elements such as the iliau (*Wilkesia gymnoxiphium* or Kaua'i greensword) are still relatively abundant along the dry ridges of the reserve. The area is federally designated as critical habitat for threatened and endangered plants on Kaua'i. The Reserve is traversed by the Nu'alolo Trail; north of the Reserve is the Awa'awapuhi Trail, and south is Milolii Ridge.

Hono o Nā Pali contains 3,150 acres of mesic and wet forests, and riparian habitats along several perennial streams. The reserve protects numerous rare plants and aquatic animal species and is a possible nesting site for Hawaiian dark-rumped petrel and Newell's shearwater.

The Alaka'i Wilderness Preserve contains approximately 9,939 acres of high-elevation wet forest and bog habitat that is the watershed source for the streams of Waimea Canyon. The preserve is home to several extremely rare native forest birds, including 'Akikiki (*Oreomystis bairdi*) and Puaiohi (*Myadestes palmeri*), the latter's existence owning to an active captive breeding program conducted by the Division of Forestry and Wildlife. The Alaka'i Wilderness is also the last known residence of the Kaua'i 'Ō'ō (*Moho braccatus*), last seen in 1969 and now presumed extinct.

An inventory of the rare natural resources in Kōke'e and Waimea Canyon State Parks was undertaken by The Nature Conservancy of Hawai'i (TNCH) in 1996. TNCH employs a global ranking system to assess the rarity of a particular plant species. The ranking system is based on

the number of wild populations known to exist globally, the condition of the habitat in which they are located, and the presence of threats to their existence. The global ranking system often correlates with federal "threatened and endangered" designations, but does not connote federal protection status.

Based on the global ranking system, TNCH identified 57 rare plants in Kōkeʻe and Waimea Canyon State Parks, all but one of which are endemic to the Hawaiian Islands (TNCH, February 1996). Fifty-four of the rare plants are known from Kōkeʻe State Park, and 6 are known from Waimea Canyon State Park. Thirty-nine of the plants are considered critically imperiled; that is, only 1 to 5 occurrences are known in the wild. The remainder typically has between 6 and 100 recorded occurrences in the wild. Twenty-one of the identified rare plants are federally listed Endangered, and four are federally listed Threatened (November 29, 1999, U. S. Endangered Species Act Listed and Candidate Species List).

4.5.1 Natural Communities

Natural communities are assemblages of plant and animal species that form an ecosystem under typical environmental conditions of temperature, moisture, and other factors. Natural communities are characterized by elevation zone, moisture conditions, and dominant vegetation type.

A. Elevation Zones

Five major elevation zones have been defined for the Hawaiian Islands: coastal, lowland, montane, subalpine, and alpine. Two elevation zones are identified in Kōkeʻe and Waimea Canyon State Parks, as described in **Table 4- 2**.

TABLE 4-2
ELEVATION ZONES OF KŌKE'E AND WAIMEA CANYON STATE PARKS

Zone Name	Elevation	Characteristics
Lowland	100 to 3,000 feet	Warm and mild conditions. Below the cloud zone. Frost-free zone. Includes the hottest and driest ecosystems in leeward settings. The majority of Waimea Canyon lies within this zone.
Montane	3,000 to 6,000 feet	Cloud-forming region, cooler temperatures, infrequent frost. Montane leeward settings such as Kōke'e tend to be very wet due to mountain-induced (orographic) rainfall over montane summits.

B. Moisture Zones

For each elevation zone, three moisture categories are defined. These are based on prevailing soil moisture due to rainfall, cloud or fog interception, soil drainage, groundwater or other substrate characteristics, and exposure to wind and sun. Moisture zones found in Kōke'e and Waimea Canyon State Parks are described in **Table 4-3**.

Table 4-3

MOISTURE ZONES OF KŌKE'E AND WAIMEA CANYON STATE PARKS

Category	Characteristics
Dry	<50 inches annual rain, or prevailing dry soil conditions.
Mesic	50-100 inches of annual rain, or prevailing moist soil conditions.
Wet	>100 inches of annual rain, or prevailing wet soil conditions.

C. Native Natural Communities

The Hawai'i Natural Heritage Program identified four native natural community types and one subtype in Kōke'e and Waimea Canyon State Parks, one of which is considered rare (TNCH, February 1996). Native Natural Community types are summarized in **Table 4-4**. Natural communities identified by TNCH are depicted in **Figures 4-8, 4-9 and 4-10.**

TABLE 4-4
NATIVE NATURAL COMMUNITIES OF KŌKE'E AND WAIMEA CANYON STATE PARKS

Native Natural Community	Global Rank
ʻAʻaliʻi Lowland Dry Shrubland	G3
Koa Lowland Mesic Forest	G3
Koa/ʻŌhiʻa Montane Mesic Forest*	G1
ʻŌhiʻa Montane Wet Forest	G3
ʻŌhia Montane Wet Forest - Subtype ʻŌhia/Uluhe Montane Wet Forest	G3

Key to Heritage Global Ranks:

G1 = Critically Imperiled (1-5 Current Occurrences)

G3 = Restricted Range (21-100 Current Occurrences)

* Rare natural community type, tracked by HINHP.

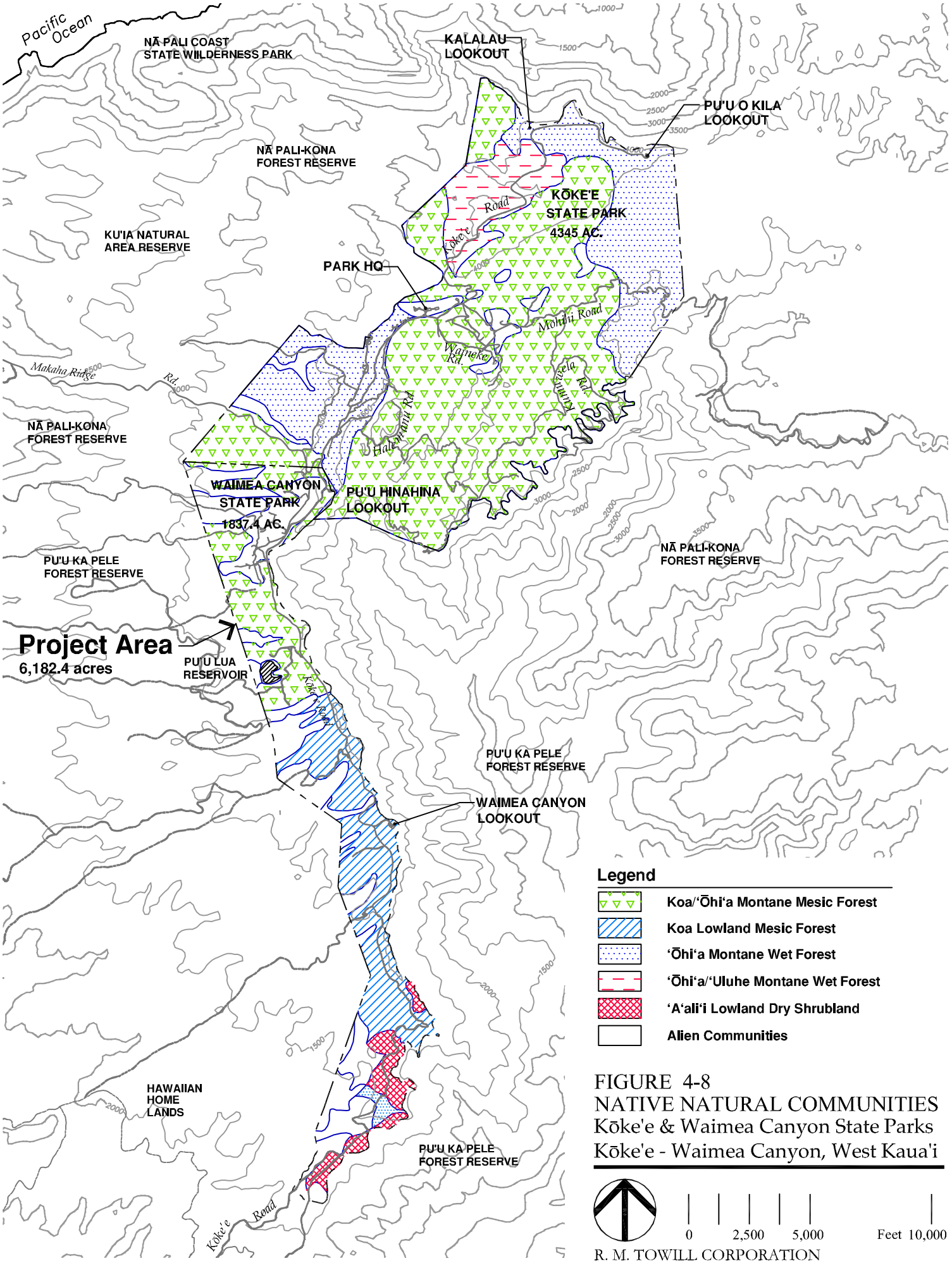

FIGURE 4-8
NATIVE NATURAL COMMUNITIES
Kōke'e & Waimea Canyon State Parks
Kōke'e - Waimea Canyon, West Kaua'i

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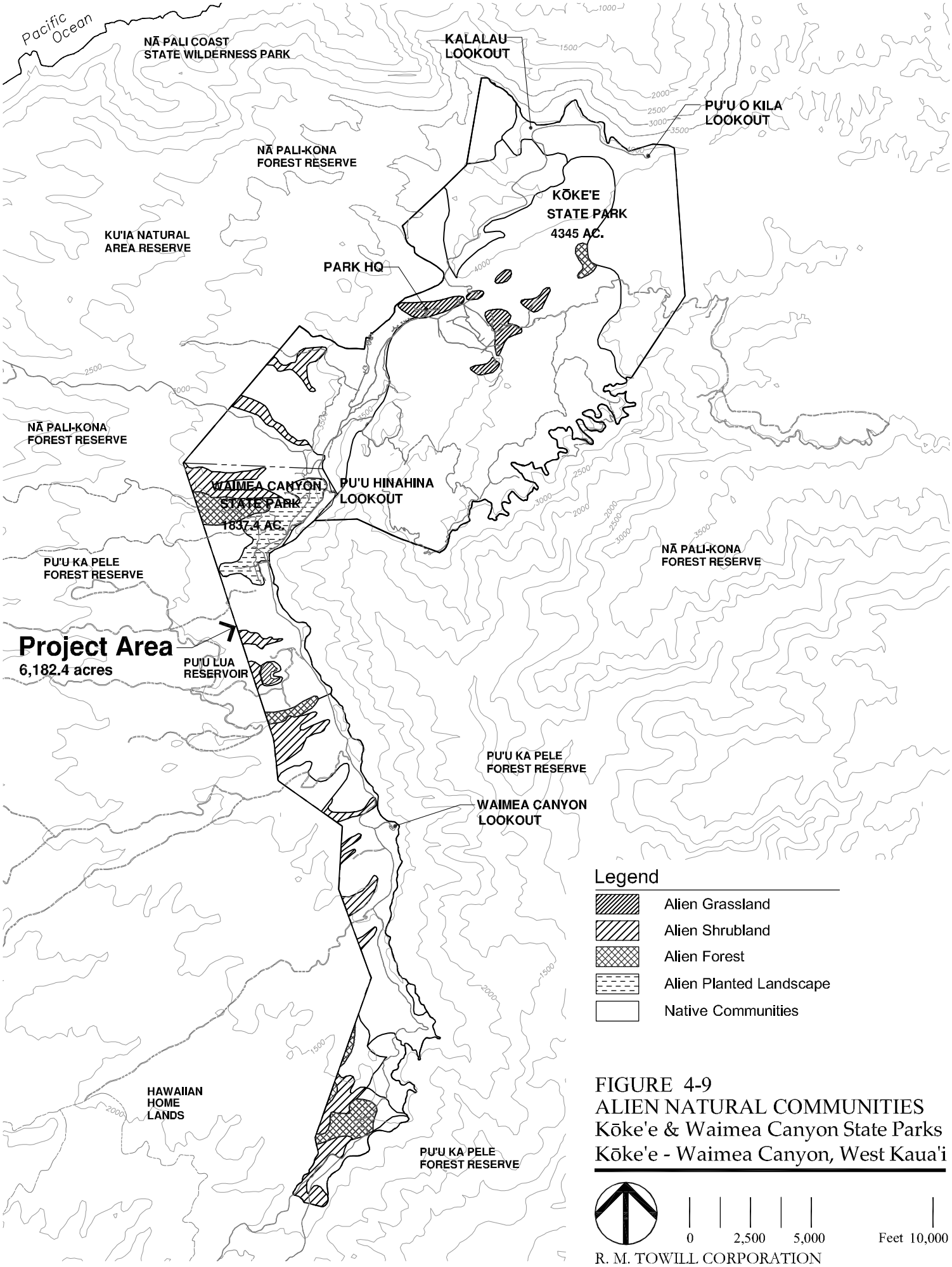

FIGURE 4-9
ALIEN NATURAL COMMUNITIES
Kōke'e & Waimea Canyon State Parks
Kōke'e - Waimea Canyon, West Kaua'i

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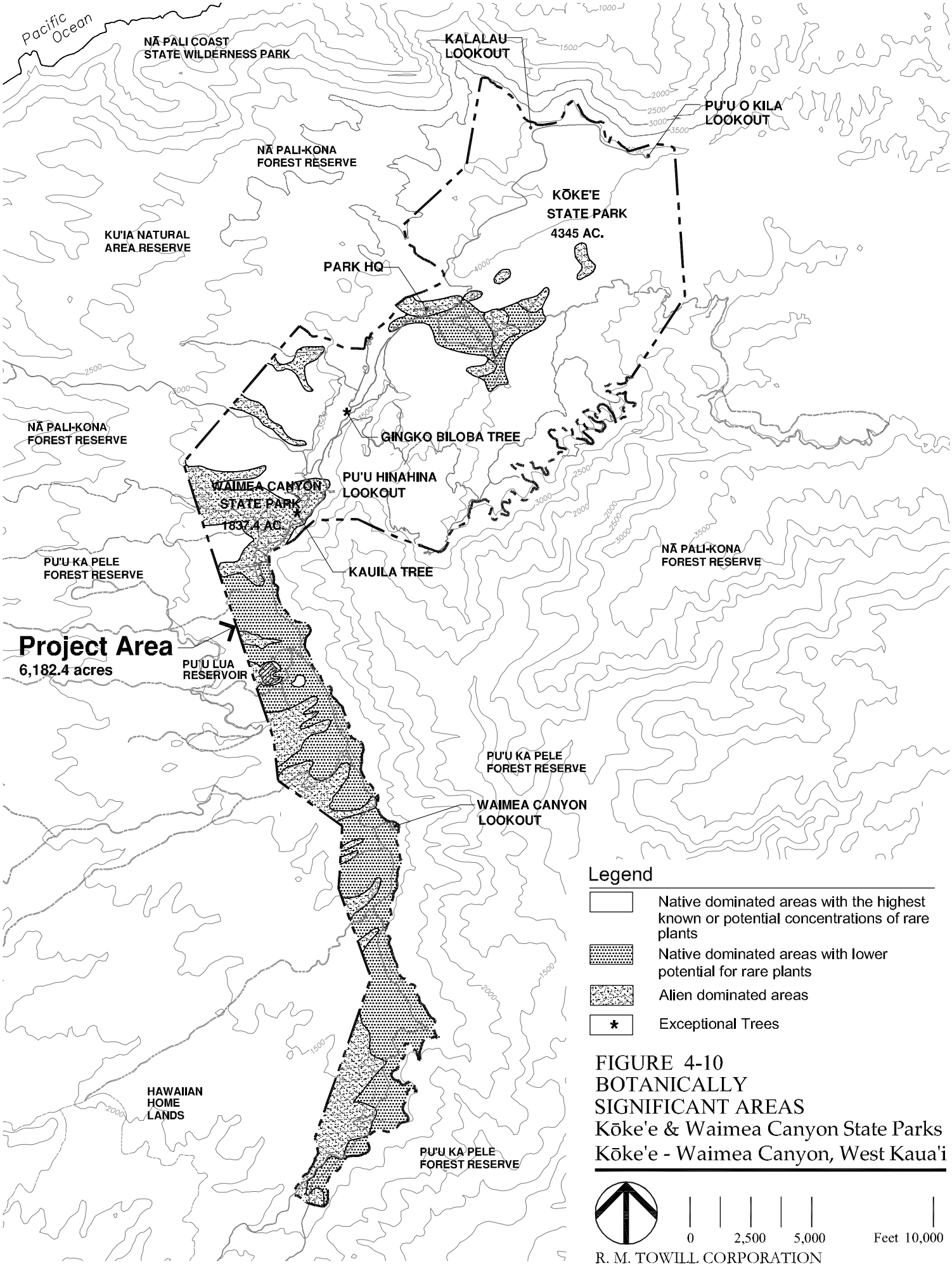

FIGURE 4-10
BOTANICALLY SIGNIFICANT AREAS
Kōke'e & Waimea Canyon State Parks
Kōke'e - Waimea Canyon, West Kaua'i

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ʻAʻaliʻi Lowland Dry Shrubland

ʻAʻaliʻi (Hawaiian hopseed*, Dodonaea viscosa*) is a common, indigenous shrub species that forms the dominant constituent in a variety of shrubland communities. In Waimea Canyon State Park, it is found growing in stands codominated by iliau (*Wilkesia gymnoxiphium*) along the canyon rim between 2,000 and 3,000 feet above mean sea level (msl). A notable example of the ʻAʻaliʻi/iliau community is located at the head of the Kukui Trail. Companion plant species found in this community vary according to elevation and moisture levels, and include shrubs such as pūkiawe (*Styphelia tameiameiae*), iliahi (*Santalum ellipticum*), and ʻakia (*Wikstroemia* spp.); grasses such as kawelu (*Eragrostis* spp.), sedges such as *Carex* spp., and lichens such as *Cladonia*.

Major threats to ʻAʻaliʻi shrubland are posed by invasive, non-native plants, including Christmas berry (*Schinus terebinthifolius*), molasses grass (*Melinis minutiflora*), guava (*Psidium guajava*), koa haole, and various other plants. Disturbance from fire and grazing animals have also done much to modify this native natural community type.

Koa Lowland Mesic Forest

Lowland mesic forest dominated by koa (*Acacia koa*) is the main forest type found between Kukui Trail and Puʻu ka Pele in Waimea Canyon State Park. This is a relatively common lowland forest type. However, this forest type is known to harbor rare plant species and is recognized historically as an important habitat for rare forest birds that have since been forced to higher elevations.

In Waimea Canyon, the koa lowland mesic forest occupies the ridgetop along the canyon rim road between 2,500 and 3,500 feet elevation. Through this stretch, the koa forest displaces a lower-elevation zone dominated by stands of silk oak (*Grevillea robusta*) and eucalyptus before transitioning into the Koa ʻŌhiʻa Montane Mesic Forest type at higher elevations. Small stands of transitional koa forest are also present on the southern boundary of Waimea Canyon State Park. Weed species noted in this forest type include *Lantana camara,* and strawberry guava (*Psidium cattleianum*).

Koa/ʻŌhiʻa Montane Mesic Forest

Montane forests dominated by koa and ʻōhiʻa (*Metrosideros polymorpha*) form the major forest type in the upper elevations of Kōkeʻe and Waimea Canyon State Parks, occupying the landscape above lowland dry and mesic shrublands and forest, and below montane wet ʻōhiʻa-dominated forest. The canopy in this forest type may be open or closed, with taller koa trees growing above the ʻōhiʻa. The understory typically harbors a diverse array of native and endemic species, including ʻalaʻa (*Pouteria sandwicensis*), poʻola (*Claoxylon sandwicense*),

maua (*Xylosma Hawaiiense*), and mehame (*Antidesma platyphyllum*). In addition, plants that are typically found in drier areas, such as mamane (*Sophora chrysophylla*), naio (*Myoporum sandwicense*), hoʻawa (*Pittosporum* spp.), manena (*Melicope Hawaiensis*), ʻaiea (*Nothocestrum breviflorum*), and pūkiawe (*Styphelia tameiameiae*) are not uncommon. In undisturbed areas, the ground cover is dominated by native ferns, including laukahi (*Dryopteris wallichiana*), and ʻamaʻu (*Sadleria* spp.). Rare species of *Chamaesyce, Cyrtandra, Dubautia, Isodendrion, Lobelia, Lysimachia, Melicope, Phyllostegia*, and others are also found in this forest type. Threats to the koa/ʻōhiʻa mesic forests include koa logging, invasion by alien weeds, and ungulates including feral pigs (*Sus scrofa*) and deer *(Odocoileus hemionus*).

ʻŌhiʻa Montane Wet Forest, and Subtype ʻŌhiʻa/Uluhe Montane Wet Forest

This forest type is one of the most common wet forest communities in the Hawaiian Islands. It is typified by ʻōhiʻa-dominated overstory above a mix of fern and shrub species. This natural community is not considered rare, but is known to harbor rare plants, birds, and invertebrates. Plant species found in this forest type include manono (*Hedyotis terminalis*), mehame (*Antidesma platyphyllum*), kōlea (*Myrsine lessertiana*), kāwaʻu (*Ilex anomala*), Kopiko (*Psychotria* spp.), and ʻōhiʻa hā (*Syzygium sandwicensis*). Hāpuʻu (*Cibotium* spp.), mamaki (*Pipturus albidus*), naupaka kuahiwi (*Scaevola* spp.) and naʻenaʻe (*Dubautia* spp.) are also found in the ʻōhiʻa montane wet forest. Major threats to ʻōhiʻa montane wet forest include ungulates, notably feral pigs and deer, and invasion by alien weeds, such as strawberry guava and blackberry.

Kōkeʻe State Park also contains areas classified as ʻŌhiʻa/Uluhe (*Dicranopteris linearis*) Montane Wet Forest, one of three recognized subtypes of this native natural community that share the common attribute of a dominant ʻōhiʻa overstory.

The ʻōhiʻa/uluhe subtype is characterized by a low ʻōhiʻa canopy over a dense mat of uluhe interspersed with a variety of native trees and shrubs.

4.5.2 Significant Tree Stands

Two trees, one within Waimea Canyon State Park and one within Kōkeʻe State Park, have been designated by the County of Kaua'i as "Exceptional" (Chapter 22, Article 5, Kaua'i County Code, 1987):

- Kauila (*Alphitonia ponderosa*) located at eastern end of Kauhao Ridge, north-west of Kōkeʻe Ditch gauging station, 3,300 elevation, TMK 1-4-01: 03.

- Gingko biloba – also known as "Maidenhair Tree", located on Kaunuohua Ridge near Kōkeʻe Road and Pacific Missile Range Facility power station, elevation 3,680, TMK 1-4-01: 13.

In addition to the two "exceptional" trees, Kōkeʻe and Waimea Canyon State Parks are home to several stands of trees that may be considered significant based on the following criteria:

- They form a key element of the cultural/historical landscape of Kōkeʻe and Waimea Canyon region.
- They are linked directly to a historical event or activity.
- They are exceptional representatives of their species based on age, size, environmental context, and aesthetics.
- They serve as easily-identifiable landmarks for park users.

A process for evaluating and designating certain tree stands or individual tree specimens as significant should be developed by the Department of Land and Natural Resources to guide preservation and interpretation efforts. Candidate stands for such designation include:

Sugi Grove

Sugi grove consists of sugi pine (*cryptomeria japonica*) trees planted by the Civilian Conservation Corps. The grove is located just outside of the Kōkeʻe State Park boundary on Camp 10 Road.

Kanaloahuluhulu Meadow

Lining the open meadow are some of the largest specimens of redwood, black pine, sugi pine, and Monterey cypress found in the Parks. These trees were also planted by the CCC. They constitute significant landmarks that define the meadow space at the heart of the park.

Fruit Orchard at Ranger Station

Remnants of a CCC experimental fruit orchard are located on the low slope between the Kōkeʻe Ranger Station and CCC Camp. A map of the original orchard showing the planned layout by location, number, and species of tree is presented in **Section 5**, **Figure 5-3**. A handful of the original trees remain around the Park Headquarters Building. Remaining species include apple, olive, Methley plum, and crab apple.

Tree Plantings at Lease Cabins

As a condition of the original campground and cabin leases, lessees were required to plant 50 trees on their leased property (Duensing 2003). A wide variety of tree seedlings, including

redwood, Monterey cypress, eucalyptus, Methley plum, pear, and apple, were provided by the Territorial Department of Forestry for that purpose. Remnants of these early forestry efforts constitute a distinct piece of the Kōkeʻe and Waimea Canyon story and have historic value within the cultural landscape of the Parks.

Examples noted during field surveys for the cabin inventory and assessment are listed in **Table 4-5**.

TABLE 4-5
CABIN SITES WITH NOTEWORTHY FORESTRY PLANTINGS

Location	TMK	Tree Types Noted
Puʻu ka Pele	1-4-2-008	Fruit Orchard Landscape
	1-4-2-031	Sugi Pines
	1-4-2-060	Old Koa in Pasture Setting
	1-4-2-061	Fruit Orchard Landscape
	1-4-2-076	Fruit Orchard Landscape
Berry Flat	1-4-4-003-010	Redwood, Monterey Cypress, Koa, ʻŌhiʻa, Fruit Orchard in open pasture landscape.
Halemanu	1-4-3-009	Sugi Pine, Monterey Cypress
	1-4-3-010	Redwood

4.5.3 USFWS Critical Habitat

Under the Endangered Species Act (ESA), the U. S. Fish and Wildlife Service (USFWS) is charged with designating critical habitat for threatened and endangered species whenever it is determined to be prudent and determinable. Critical habitat is defined in the ESA as those areas of habitat that are known to be essential for an endangered or threatened species to recover and that require special management or protection.

In critical habitat areas, all federal agencies must consult with USFWS to ensure that any action they authorize, fund, or carry out is not likely to result in the destruction or adverse modification of the critical habitat. State, County, municipal and private actions that involve federal funding or a federal permit or license are also subject to USFWS review. The critical habitat designation has no impact on City, County, or State actions if there is no federal

involvement.

A total of 83 endangered plant species have been identified on Kaua'i and Ni'ihau for critical habitat protection. The final, approved USFWS critical habitat boundaries related to the park are shown on **Figure 4-12**.

4.5.4 Timber Resources

From July to September 1998, the Hawai'i Forestry and Communities Initiative (HFCI) timber survey crew conducted an inventory of publicly-held, non-native timber resources on Kaua'i. The primary objectives of the inventory were to provide accurate forest type maps, estimate volumes of commercial timber resources, and assess timber losses sustained due to hurricane damage from Hurricane 'Iwa (1982) and Iniki (1992). A majority of the timber resources are located on lands managed by DOFAW. The primary concentration of DOFAW-managed non-native timber is located within Pu'u ka Pele Forest Reserve, west of Kōke'e Road (State Route 550). Most of the remaining timber acreage is located within Nā Pali-Kona Forest Reserve and Waimea Canyon State Park. An inventory of timber resources is summarized in **Table 4-6**.

Non-native timber stands in these areas are located primarily on ridge tops with an east-west orientation, and within an elevation range of 1,000 to 3,500 feet. Average annual rainfall on these ridge tops ranges from approximately 30 to 55 inches, with rainfall positively correlated with elevation. The structure of vegetation communities in forested areas approximates Lowland Mesic Shrublands and Lowland Mesic Forests (Wagner et al., 1990). Excluding planted non-native species, overstory trees include koa (*Acacia koa*) and 'ōhi'a (*Metrosideros polymorpha*). 'A'ali'i (*Dodonaea viscosa*), pūkiawe (*Styphelia tameiameiae*), uluhe (*Dicranopteris linearis*), *Lantana camara*, guava (*Psidium* spp.), blackberry (*Rubus fruticosus*), molasses grass (*Melinis minutiflora*), and 'uki'uki (*Dianella sandwicensis*) are common understory and groundcover species. Timber resources are shown in **Figure 4-11.**

Access to Forest Reserves

Vehicular access to the timber zones is via paved roadways (Kōke'e Road and Makaha Ridge Road), and a series of secondary, unpaved roads leading off from the paved highway. Kōke'e Road provides the primary access. There are approximately 40 miles of secondary roads. These are found on all of the main ridge tops. There is also a road that connects the ridges from Papaalai to Kauho along the 3,000-foot contour. These roads provide access to the public for hunting, recreation, and non-timber forest resource gathering; to DOFAW for forest protection, timber, and resource management; and to other government agencies for resource management and protection activities (DLNR, March 2000 DRAFT).

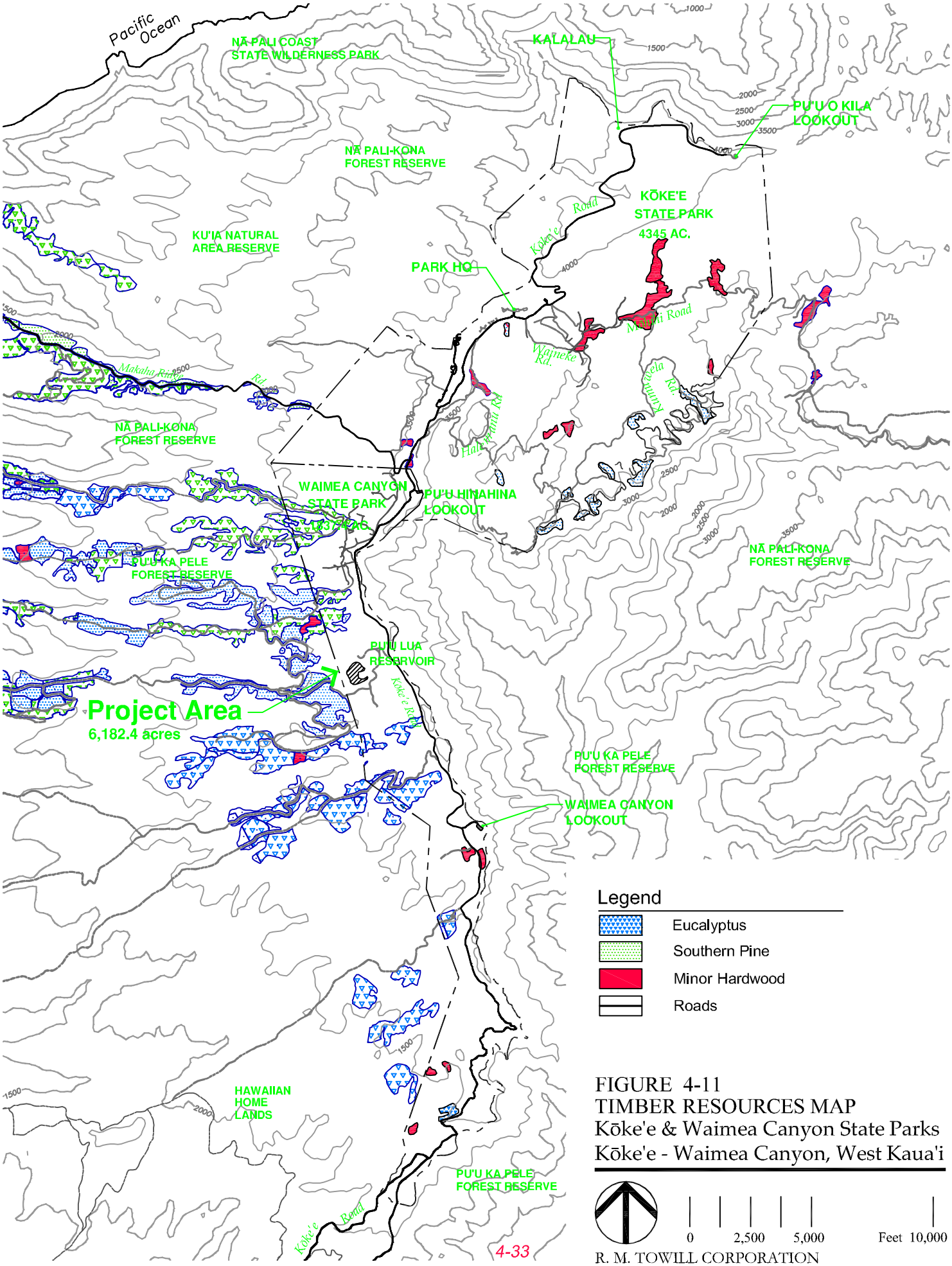

FIGURE 4-11
TIMBER RESOURCES MAP
Kōke'e & Waimea Canyon State Parks
Kōke'e - Waimea Canyon, West Kaua'i

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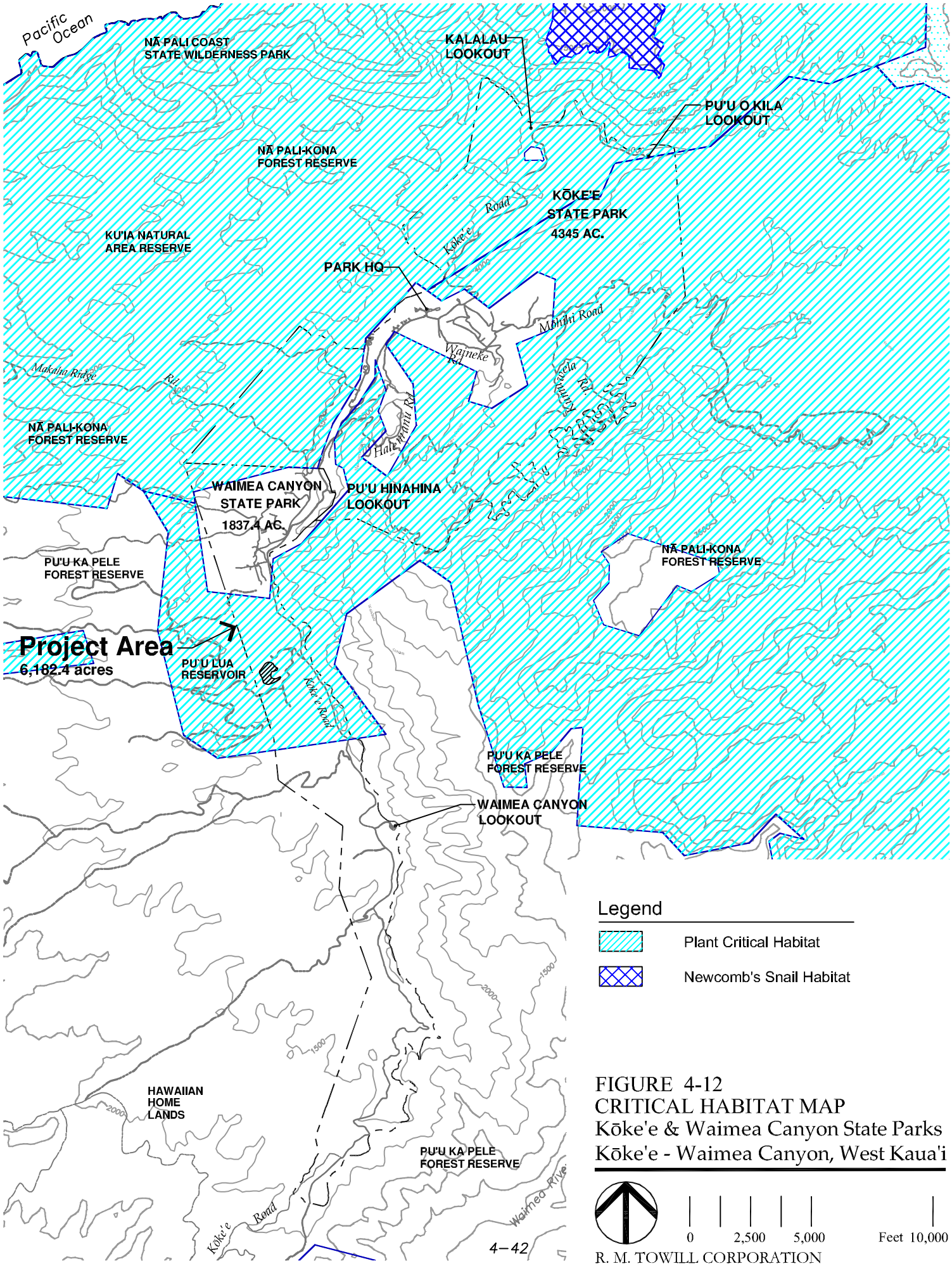

FIGURE 4-12
CRITICAL HABITAT MAP
Kōke'e & Waimea Canyon State Parks
Kōke'e - Waimea Canyon, West Kaua'i

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TABLE 4-6
TIMBER RESOURCES IN THE PU'U KA PELE FOREST RESERVE

Tree Species	Acreage	Cubic Feet
Eucalyptus Robusta	408	715,285
Eucalyptus Saligna	431	722,397
Other/Mixed Eucalyptus	246	449,919
Total Eucalyptus	1,085	1,887,601
Slash Pine (*Pinus elliottii*)	345	731,175
Loblolly Pine (*Pinus taeda*)	128	417,723
Mixed Pines	195	208,650
Total Pines	668	1,357,548
Totals	1,753	3,245,149

Timber Management Plan

Hawai'i's State law requires that a timber management plan be prepared before harvesting can occur. DOFAW prepared a Draft Forest Management Plan for harvesting non-native timber and incidental harvesting of select native hardwoods (koa and ʻōhiʻa) in the Puʻu ka Pele Timber Management Area (DOFAW, March 1, 2000). The plan is based on the findings of an inventory of Kauaʻi's forest reserve timber resources conducted in 1999 (DOFAW, August 1999). Completion and implementation of a final forest management plan is dependent upon Division resources and staff priorities. Harvesting activities are unlikely to occur before 2005.

Potential impacts from harvesting activities include:

- Visual impacts of harvesting activities.
- Traffic caused by timber hauling.
- Damage to highways and access roads due to timber harvest activities.

- Air quality, run-off, noise, and other impacts from equipment operations and activities related to on-site timber processing and removal activities.
- Effects on endangered species and habitat.
- Soil exposure and erosion.
- Loss of water retention from absence of vegetative cover.

4.5.5 Invasive Species

A. Invasive Plant Species

The rates of endemism of native plants on the upper northwest slopes of Kaua'i are higher than the State average of 90 percent. Many invasive introduced plant species have gained a foothold in the Kōke'e and Waimea Canyon region and threaten the many species of native flora with extinction. The most prevalent plant pests in the Kōke'e and Waimea Canyon area are discussed in the following sections.

B. Incipient Invasive Species

Incipient species are alien plants that have not yet become established, but that pose a significant threat due to their aggressiveness, rapid rate of dispersal, and characteristics of killing off, crowding out, or otherwise displacing native vegetation. These plants have a good potential for being eliminated from sensitive areas, thus often are priority plants for eradication efforts. They include:

- Australian Tree Fern (*Cibotium chamissoi*)
- Chinese Privet (*Ligustrum sinense, Oleaceae*)
- Firethorn (*Pyracantha angustifolia*)
- Glory Bush (*Tibouchina urvilleana*)
- Tree Privet (*Ligustrum lucidum, Oleaceae*)

C. Established Invasive Species

Established species are alien plants that have become naturalized in the environment, even to the point of becoming emblematic of Hawai'i (e.g., ginger). In many areas they compose the majority of the vegetation type, and no reasonable potential for eradication exists. These plants do pose a significant threat in areas of primarily native vegetation. Control efforts for these plants focus on containment and removal from native-dominant vegetation areas. Established species in the two parks includes:

- Australian Blackwood (*Acadia melanoxylon*)
- Banana Poka (*Passiflora mollissima*)
- Blackberry (*Rubus fruticosus*)
- Black Wattle (*Acacia mearnsii*)
- Bush Beardgrass (*Schizachyrium condensatum*)
- Fire Tree (*Myrica faya*)
- Honeysuckle (*Lonicera japonica*)
- Ginger - Kahili (*Hedychium gardnerianum*)
- Ginger - White (*Hedychium coronarium*)
- Ginger - Yellow (*Hedychium flavescens*)
- Koa Haole (*Leucaena leucocephala*)
- Lantana (*Lantana camara*)
- Molasses Grass (*Melinis minutiflora*)
- Strawberry Guava (*Psidium cattleianum*)

Potential Impacts and Proposed Mitigation

The introduction of non-native, invasive plant species pose the greatest impact to the native forest. Unintentional and intentional introductions have created situations where eradication may be currently out of the question, such as in the case of blackberry (*Rubus fruticosus*) and banana poka (*Passiflora mollisima*). In these instances, controlling the spread should be undertaken by manual removal, herbicide, and biological controls. Control of seed carriers, such as pigs, should also be undertaken. Education should also be part of an overall strategy of controlling the spread of invasive species.

Controlling new introductions should be a priority. An education program should be included in the program for hikers and lessees to caution against the inadvertent release of an invasive plant species.

Existing timber resources should continue to be managed to the point where the trees are of commercial value. Once the timber is harvested, however, the area should be replanted with native tree species suitable for the area.

Long-term plant species management should include the removal of all non-native

species. This work can be done incrementally as the trees become diseased or are damaged through natural causes. Plant nurseries should be a part of an overall strategy for reforestation.

4.6 ANIMAL RESOURCES

Note: Avian phylogenetic order and nomenclature follows *The American Ornithologists' Union Checklist of North American Birds 7th Edition* (American Ornithologists' Union 1998), and the 42nd and 43rd supplements to *Check-list of North American Birds* (American Ornithologists' Union 2000, 2002). Mammal scientific names follow *Mammals in Hawai'i* (Tomich 1986).

4.6.1 Animal Communities

The Kōkeʻe and Waimea Canyon State Parks and surrounding Natural Area Reserves, Forest Reserves and the Alakaʻi Wilderness Preserve support a remarkable assemblage of endemic, indigenous and introduced animal species. These include the sole endemic Hawaiian terrestrial mammalian species, the endangered Hawaiian Hoary Bat (ōpeʻapeʻa), and sixteen endemic avian species or sub-species including ten of which are currently listed as threatened, endangered or candidate species under both the federal and the State of Hawaiʻi's endangered species programs (DLNR 1998, Federal Register 1999a, 1999b, 2001, 2002). Numerous indigenous migratory avian species have also been regularly recorded within the parks addressed in this plan. Additionally at least 35 introduced bird species are regularly seen within the area.

Kōkeʻe and Waimea Canyon's faunal resources are discussed below.

4.6.2 Terrestrial Mammals

Only one native terrestrial mammal is known from the Hawaiian Islands, the Hawaiian Hoary Bat, or ōpeʻapeʻa (*Lasiurus cinereus semotus*). This species is a resident of the park lands and surrounding areas. It is frequently seen in areas of the park with nighttime lighting where it preys on insects attracted to the glow (USAF, June 1997). Several introduced terrestrial mammals have become naturalized residents within the Parks and surrounding areas. These include:

- Black-tailed deer (*Odocoileus hemionus columbianus*),
- Pigs (*Sus scrofa*), and
- Goats (*Capra hircus*).

These species offer recreation and subsistence hunting resources for residents and visitors alike.

When present in the more pristine areas of the Parks and refuges these ungulates pose grave threats to the native ecosystems and their components.

Other terrestrial mammals known to reside within the study area include mice (*mus musculus*) and rats (*rattus rattus*).

4.6.3 Birds

Native forest and seabird species are important components of the ecosystem in Kōkeʻe and Waimea Canyon State Parks. Many of the common native species are readily seen within Kōkeʻe State Park. Nesting colonies of Hawaiian Petrel, Newell's Shearwaters and Band-rumped Storm-Petrels are known to be present in areas addressed in this document. The former two are regularly seen around Kōkeʻe Air Force Station near Kalalau Lookout during the breeding season. There is a resident Nēnē population living within the Kōkeʻe area. The existence of this population is the result of DOFAW's Nēnē reintroduction program. Nēnē are commonly seen at the lookouts where they have learned to beg for handouts from visitors.

Table 4-7 lists avian species commonly seen within the study area. In addition to these regularly occurring species, a number of seabird species more commonly found in coastal areas are also possible, additionally a small number of the 80 odd accidental and extralimital migratory species recorded from the Hawaiian Islands over the years are also probable on an annual basis. For a complete list of these species refer to Pyle (2002).

The Parks offer unique opportunities to view and enjoy Kauaʻi's unique avifauna. Most of the lookouts and trails heading into the Alakaʻi provide access for bird watching and nature viewing. With careful observation and a modicum of good luck, a visitor to the park may stumble upon one of the following endemic species: Kaua'i ʻŌʻō (*Moho braccatus*), Kaua'i Nukupu'u (*Hemignathus lucidus*), Kāma'o (*Myadestes myadestinus*), ʻŌ'ū (*Psittirostra psittacea*) and the Kaua'i 'Akialoa (*Hemignathus obscurus*) which are thought to have become extinct over the last 30 years or so, having fallen victim to the multiple threats posed by the reduction in habitat, disease, and other confounding perturbations.

4.6.4 Invertebrates

Thousands of species of native invertebrates (insects, spiders, and snails) can be found among native vegetation, litter, and other habitats. Most of the native habitats, including those found underground, support numerous species of endemic invertebrates. Many of these organisms have yet to be discovered and scientifically described (TNCH, 1996).

Much of the invertebrate research attention focuses on problematic insect species. The following are known from Kōkeʻe and Waimea Canyon State Parks:

TABLE 4-7
REGULARLY OCCURRING AVIAN SPECIES IN KŌKE'E AND WAIMEA CANYON STATE PARKS

Common Name	Scientific Name	Status
PETRELS & SHEARWATERS - Procellariidae		
Hawaiian Petrel	*Pterodroma phaeopygia*	EE
Wedge-Tailed Shearwater	*Puffinus pacificus*	IB
Newell's Shearwater	*Puffinus newelli*	ES
STORM-PETRELS - Hydrobatidae		
Band-Rumped Storm-Petrel	*Oceanodroma castro*	CI
TROPICBIRDS - Phaethontidae		
White-Tailed Tropicbird	*Phaethon lepturus*	IB
Red-Tailed Tropic bird	*Phaethon rubricauda*	IB
FRIGATEBIRDS - Fregatidae		
Great Frigatebird	*Fregata minor*	IB
HERONS & ALLIES - Ardeidae		
Cattle Egret	*Bubulcus ibis*	A
Black-Crowned Night-Heron	*Nycticorax nycticorax hoactli.*	I
DUCKS, GEESE & ALLIES - Anatidae		
Nēnē Goose	*Nesochen sandvicensis*	EE
Koloa, Hawaiian Duck	*Anas wyvilliana (Koloa)*	EE
FALCONS - Falconidae		
Peregrine Falcon	*Falco peregrinus*	EM
GALLINACEOUS BIRDS - Phasianidae	*Alectoris chukar*	A
Erckel's Francolin	*Francolinus e. erckelii*	A
Japanese Quail	*Coturnix c. japonica*	A
Red Junglefowl	*Gallus gallus*	A
Common (Ring-Necked) Pheasant	*Phasianus colchicus*	A
California Quail	*Callipepla californica*	A
NEW WORLD QUAILS - Odontophoridae		
Valley Quail	*Lophortyx californicus*	
Coast Quail	*Lophortyx brunnescens*	
RAILS & ALLIES - Rallidae		
Common Moorhen	*Gallinula chloropus*	ES
Hawaiian Coot	*Fulica alai*	EE
PLOVERS & DOTTERELS - Charadriidae		
Lesser Golden-Plover	*Pluvialis dominica*	IM

Common Name	Scientific Name	Status
STILTS & AVOCETS - Recurvirostridae		
Black-Necked Stilt (Hawaiian Stilt or Aeo)	*Himantopus mexicanus knudseni*	ES
SANDPIPERS & ALLIES - Scolopacidae		
Wandering Tattler	*Heteroscelus incanus*	IM
Ruddy Turnstone	*Arenaria interpres*	IM
Sanderling	*Calidris alba*	IM
GULLS, TERNS & ALLIES - Laridae		
Sooty Tern	*Sterna fuscata oahuensis*	IB
PIGEONS & DOVES - Columbidae		
Rock Dove	*Columba livia*	A
Spotted Dove	*Streptopelia chinensis*	A
Zebra Dove	*Geopelia striata*	A
PARROTS & ALLIES - Psittacidae		
Rose-Ringed Parakeet	*Psittacula krameri*	A
BARN OWLS - Tytonidae	*Tyto alba*	A
TYPICAL OWLS – Strigidae (Pueo)	*Asio flammeus*	ES
Pueo, Short-eared Owl, Hawaiian Owl		
MONARCH FLYCATCHERS - Monarchinae	*Chasiempis sandwichensis sclateri*	ES
LARKS - Alaudidae	*Alauda arvensis*	A
OLD WORLD WARBLERS - Sylviidae	*Cettia diphone*	A
THRUSHES - Turdidae		
White-Rumped Shama	*Copsychus malabaricus*	A
Puaiohi, Small Kaua‘i Thrush	*Phaeornis palmeri*	EE
BABBLERS - Timaliidae		
Melodious Laughing Thrush	*Garrulax canorus*	A
SILVEREYES - Zosteropidae		
Japanese White-Eye	*Zosterops japonicus*	A
MOCKINGBIRDS & THRASHERS - Mimidae		
Northern Mockingbird	*Mimus polyglottos.*	A
STARLINGS & MYNAS - Sturnidae		
Common Myna	*Acridotheres tristis*	A
EMBERIZINE FINCHES & ALLIES - Emberizinae		
Northern Cardinal	*Cardinalis cardinalis*	A
Red-Crested Cardinal	*Paroaria coronata*	A
Western Meadowlark	*Sturnella neglecta*	A
CARDUELINE FINCHES & ALLIES - Fringillidae		

Common Name	Scientific Name	Status
House Finch	*Carpodacus mexicanus frontalis*	A
Kauaʻi Amakihi	*Hemignathus stejnegeri*	E
ʻAnianiau (Lesser Amakihi)	*Hemignathus parvus*	E
ʻAkikiki (Kauaʻi Creeper)	*Oreomystis bairdi*	E
ʻAkekeʻe (Kauai Akepa)	*Loxops caeruleirostris*	E
ʻIʻiwi	*Vestiaria coccinea*	E
ʻApapane	*Himatione sanguinea*	E
OLD WORLD SPARROWS – Passerinae		
House Sparrow	*Passer domesticus*	A
WAXBILLS & ALLIES - Estrildinae		
Common Waxbill	*Estrilda astrild*	A
Red Avadavat (Red Munia)	*Amandava amandava*	A
Nutmeg Mannikin	*Lonchura punctulata*	A
Chestnut Mannikin (Black-headed Mannikin)	*Lonchura malacca atricapilla*	A
Java Sparrow	*Padda oryzivora*	A

Key to Table 4-7

ST	Status
EE	Endangered endemic (i.e., native and unique to Hawaiʻi) species.
IB	Indigenous (i.e., native to Hawaiʻi, but also found elsewhere naturally) breeding species
ES	Endangered endemic sub-species
CI	Candidate indigenous species
IB	Indigenous breeding species
A	Alien (i.e., introduced to Hawaiʻi by humans) species
EM	Endangered migratory species
E	Endemic resident species not currently protected under the ESA

- Two spotted Leafhopper (*Sophonia*) is an alien pest insect affecting many native plants in the region. Native plants affected by the Two spotted Leafhopper include uluhe fern, ʻōhiʻa, *Scaevola, Antidesma, Pouteria*, and others. (TNCH, February 1996).
- Formosan Subterranean Termite (*Coptotermes formosanus*)is present throughout Kaua'i and is known to infest native koa (*Acacia koa*) and other trees. They are suspected of being present in the forests of Kōkeʻe and Waimea Canyon State Parks. (Dudley & Yamasaki, 2000).
- Argentine Ants (*Linepithema humile*) have established themselves in developed areas of Kōkeʻe and Waimea Canyon State Parks. They have been observed in built areas and along trails, but have not yet been found within undeveloped areas of native vegetation. Argentine Ants could become a potential danger to bird populations due to competition for available insect prey. In other areas of Hawai'i, they have been found to have a significantly negative impact on native arthropods, including native plant pollinators. (Cole et. al. 1992; HNIS 1997).
- Numerous species of wasps, including immigrant species (*Diadegma blackburi*) and those deliberately introduced as biological control agents (*Eriborus sinicus* and *Meteorus laphygmae*), have become established in Kōkeʻe State Park and the surrounding high-elevation areas. While endemic species still contribute the most to species diversity in the area, these invasives represent an increase in the number of wasp species that parasitize native moth (*Lepidoptera*) larvae. (Howarth, Nishida, & Asquith, 1993; Henneman & Memmott, 2001).
- Mosquitoes are not frequently found in Kōkeʻe or Waimea. However they do exist and are known carriers of avian pox and malaria, diseases which have proven destructive to Hawai'i's native forest birds.

4.6.5 Threatened and Endangered Species

Threatened and endangered fauna known from Kōkeʻe and Waimea Canyon State Parks are listed in **Table 4-8**.

TABLE 4-8
RESIDENT THREATENED AND ENDANGERED ANIMAL SPECIES IN KŌKE'E AND WAIMEA CANYON STATE PARKS

Common Name	Scientific Name	Status
COMMMON BATS - Vespertilionidae		
'Ōpe'ape'a (Hawaiian Hoary Bat)	Lasiurus cinereus semotus	E
PETRELS & SHEARWATERS - Procellariidae		
Hawaiian Petrel	Pterodroma phaeopygia	E
Newell's Shearwater	Puffinus newelli	T
STORM-PETRELS - Hydrobatidae		
Band-Rumped Storm Petrel	Oceanodroma castro	C
DUCKS, GEESE & ALLIES - Anatidae		
Nēnē (Hawaiian Goose)	Nesochen sandvicensis	E
Koloa (Hawaiian Duck)	Anas wyvilliana	E
RAILS & ALLIES - Rallidae		
Common Moorhen (Hawaiian Gallinule)	Gallinula chloropus	E
Hawaiian Coot	Fulica alai	E
STILTS & AVOCETS - Recurvirostridae		
Black-Necked Stilt	Himantopus mexicanus	E
HAWAIIAN NATIVE THRUSHES - Myadestes		
Puaiohi (Small Kaua'i Thrush)	Myadestes palmeri	E
HAWAIIAN HONEYCREEPERS & FINCHES - Drepanidinae		
'Akikiki (Kaua'i Creeper)	Oreomystis bairdi	C

Key to Table 4-8

ST Status under the Federal Endangered Species Act of 1973, as amended
E Endangered Species
T Threatened Species
C Candidate Species

4.6.6 Invasive Species

Invasive Animals

Invasive animal species threaten the native ecosystems and their constituents directly through predation, physical disturbance of the habitat and resident species; and indirectly through competition with native plants and animals and through dispersal of seeds and diseases. Problem species include:

- Invasive bird species include the Polynesian-introduced Red Junglefowl (*Gallus gallus*), which has become emblematic of Kōkeʻe, and numerous passerines, as well as many species of gamebirds introduced to produce hunting resources for local residents and visitors. Junglefowl are carriers of avian malaria and small pox.

- Feral ungulates, though valued as a hunting resource, pose a threat to native plants and habitat. Pigs, goats, and deer have caused significant damage to native plants and sensitive habitats through foraging, trampling, and facilitating weed invasion. Damage from feral ungulates is a concern within the park boundaries where hunting is prohibited, and in the adjacent natural areas where native plant preservation programs are targeted.

  Potential Impacts and Proposed Mitigation

  The control of non-native animal species in the Parks and the native ecosystem, in general, is the primary mitigation required. The feral animals, especially those that feed on the native plants are of particular concern. Feral animals impact the forest not only by feeding on the plants, but they are also responsible for the spreading of non-native plant species in the forest. Actions that can be taken include eradication and control. To protect the Ku'ia Natural Area Reserve from the impact of pigs, goats and deer, the DLNR proposes to construct about 3.7 miles of steel mesh fencing to enclose approximately 550 acres of native habitat. In addition, fencing will be installed for the proposed plant preserves in the two parks to include all the different habitats. The proposed fencing will provide a protected area for existing plant species and future restoration and outplanting projects. Opposition to the fencing project has been voiced by local hunting groups who are concerned about loss of access to prime hunting areas.

4.7 NOISE

Ambient sound within the parks is generally of natural origin--wind, rain, birds, insects, and running water. Intrusive noise is generated by a variety of human activities, including vehicle traffic on park roads, the use of heavy equipment and internal combustion engines in park

operations and maintenance activities, the presence of large groups of park visitors, radio "boom boxes" used by campers and picnickers, gun shots from hunting, and other human activities. Helicopters and airplanes flying over the Parks also generate intrusive noise. During the public input process, low-flying helicopters were identified as a nuisance noise source to park users seeking a quiet, wilderness experience, and as a possible source of disruption to forest birds.

Potential Impacts and Proposed Mitigation

Short-term noise impacts will be construction related and will stop at the conclusion of work. Other short-term noise impacts, such as those associated with park users, can be mitigated, to some degree, through education and the exercise of courtesy. As part of the permitting process, information will be provided to the users to be courteous to other users. No long-term impacts are anticipated.

4.8 AIR QUALITY

Air quality throughout the Parks is excellent due to the general absence of pollutant sources and the prevailing winds and rains. Air quality in localized areas, such as Waimea Canyon Lookout and Kōkeʻe Lodge and Museum, is intermittently impacted by exhaust from concentrated vehicle traffic and idling tour buses. No other significant pollutant sources are known to exist.

Potential Impacts and Proposed Mitigation

Short-term impacts to air quality are anticipated during construction. Exhaust fumes can be mitigated through the use of properly maintained equipment and limiting the amount of engine idle time. The use of equipment that releases smoke can be curtailed by monitoring the construction project. The release of fugitive dust can be controlled by keeping loose soil moistened or covered. In areas that are in close proximity to park users, such as picnic or lookout areas, dust screens can be erected. No long-term impacts to air quality are anticipated.

SECTION 5

HUMAN ENVIRONMENT: EXISTING CONDITIONS, IMPACTS AND PROPOSED MITIGATION MEASURES

5.1 LAND USE

5.1.1 Kōke'e Lodge

Kōke'e Lodge started as a "country store" constructed out of material recovered during the demolition of the Army camp (across the Awa'awapuhi Trail) in 1950. The original building has been modified over the years to include an extension in the front and ramps to allow access to the handicapped. The building is approximately 4,000 square feet under roof.

The current lease was originally executed in 1983 for a period of 20 years. However, the terms of the contract were modified in 1998 to provide for annual renewals to the end of the lease period.

Kōke'e Lodge employed 14-15 persons (2003) who handle the following: (a) housekeeping, (b) maintenance, (c) kitchen, (d) retail and front desk, and (e) lunch wagon. Operating hours are between 9 a.m. and 5 p.m.

Rental payments for the Kōke'e Lodge are based on either a minimum rent of $5,040 per month or a percentage of sales based on the following: Bar @ 10 percent; Cabins @ 16-1/2 percent; Restaurant @ 5 percent; and Retail @ 8 percent.

Kōke'e Lodge represents a significant revenue-generating source in Kōke'e and Waimea Canyon State Parks. The concession agreement between the State of Hawai'i and The Lodge at Kōke'e, LLC includes the following mandatory and optional operations.

The Lodge pays approximately between $6,000-$7,000 per month or between $72,000 to $84,000 per year (2003). Retail sales represents the bulk of the income produced by the Lodge.

The following are mandatory features of the Kōke'e Lodge operations: Inn (restaurant) and cabin rentals (12 units, 2 duplexes). The following are optional activities of the Lodge: gift shop, service station, camping and fishing equipment rentals, film, camera, postcards, etc., and alcoholic beverage service.

Potential Impacts and Proposed Mitigation

The existing Lodge is proposed to be incorporated into a new facility that would accommodate all of the existing functions. A new facility will be able to accommodate park visitors in a more efficient manner. The new facility is proposed to be designed in keeping with the existing rustic architecture. The predominant building material should be wood. Further, in keeping with the area, the facility should be designed with a low

profile and not be an imposing edifice on the Meadow.

5.1.2 Kanaloahuluhulu Ranger Cabin

In addition to the Lodge, the former Ranger cabin and adjacent facilities are part of the Lodge assets and contract. The Ranger cabin is used by the Lodge's Resident Manager. The adjacent buildings are used for: (a) wood storage, (b) laundry for housekeeping, and (c) general storage. The Lodge personnel provide hiking, picnicking and camping information to visitors.

Potential Impacts and Proposed Mitigation

No impacts are anticipated for the Ranger Cabin. The functions of the cabin, grounds and accessory buildings will change from support of the Lodge operations to support facilities for the Division of State Parks. The change in function will not impact the exterior view of the area. No mitigation is proposed or required.

5.1.3 Kōke'e Natural History Museum (Hui o Laka)

Hui o Laka operates the Kōke'e Natural History Museum located at the Kanaloahuluhulu Meadow. The Museum building was built at the same time as the Kōke'e Lodge. Hui o Laka has operated the Museum since its founding in 1952. Hui o Laka is a nonprofit organization under the provision of the section 501(c) (3) of the tax code. The stated objectives of the organization are "*the maintenance and administration of a natural history museum at Kōke'e, Kaua'i for the purpose of promoting, stimulating, and encouraging scientific and educational interests in the natural history of the Island of Kaua'i, and in connection therewith, the natural history in general of the Hawaiian Islands as a group, to promote the preservation and protection of the endemic plants and birds of the Island of Kaua'i and artifacts of the early Hawaiian inhabitants thereof, and also, to interest itself in any matter having to do with the Kōke'e area in general as authorized by the Board of Trustees*." (from the Constitution of Hui o Laka, 1978).

The Museum building is approximately 2,000 square feet and constructed of wood on a post and pier foundation. The roof is corrugated metal and painted red. The building has undergone some modification towards the front of the building to accommodate handicapped access. Parking for the handicapped is in the front of the building. Parking for the site is shared with the Kōke'e Lodge.

Since 1986 the Museum has been operating under an agreement with the Division of State Parks to "provide interpretive visitor services for Kōke'e and Waimea Canyon State Parks." The agreement terminates in 2006. The agreement further required the Museum to operate for 365 days per year with no admission fees to be charged to the public.

The operation of the Museum is supported by retail sales, voluntary donations at the door, annual memberships, and grants.

The Museum annually sponsors a number of programs such as:

- A multi-week Interpretive Training Series each spring (since 1992).
- Excursion support for 2,000+ elementary students using volunteers and a specially developed curriculum, "Crow for Kōke'e!" (since 1992).
- The Banana Poka Festival (since 1989).
- A guided hike series, "Wonder Walks" (since 1993).
- Overnight seminars/conferences for youngsters, adults, and families such as Forest Wise Camp, Elderhostel, Pacific Fiber Retreat, etc.
- Eo E Emalani I Alaka'i, a historic commemorative festival held each fall (since 1988).
- Short-term residencies for artists, writers, exhibit designers or others working on Museum projects and/or programs.
- Volunteer work days (at least 12), assisting with grounds, facilities, and programs.
- A lecture series by visiting researchers.
- Summer internship(s) for 1-2 secondary/early college students (since 1991).
- Exhibit production, brochures, posters, signs, and in-house newsletters.
- Educational workshops, such as Banana Poka and Black Wattle basket making.

Potential Impacts and Proposed Mitigation

The existing Museum functions are proposed to be integrated into a new building that would serve as a visitor center. The new visitor center would be constructed in keeping with the rustic architectural theme of the Parks. The predominant building material should be wood. Further, in keeping with the area, the facility should be designed with a low profile and not be an imposing edifice on the Meadow. The operations agreement between the DLNR and Hui o Laka will terminate in 2006 and will need to be addressed.

5.1.4 Civilian Conservation Corps (CCC) Camp

The Civilian Conservation Corps (CCC) Camp in Kōke'e was built in 1935 to house workers as part of President Roosevelt's effort to improve infrastructure while providing employment during the depression years.

This CCC facility, located to the northwest of the Kōke'e Lodge, still remains today, and was placed on both the National and Hawai'i Registers of Historic Places in 1996 (Site No. 30-06-9392). Members of the CCC were responsible for planting many of the mature tree stands found in Kōke'e and Waimea Canyon State Parks. It was noted that in 1937, one million Silver Oak trees were planted in the Nā Pali Forest Reserve by the Kōke'e CCC to control soil erosion.

In addition, many trails and roads were constructed, including the Alakaʻi Swamp Trail. The plum orchards that were planted still yield fruit for the popular July plum season, and are still enjoyed by residents. In 1943 when the CCC was disbanded because of the outbreak of World War II, the Kōkeʻe Camp became headquarters for men of the 443rd Aviation and Construction Battalion "which constructed an alternative communications line through the Alakaʻi Swamp to Kauaʻiʻs north shore."

After World War II, the camp was used by community and church groups. Then in 1966 the site was used by the Job Corps Program until 1973. The camp was subsequently used by the Youth Conservation Corps till 1982. Following the destruction of Hurricane Iwa in 1982, the camp was used for interagency conferences. In the years following, the camp was abandoned.

In 1990, the nonprofit organization Hui o Laka proposed camp renovations and established the Kōkeʻe Natural History Museum administrative offices at the CCC Camp. The Museum uses building number 2 at the CCC Camp for its administrative offices. The restoration of the buildings was undertaken to preserve the "vernacular architecture" of Hawaiʻi characterized by single wall construction, site organization around a grassed clearing, and a close relationship to the natural environment evident in native building materials and the integration of tended forest plantings within the landscape.

Through efforts of Hui o Laka and the Division of State Parks, the CCC Camp was placed on the Hawaiʻi and National Register of Historic Places in 1996. These historic resources are further described in **Section 5.2**, Archaeological and Historic Resources.

Potential Impacts and Proposed Mitigation

No impacts are anticipated for the CCC Camp. No changes to the functions of the CCC Camp buildings, grounds and accessory buildings are anticipated. The CCC Camp is on the historic register, and therefore, exterior changes will be reviewed prior to the change taking place. No mitigation is proposed or required.

5.1.5 Rental Cabins

Twelve rental cabin units, owned by the State, are operated and maintained by the Lodge. The cabins are arranged in a row towards the south of the Lodge. The cabins are provided with direct access to Kōkeʻe Road via unpaved driveways. With the expanse of foliage that includes trees and shrubs, the cabins are screened from the roadway. The cabins, however, are within sight of each other.

The cabins are constructed of wood and have corrugated metal roofs painted red. The structures are not of a single style. Two of the cabins are a duplex model.

Rental for the cabins is $35 per night for the duplex units and $45 per night for the single detached units. The cabins are semi-furnished with beds, bedding, linen, kitchen and utensils.

The cabins are also provided with potable water, electricity and hot and cold running water. The Lodge, however, is not charged for water used. The Lodge reports that occupancy at the cabins is nominally 100 percent, or always filled. Busy periods are during holidays and fishing season.

Potential Impacts and Proposed Mitigation

In the near term (within the next 5 years), no impacts are anticipated for the twelve rental cabin units. In the long-term, however, the DLNR is considering the development of a lodge with rental units. These rental units may be incorporated into a single structure or in satellite units as they are now. The new lodge and cabins will be constructed in approximately the same location of the existing buildings. Impacts anticipated include: (a) earthwork or grading, (b) noise from construction activity, (c) dust, and (d) changes in land use. The proposed construction impacts can be mitigated through the implementation of best management practices such as: (a) installation of erosion control measures, and (b) good housekeeping during construction. Long-term impacts are beneficial because the new structures will be designed in keeping with the Park's architectural theme to allow limited access to the handicapped, to be more energy efficient, to provide additional accommodations to park visitors, and to enhance the revenues to State Parks. During redevelopment, create low-maintenance fuel breaks behind cabins by excavating as necessary, grading and grassing so that it can be easily mowed.

5.1.6 Baseyards

DLNR State Parks operates two baseyards in the Park. The first is located in the Park at the Kanaloahuluhulu area adjacent to the Kōke'e CCC Camp. See **Figure 5-1**. It comprises approximately one-half acre and contains four older building and sheds. It is within the Kōke'e CCC Camp historic boundary; however, the buildings are post 1950. The baseyard is used primarily for storage of equipment. It is a non-secured facility that is infrequently used. Its industrial character is not compatible with the heavy visitor activities of the Park HQ area.

The second baseyard is located on the Kaunuohua Ridge adjacent to one of the NASA facilities. The baseyard consists of a single metal building and exterior vehicle storage areas. Access is via a paved and secured (gated) roadway that is manned by the U.S. Navy. The site is hidden from public view. See **Figure 5-1**.

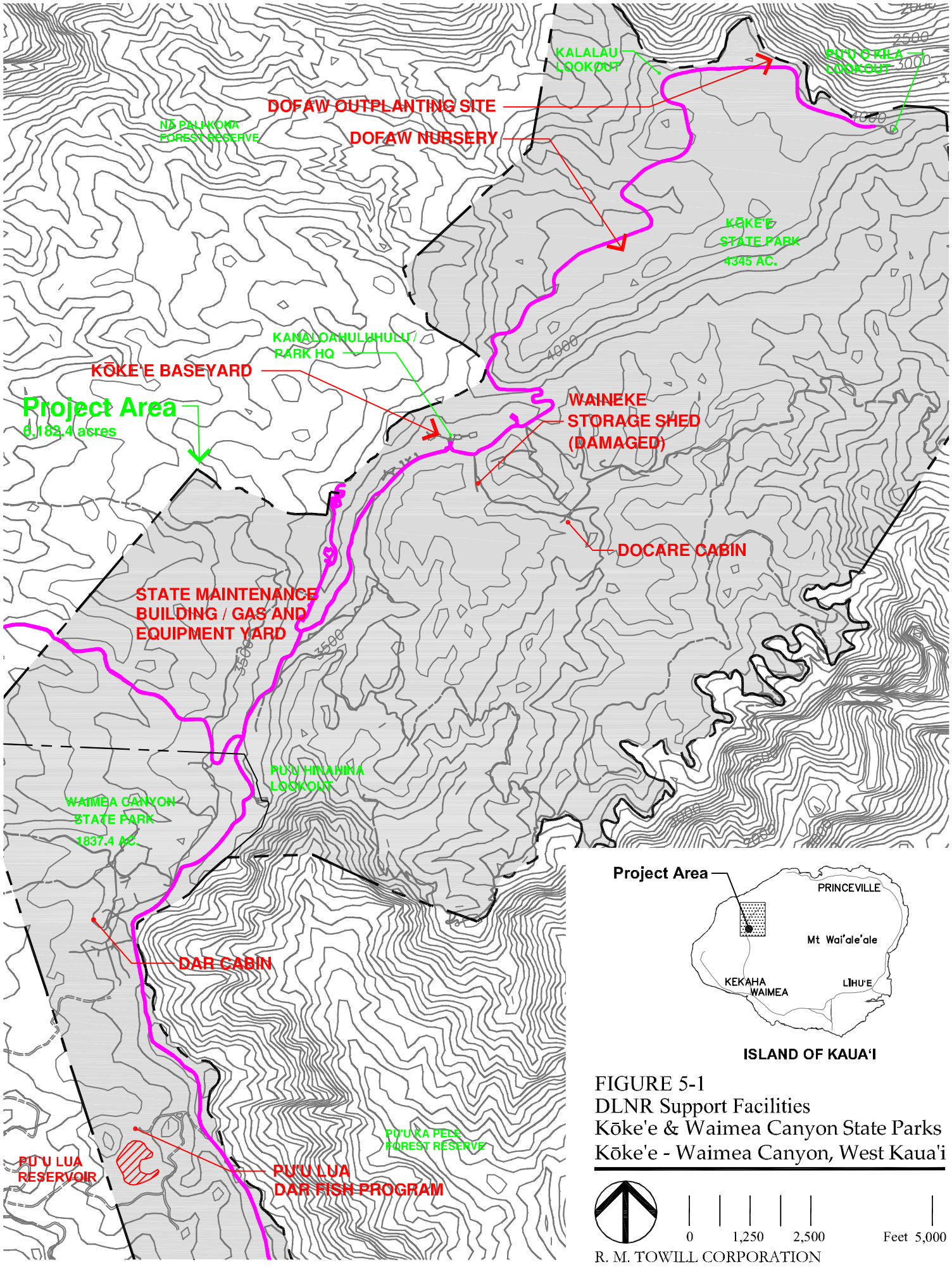

FIGURE 5-1
DLNR Support Facilities
Kōke'e & Waimea Canyon State Parks
Kōke'e - Waimea Canyon, West Kaua'i

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Expansion of the Kaunuohua Ridge baseyard is the obvious and logical relocation site. There is ample room for expansion without precluding the use of the ridge as a heliport. In addition, the site is serviced with a backup electrical system (generator) that insures a steady source of power. However, the federal government has a lease for the area; and the U.S. Navy controls access to this site which in the past has been a problem. The U.S. Navy and NASA have leases and facilities at the Kaunuohua Ridge site, and it is unlikely that either facility would be relinquished in the foreseeable future.

Potential Impacts and Proposed Mitigation

No impacts are anticipated for the baseyards. No changes to the functions of the baseyards' buildings, grounds and accessory buildings are anticipated. No mitigation is proposed or required.

- Develop new baseyard site on Kōkeʻe Road east of the Water Tank Road intersection, between the head of Noʻe Stream and Kōkeʻe Road. The new facility will contain an administrative office, maintenance shop, repair shop, garage, storage buildings, and restrooms with showers.
- Relocate main baseyard functions, including office space, vehicle parking, material stockpiles, and non-hazardous material storage. Dedicate space for use by other state agencies. Include space for fire equipment and the possible inclusion of a water tank for fire-response use.
- The NASA maintenance annex will continue to serves as a maintenance shop, helicopter landing zone, and the site for the installation of an above-ground fuel storage tank. DSP use of the NASA site will be minimized due to DSP's lack of authority over the site.

5.1.7 Forestry and Wildlife

Awaʻawapuhi Plant Nursery. DOFAW operates a plant nursery for the propagation and plant acclimatizing facility on a three-acre site. This site is used to propagate native species for out-planting in the Kōkeʻe area. The facility is also used to grow plants at certain elevations and climate for out-planting. The area is fenced to keep out animals such as deer and pigs. The facility utilizes one of the former Army buildings and a warehouse (16 feet by 20 feet). The site also has a shed to house fire fighting equipment.

Kalalau Rim Out-Planting Site. This area is used to out-plant native plants propagated in the nursery. The area is currently 9 acres. The site is fenced to keep out animals such as deer and pigs.

Potential Impacts and Proposed Mitigation

No impacts are anticipated for the plant nurseries. No changes to the functions of the

nursery's buildings and grounds are anticipated. No mitigation is proposed or required.

5.1.8 Aquatic Resources

The Division of Aquatic Resources (DAR) manages fishing resources and recreational fishing activities within Kōkeʻe and Waimea Canyon State Parks. The DAR operates a fish hatchery at Puʻu Lua Reservoir. In 2002, DAR released 40,000 rainbow trout into Kōkeʻe State Park's streams, ditch system, and reservoir. DAR typically releases 20,000 fish each year and anticipates an initial natural loss of 20 percent of the total stock. Released fish have an average life span of two years. During the 2002 fishing season, 1,033 anglers reported into the fishing check-in station and recorded a total catch of 1,937 fish for the season.

The Kōkeʻe Public Fishing Area includes designated streams, reservoirs, and ditches in Kōkeʻe State Park, as shown in **Figure 5-2**. The principal fishing areas are located west of Kōkeʻe Road, centered around Puʻu Lua Reservoir. Designated streams include Koaiʻe, Mōhihi, Waiʻale, Kawaikōī, Waikoali, Kōkeʻe, and Kauaikinānā Streams and the entire ditch system. Fishing is prohibited in Kōkeʻe Stream and its tributaries above Camp Sloggett.

Fishing is permitted with a valid Freshwater Game Fishing License. Fishing licenses are obtained from the DLNR office in Līhuʻe, and the DLNR main office in Honolulu. Money from fishing licenses goes into the special fund. The license permits an individual to fish during the open fishing season beginning on the first Saturday in August and continuing for a period of 16 consecutive days, and then only on weekends and holidays for the remainder of August and September. The season provides a total of approximately 30 days of fishing each year unless otherwise suspended by the Division of Aquatic Resources, DLNR.

Fishing is one of the most popular seasonal events in Kōkeʻe and Waimea Canyon State Parks. There is strong public support for expanding the season and developing year-round fishing resources. To have year-round fishing, a change is required in Hawaiʻi Administrative Rules (HAR), Title 13, Subtitle 4 - Fisheries, Chapter 64 - Kōkeʻe Public Fishing Area, Kauaʻi.

Potential Impacts and Proposed Mitigation

No impacts are anticipated for the fishing program. No mitigation is proposed or required.

5.1.9 Conservation Enforcement

The Division of Conservation and Resources Enforcement (DOCARE) is responsible for enforcement activities of the Department of Land and Natural Resources. The division, with full police powers, enforces all State laws and rules involving State lands, State Parks, historic sites, forest reserves, aquatic life and wildlife areas, coastal zones, Conservation districts, State shores, as well as county ordinances involving county parks. The division also enforces laws relating to firearms, ammunition, and dangerous weapons.

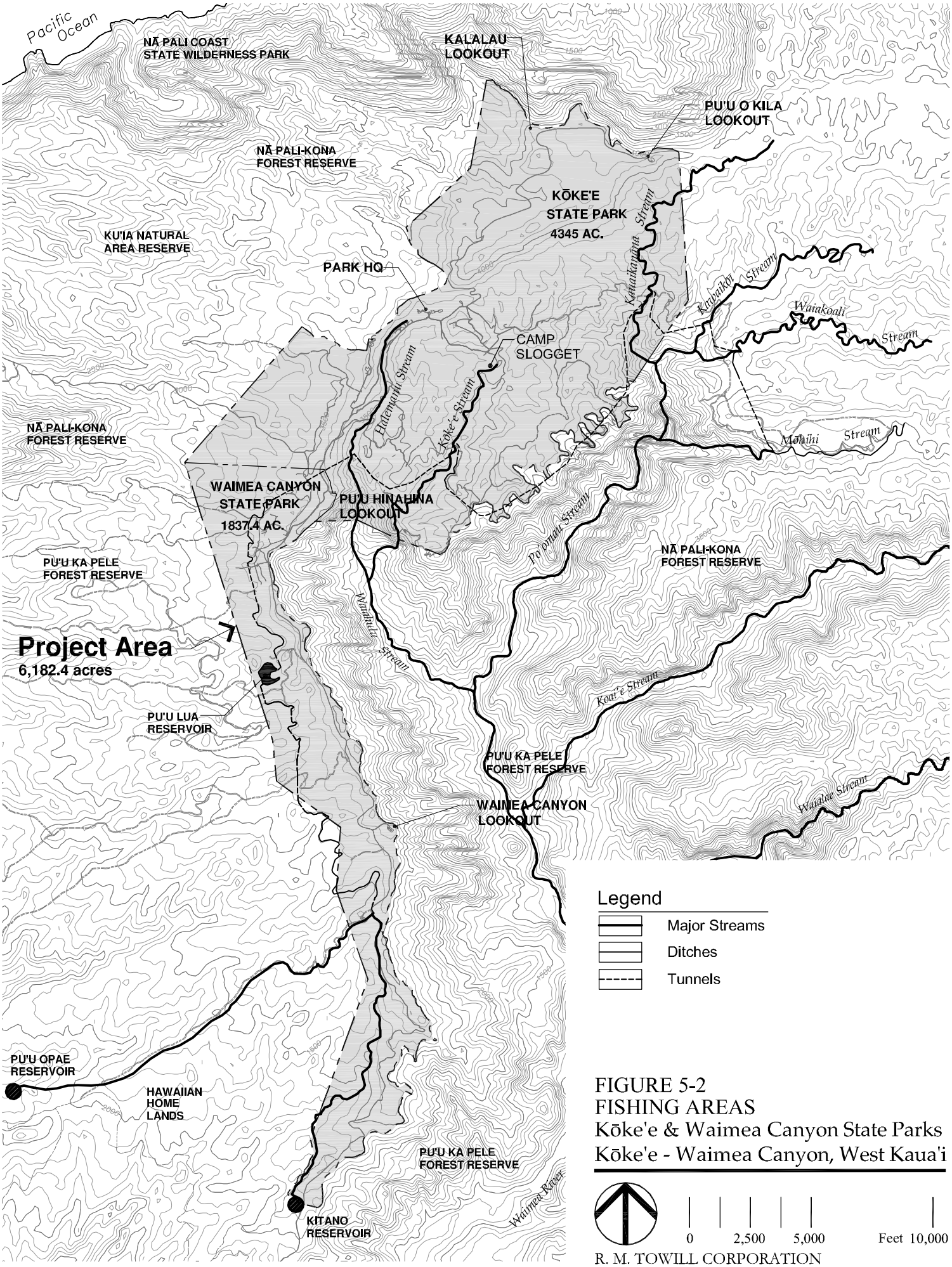

FIGURE 5-2
FISHING AREAS
Kōke'e & Waimea Canyon State Parks
Kōke'e - Waimea Canyon, West Kaua'i

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Potential Impact and Proposed Mitigation Proposed

No impacts are anticipated for the functions of the DOCARE. No mitigation is proposed or required.

5.1.10 Federal Agencies

A. NASA (at Halemanu)

Kōkeʻe Park Geophysical Observatory (KPGO) is a site located just mauka of the 14-mile marker off Kōkeʻe Road. Housed in what was formerly a full-blown NASA Tracking Station, the KPGO has nothing to do with strategic defense. The Naval Observatory in Washington, D.C., has a charter from Congress to monitor earth rotations and to check time standards. Allied Signal Technical Service Corp. is under contract with NASA through the Goddard Flight Center to operate the facility and help fulfill the Naval Observatory's mission. The primary work of KPGO is to observe the dynamics of the earth, which is slowing each day. The KPGO collects data using radio astronomy. From the data, KPGO observes tectonic plate movements.

Allied Signal also performs a second function at the old NASA Tracking Station. It monitors PEACESAT (Pan-Pacific Education and Communications Experiment by Satellite), an old, blind weather satellite that no longer tracks weather, but has transponders that catch voices and bounce them around to more than 36 sites in the Pacific. The University of Hawaiʻi is the hub site for the project. Allied Signal keeps an eye on it in space (Chu, May 1998).

B. U.S. Air Force, Kōkeʻe Microwave Antenna Station (MAS)

This facility occupies a triangular piece of land 1.25 acres in size and located within Waimea Canyon State Park near the Kukui Trail trailhead. The facility is adjacent to State Route 550, near mile mark 9, approximately 8.75 miles down the road from Kōkeʻe AFS. It is bordered on the west by Waimea Canyon Drive. There are no on-site personnel at Kōkeʻe MAS (USAF, June 1997).

C. Hawaiʻi Air National Guard 150thAC&W (Kahuamaʻa Flats)

The Hawaiʻi Air National Guard 150 AC&W (Aircraft Control & Warning) Squadron operates a site before the 18-mile marker, about one-fourth mile before the Kalalau Lookout on 11 acres of land leased from the State of Hawaiʻi. This facility is part of the air defense system in Hawaiʻi, providing 24-hour air surveillance of Hawaiian skies. Information fed by the 150th to a radar station at the top of Mt. Kaʻala on Oʻahu combines to encompass the entire western portion of the Hawaiian Archipelago. Six other tenant organizations share the station: the U.S. Coast Guard, Federal Aviation Administration, U.S. Department of the Navy, State of Hawaiʻi, Kauaʻi Island Utility Cooperative, and Kauaʻi County. A nearby microwave antenna station (MAS), Kōkeʻe MAS, supports communications and is considered part of the Kōkeʻe AFS installation.

Kōke'e AFS is located on a knoll, which rises approximately 40 feet from the lower portions of the installation, and is surrounded by forest. The antenna at the site is a dominant visual feature seen from the Kalalau Lookout and the Pu'u o Kila Lookout. During training exercises, overflow parking occurs on the outside of the entry gate. Kōke'e Road passes immediately to the west of the installation and is used year-round by tourists, hunters, military personnel, and other park visitors. On average, there are 18 individuals on site at Kōke'e AFS during normal duty hours and 6 individuals on site at all other times.

D. U. S. Navy

The United States Navy Pacific Missile Range Facility has two sites located within Kōke'e State Park: a telemetry control facility near the 14-mile marker on Kōke'e Road, and adjacent radar and instrumentation facilities on Kaunuohua Ridge above Halemanu. It operates a third facility at the end of Makaha Ridge Road in the Nā Pali-Kona Forest Reserve. Facilities located within Kōke'e State Park are depicted on **Figure 5-1**. This figure also depicts the location of the DLNR support facilities.

Potential Impacts and Proposed Mitigation

No impacts are anticipated for the functions of the federal agencies at the Parks. No mitigation is proposed or required.

5.1.11 Department of Education - Discovery Education Center

The Kōke'e Discovery Center, constructed in 1994 and operated by the Department of Education (DOE), is located off Kōke'e Road above the Kanaloahuluhulu Meadow. This facility was built for the purpose of teaching environmental education. The facility is managed by the DOE.

Potential Impacts and Proposed Mitigation

No impacts are anticipated for the functions of the DOE's Kōke'e Discovery Center. When the facility was constructed, it was anticipated that its sewer system would be connected to the Parks' treatment system. This connection to the sewer treatment system is recommended to mitigate potential impacts to groundwater.

5.2 ARCHAEOLOGICAL AND HISTORIC RESOURCES

5.2.1 Historic Resources

A. Traditional/Legendary Sites

"Boiling Pots"

The "boiling pots" were noted by a Kaua'i resident during the first public Master Plan meeting.

According to the resident, the boiling pots are holes in the rocks at the top of Waipoʻo Falls where mothers put their babies while they dyed kapa or did other chores at the stream.

Pāpū

Pāpū is the name given to the pin-hole lookout just upslope from Waimea Canyon Lookout at approximately the 10.75-mile mark. The site is associated with the legend of the Menehune Pāpū, the King's messenger, who was waylaid by robbers at this spot, and thrown to his death with a bundle of fish he carried for the King. According to legend, the scent of rotting fish fills the area during certain times of the full moon, and the site is still visited by the ghost of Pāpū, who tries to lure visitors over the cliff edge (Wichman, 2001).

Puʻu ka Pele

Puʻu ka Pele is the name of the prominent hill on the Waimea Canyon rim just past mile marker 11. The area is the legendary site of an ancient Hawaiian village founded by Ola, the ruling chief of Waimea in 600 A.D. The area was used for harvesting forest resources, notably koa trees for use in making canoes, paddles, and other implements. A trail is said to have existed between Puʻu ka Pele and Waimea village to facilitate the transport of canoe logs to the workshops on the coast (Ibid.).

Kāʻana

The lookout across the road from the Puʻu ka Pele Picnic Area sits atop Kāʻana (sadness) Ridge. According to legend, the spirits of the newly dead would assemble here before beginning their journey down the ridge to the sea (Ibid.).

Halemanu (Bird House)

Halemanu (Bird House) is the name given to the valley area at the entrance of Kōkeʻe State Park. The name refers to an ancient house site used by the Kia Manu (bird catchers) who trapped forest birds to harvest feathers for making cloaks worn by the chiefs. The area is also the site of the first mountain cabin in the region, built by the Knudsen family in the late-1800s. The Knudsen cabin was purportedly built on the site of the old bird catcher house and incorporated beams from the original thatch structure in the cabin construction (Duensing, 2003; Wichman, 2001).

Pōhakuwaʻawaʻa

Pōhakuwaʻawaʻa is a large, furrowed stone located on the east side of Kaunuohua Ridge overlooking Kapukaohelo between Nuʻalolo and Awaʻawapuhi Valleys. The location is misplaced on the USGS map; the stone is not located on the peak of the ridge, but further down the flank towards Kanaloahuluhulu. This stone marks the boundary point of the ahupuaʻa of Kalalau, Waimea, Awaʻawapuhi and Nuʻalolo (Wichman, 2001).

Trails

A number of overland trails that connected the uplands of Kōkeʻe with the Nā Pali valleys were recorded by Bennett (1931). The Kamaile Trail descended into Nu'alolo Valley from the Kōkeʻe uplands. Remnants of a trail connecting the Kōkeʻe uplands with Kalalau Valley also exists, though the trailhead, located in the vicinity of Kalalau Lookout, is known to few people. Also, according to Bennett, "There was a path said to have been built by King Ola, that led from the Waimea delta up the canyon to Kōkeʻe, over the Alaka'i Swamp, where it is said to have been paved with sticks (*kipapa*), and thence down Maunahina Ridge into Wainiha by way of Kōkeʻe." This may be the path reportedly taken by the Reverend Hiram Bingham in 1821 when he traveled from Waimea to Hanalei.

B. Park Buildings

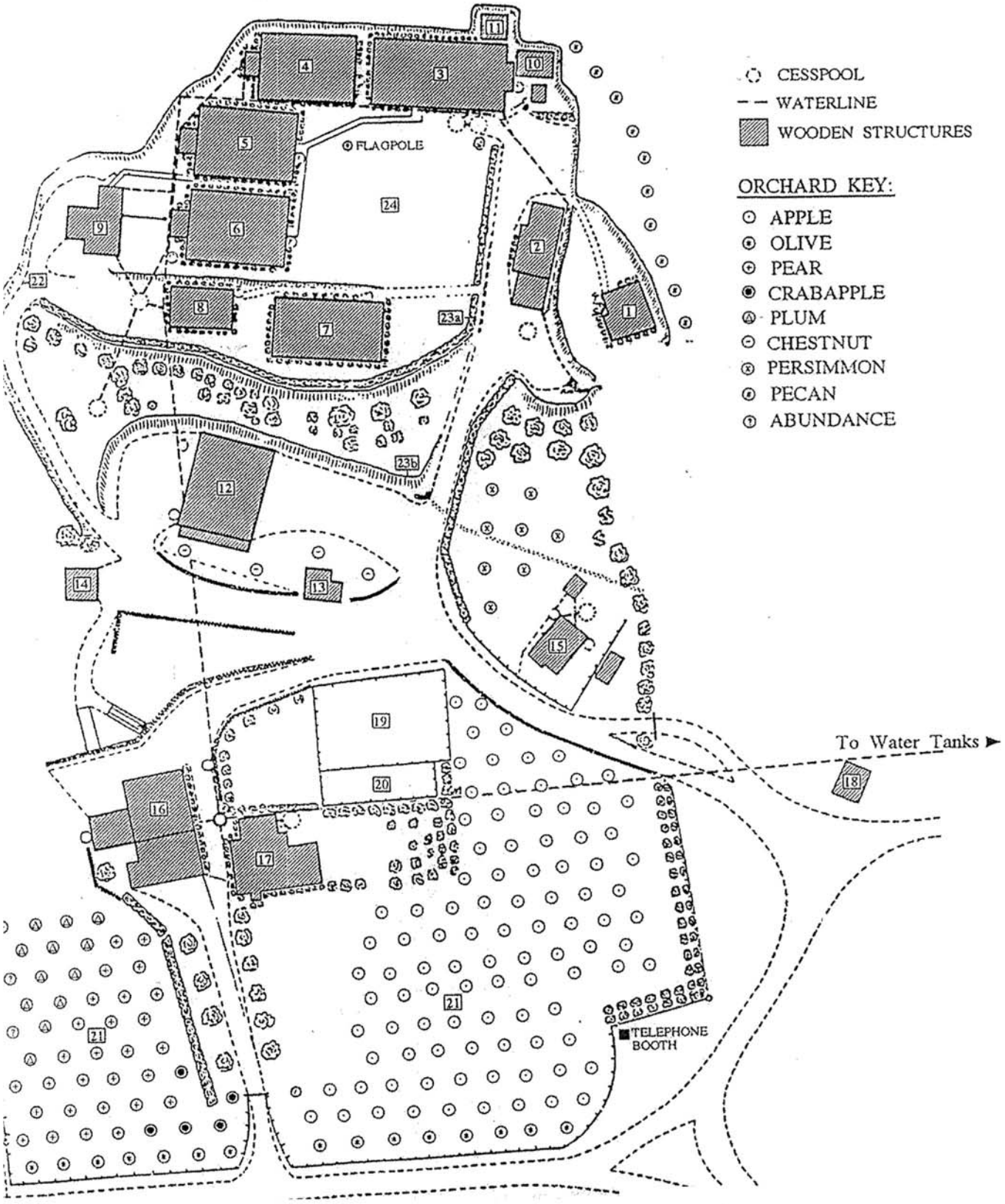
Sites within the two parks that are listed on the National and Hawai'i Register of Historic Places are presented in **Table 5-1**. In addition to these sites, numerous historic sites throughout the two parks have potential value for preservation and interpretation. These include:

CCC Camp - The CCC Camp, located at Kanaloahuluhulu Meadow, played a significant role in the development of Kōkeʻe and Waimea Canyon State Parks. The CCC Camp originally consisted of nine wooden buildings situated around a grassed quadrangle. Outside of this compound were a garage facility, a cook's house, a maintenance complex, and a ranger's house. Seven of the wooden buildings around the compound remain. The camp facilities are currently being restored by Hui o Laka. See **Figure 5-3, Kōkeʻe CCC Camp,** and **Figure 5-4, Kōkeʻe CCC Camp Boundaries. Table 5-2** lists the Buildings of the CCC Camp.

Table 5-1
National and Hawai'i Registers of Historic Places
Kōkeʻe and Waimea Canyon State Parks

Site Number	Site Name	Tax Map Key	Hawai'i Register	National Register
30-01-19	Ahuloulu Heiau Complex, Pu'u ka Pele	1-2-01: 03	6/3/81	–
30-06-9392	CCC Camp, Kōkeʻe	1-4-01: 13 (por.)	9/3/96	12/20/96
30-06-9395	Camp Sloggett, Kōkeʻe	1-4-04: 33	8/31/91	8/5/93
Outside Park Boundaries				
30-06-33	Taro Terrace and House Sites	1-5-01: 02	6/3/81	–
30-06-35	Waimea Valley Complex	1-5-01: 02, 17	6/3/81	–

Source: State Historic Preservation Division



Redrawn from original map of 1938. Building numbers correspond to description in attached Table 5-1.

Source: Preliminary Master Plan for Renovation of the Old CCC Camp as an Environmental Resource Center for Hawaii and the Pacific at Kōke'e State Park, Kaua'i, Hawai'i. Draft, October 1993.

FIGURE 5-3
KŌKE'E CCC CAMP
Kōke'e & Waimea Canyon State Parks
Kōke'e & Waimea Canyon, West Kaua'i

0 100 Feet 200

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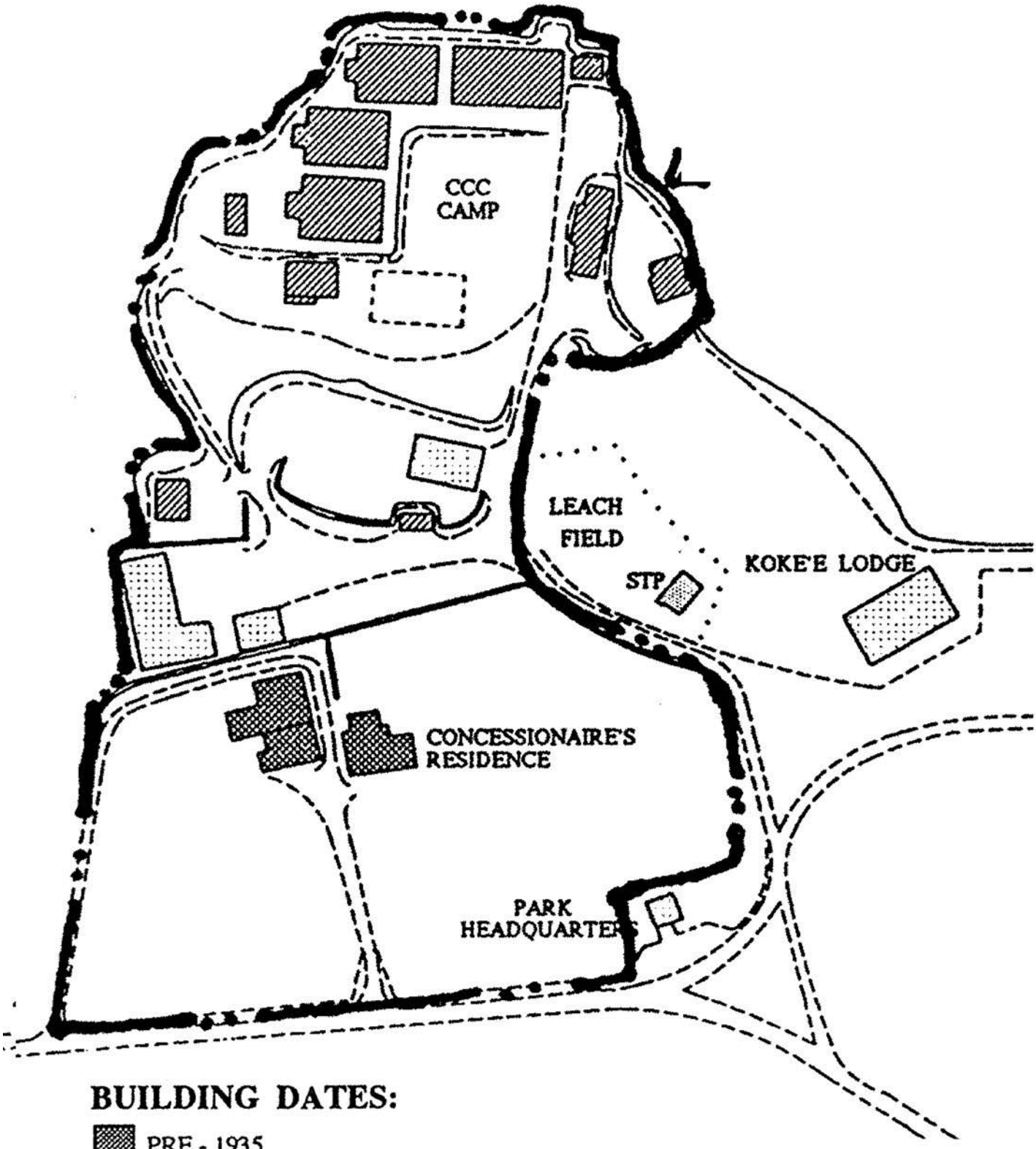

BUILDING DATES:

PRE - 1935

1935-1938

POST-1950

DEMOLISHED

Source: Preliminary Master Plan for Renovation of the Old CCC Camp as an Environmental Resource Center for Hawaii and the Pacific at Kōke'e State Park, Kaua'i, Hawai'i. Draft, October 1993.

FIGURE 5-4
KŌKE'E CCC CAMP BOUNDARIES
Kōke'e & Waimea Canyon State Parks
Kōke'e & Waimea Canyon, West Kaua'i

0 100 Feet 200

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Table 5-2

Buildings of the CCC Camp

Bldg. No.	Name	Current Status	Current Use
1	Executive Residence	Renovated	Visiting Researcher's Residence
2	Admin. Building	Renovated	Museum Offices
3	Mess Hall	Renovated	Kitchen, Dining Room, Library
4	Barracks C	Partially Renovated	
5	Barracks B	Existing	
6	Barracks A	Existing	
7	Recreation Hall	Demolished 1982	
8	Foreman's Residence	Partially Renovated	State Parks Crew Cabin
9	Bath House	Partially Demolished	
10	Supply Building	Partially Renovated	Restroom and Cabin
11	Cooler Room	Existing	
12	Garage and Tool Shed	Demolished	
13	Gas House	Existing	
14	Generator Plan	Existing	
15	Cook House & Garage	Demolished	STP and Leach Field
16	Tool Shed and Workshop	Built ca. 1931-32, Existing & Expanded	Wood Storage
17	Ranger's House	Built 1930, Renovated	Kōke'e Lodge - Res. Manager
18	Wood Shed	Demolished	
19	Garden	Grassed	
20	Chicken Coop	Demolished	
21	Orchard	Partially Existing	
22	Waterline	Existing	
23a	Wall on S & E sides of the Quadrangle	Partially Existing	
23b	Wall on slope	Existing	
24	Quadrangle Flagpole	Existing	Open grassy area

Kōke'e Lodge and Kōke'e Natural History Museum - These two wooden structures were developed in the early 1950s from relocated buildings moved from the former Army camp at Awa'awapuhi Trailhead (described below).

Kōke'e Park Headquarters (HQ) - The Kōke'e Park HQ is a small wooden building located at the western end of the Meadow. It was built in 1954 for park purposes and is currently used as office space for Kōke'e State Park personnel.

WWII Army Camp (Survey conducted by Yent in October, 1994) - This camp was built in the early 1940s on Kaunuohua Ridge and was dismantled in the 1950s. The camp site is approximately 1.5 miles northeast of the CCC Camp site. The Army Camp consisted of five major buildings along a dirt roadway off the paved Kōke'e Road, with an additional four outlying buildings. One concrete building remains, along with the slabs of two other buildings. One of the wooden buildings was relocated and now houses the Kōke'e Natural History Museum at Kanaloahuluhulu Meadow. No subsurface archaeological deposits or features other than those associated with the camp have been identified at this site.

Camp Sloggett – YWCA - In 1925, Henry Digby Sloggett and his wife Etta Wilcox Sloggett obtained one of the original recreation residence lease lots in the Kōke'e area on which they constructed a family cabin. Etta's sister, Elsie Wilcox, started the YWCA of Kaua'i in 1922, so it was appropriate that after Henry Sloggett's death in 1938, the Sloggett children donated the Camp to the YWCA for use as a camp.

The camp is comprised of three main buildings: administration/ commissary building with dormitory and an outdoor, covered pavilion for gatherings. The original Sloggett family cabins have been integrated into the camp facilities, housing the commissary, administrator's office, counselor sleeping quarters, and caretaker's cottage. A screened and covered mess hall is constructed between the original main residence and the caretaker's cottage. A large dormitory building of recent construction is located on the west side of the complex, across the large open area.

Ditch and Tunnel Irrigation System - The Kōke'e-Waimea area has three ditch irrigation water systems: the Kōke'e, Kekaha, and Waimea Ditch Systems. Each system played an important role in the development of agriculture, and in particular, the sugar industry, in the lowland regions surrounding Waimea and Kekaha. The Kōke'e System consists of a 21-mile collection system, a 260-million-gallon reservoir (Pu'u Lua), a second 63-million-gallon reservoir (Pu'u Opae), and a third reservoir (Kitano Reservoir) located 2.5 miles south of the Pu'u Lua reservoir. The system was originally built to provide for the water needs of the sugar operations in the upper slopes surrounding Waimea and Kekaha.

The Kōke'e Ditch, completed in 1926, intercepts flow from the Mōhihi, Waiakoali, Kawaikōī, Kauaikanānā and Kōke'e Streams. See **Figure 5-5**. The capacity of the Kōke'e ditch system is approximately 70-million gallons per day. The system contains 48 tunnels from the start to Pu'u Lua reservoir (DHHL, 1992).

The Waimea Ditch System, constructed in 1903, diverts portions of the flow of the Waimea River from an elevation of approximately 200 feet and travels through open ditches to the west side of the river for approximately 3 miles to the coastal plains north of Waimea Town, and for another 4 miles to the west.

The Kekaha Ditch System, built in 1901, diverts water from the Koai'e and Waiahulu Streams and conveys the water to irrigation systems in Waimea. The irrigation water system currently serves the diversified agricultural users located in the Kekaha Agricultural Park.

C. Recreation Residences

The heritage of Kōke'e State Park as a retreat from the urban environment is exemplified by the recreation residences. The recreation residences are loosely clustered into three forested neighborhoods and represent the "residential villages" of the parks. The neighborhoods are picturesque, consisting of wooden cabins with weathered facades, metal roofs, and wide porches and chimneys. They are strung together along meandering dirt roads with narrow dirt driveways.

Kōke'e and Waimea Canyon State Parks contain 114 recreation residences leased to private individuals. Some of these structures date back to the 1920s and one cabin in Halemanu was built in 1918. The State Historic Preservation Division evaluated and ranked the historic value of each of the recreation residences in 1983 and again in 2001. Two additional studies of the recreation residences were conducted. The first was a photographic inventory of the residences, and the second examined architectural features and historic integrity. The two reports are in the Appendix. **Figure 5-6** shows the location of the original 47 camp lots, and **Figure 5-7** shows the location of the recreation residence lease lots within the Parks.

The tradition of recreation residences in the park, their architectural character and the landscape plantings that have been introduced has created a unique setting not duplicated by any other park in the State park system.

Architectural Design and Evolution at Kōke'e and Pu'u ka Pele Camps

Vernacular architectural styles with rustic elements were established at Kōke'e during Valdemar Knudsen's tenure on the land in the late 1800s. The earliest permanent structures, which might be appropriately labeled as "Kōke'e rustic," reflected common vernacular styles in Hawai'i circa 1900. Later buildings, primarily those constructed after the late 1920s, were also

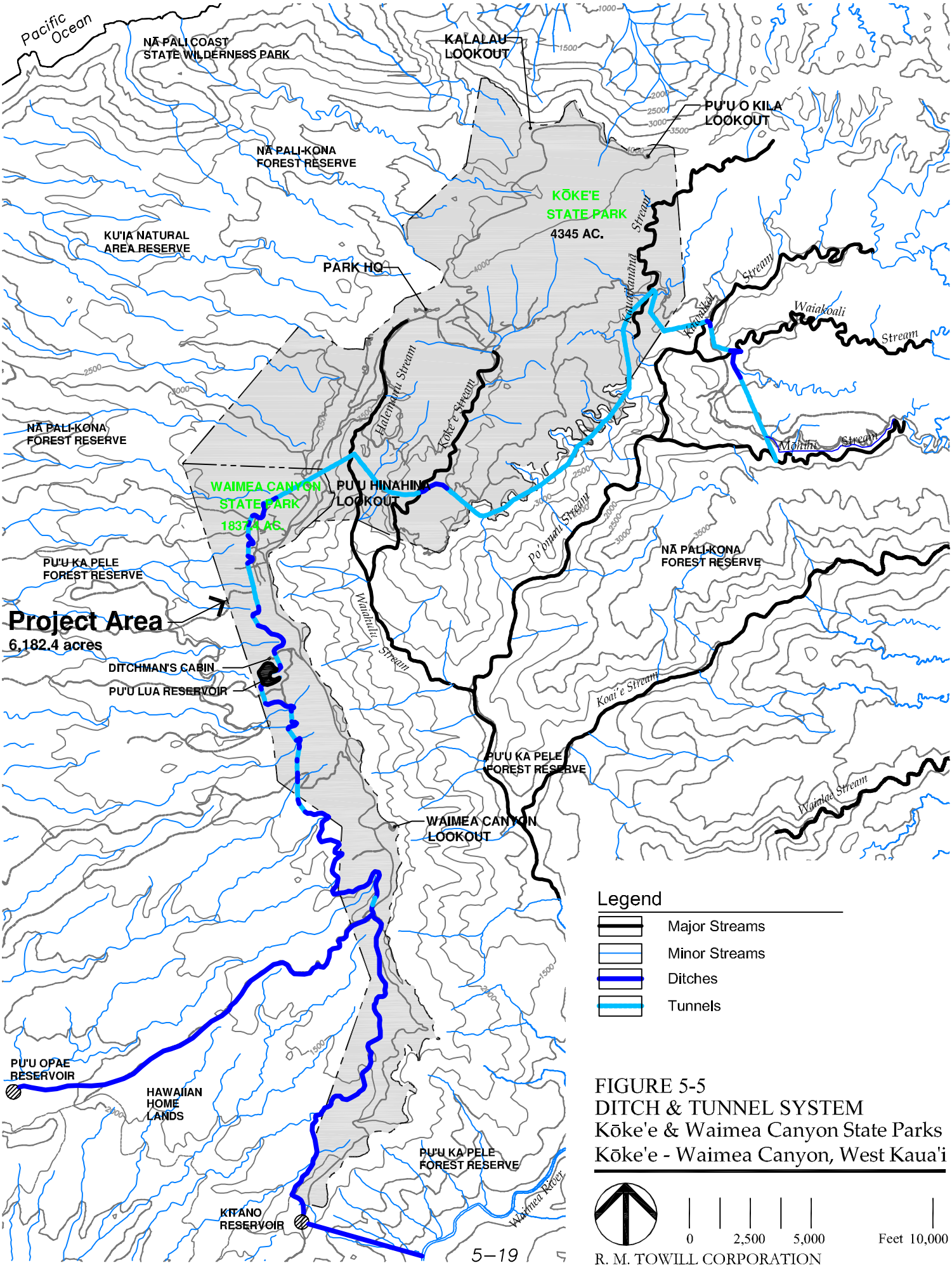

FIGURE 5-5
DITCH & TUNNEL SYSTEM
Kōke'e & Waimea Canyon State Parks
Kōke'e - Waimea Canyon, West Kaua'i

R. M. TOWILL CORPORATION

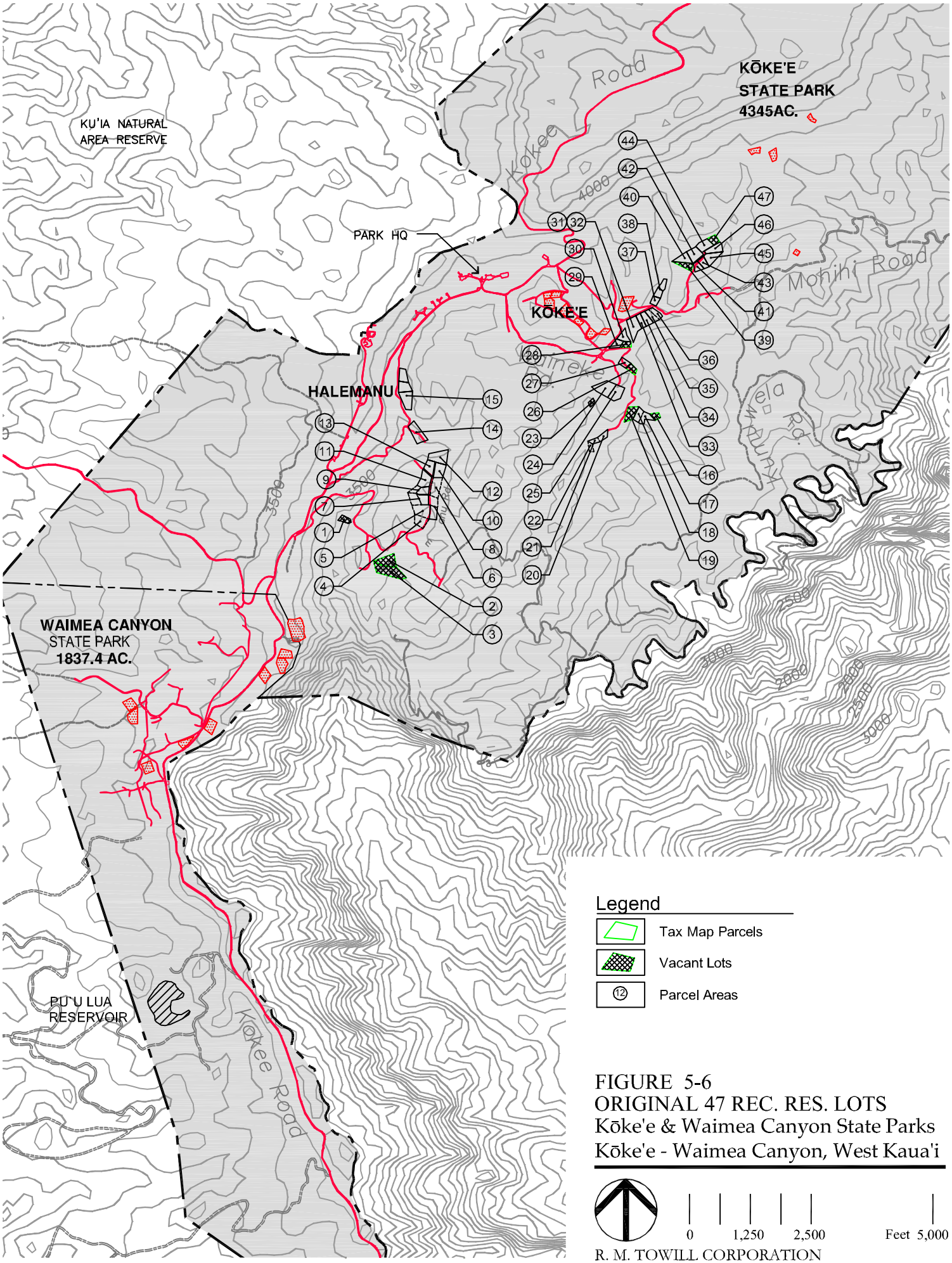

FIGURE 5-6
ORIGINAL 47 REC. RES. LOTS
Kōke'e & Waimea Canyon State Parks
Kōke'e - Waimea Canyon, West Kaua'i

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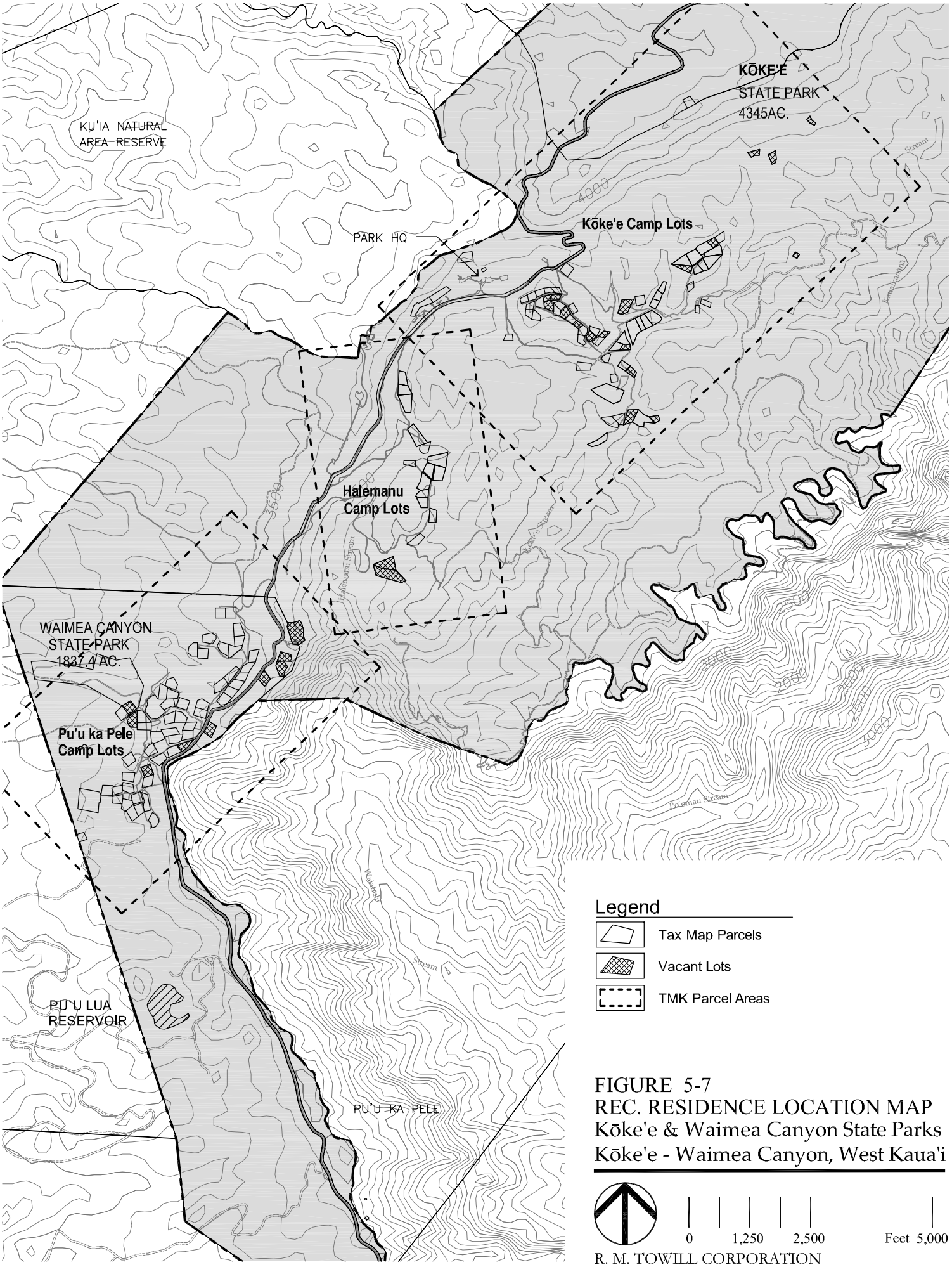


FIGURE 5-7
REC. RESIDENCE LOCATION MAP
Kōke'e & Waimea Canyon State Parks
Kōke'e - Waimea Canyon, West Kaua'i

R. M. TOWILL CORPORATION

vernacular, but were markedly different from the earlier Kōkeʻe camp buildings. Two buildings, the Danford House (TMK 1-4-03-13) and the Hagino House (TMK 1-4-04-40), are exceptional architectural examples at Kōkeʻe.

In the earliest days of camping in the Kōkeʻe area, a variety of temporary and permanent structures were built. Valdemar Knudsen's earliest shelter at Halemanu was a Hawaiian thatched house. By 1868 Knudsen had built a larger, more permanent structure constructed of wood for his family's summer house. When others began coming to the Kōkeʻe area to enjoy Knudsen's mountain retreat, a canvas tent or shelter often served as the typical camping structure. Photographs show that campers built all types of canvas shelters, including octagonal tents, "pup" tents, and gable-roofed tents, often using available tree branches to support the canvas walls. Earlier architectural styles continued to be utilized as well. A 1913 photograph showed a lanai/shelter with a Hawaiian thatched roof, which was adjacent to Knudsen's tennis court. The Knudsen house was removed from Halemanu in the 1980s.

Early photographs of Kōkeʻe and Halemanu demonstrate that a "Kōkeʻe rustic" architectural style was well developed by 1900. This "Kōkeʻe rustic" architectural style consisted of unpainted cabins built of board-and-batten, post-on-pier construction. The cabins were often small and featured gable roofs that appeared to be shake covered. Photographs indicate that six-light wood-framed sliding windows were prevalent, but multiple-light double-hung windows were also used. Most of the architectural features of these early buildings at Kōkeʻe were also common elements in Hawaiʻi's agricultural housing during the same period.

Certain rustic architectural features unique to Kōkeʻe developed by the early 1900s as well. One of the most conspicuous rustic elements in Kōkeʻe architecture were the ʻōhiʻa logs and branches that were fashioned into porch railings. Another simple feature was window openings (often without glass) that could be closed by a wooden "flap" that swung up from beneath the window. Fireplaces and chimneys constructed of native rock were prominent rustic elements. Some post-on-pier foundations utilized the readily available rocks and/or tree logs rather than cut lumber.

Excellent examples of cabins that fit the traditional "Kōkeʻe rustic" architectural style includes the unpainted board-and-batten structures in Rice Flats that date to the 1920s, especially the older cabins on TMK's: 1-4-04:16, 17, and 19. Other illustrations of this early rustic style are the structures at TMK: 1-4-04:09 (circa 1923) in Kōkeʻe, and in Halemanu, at TMK: 1-4-03:3 (circa 1922) and TMK: 1-4-03:5 (circa 1931). A fine example at Puʻu ka Pele is the small cabin located at TMK: 1-4-02:76, which was probably built circa 1923.

Many of the earliest Kōkeʻe cabins may have been small structures that were no more than shelters and sleeping quarters. Many cabins were not equipped with indoor plumbing when the Kōkeʻe Camps were first established by the Territory of Hawaiʻi in 1918. Outhouses and

sometimes kitchens were separate facilities. Showers were built in streams. The absence of plumbing as well as electricity was partly due to a "simple life in the country ethic." Prior to WWII, the cabins were used only during the dry summer months. Part-time use did not justify the high costs of utility and infrastructure development. To a certain extent, the absence of electricity and water also reflected an intentional and simple country life experience that is still evident in many of the cabins today, despite the availability of utility services.

Water service was provided at Pu'u ka Pele in the 1920s. Electricity would not be delivered to the Kōke'e area until the 1960s. Elements of the rustic lifestyle are still evident. The cabins at Makaweli Flats do not have electric service. The Wilcox Cabin (TMK: 1-4-04:12) has neither water nor electric service and relies on an adjacent stream for water. Several cabins in this study were noted as having outdoor bathing areas with a bathtub, shower, or furo. A few had functional wood-burning water heaters, even though the cabins had electricity.

By the end of the 1920s, some buildings were being constructed of tongue-and-groove vertical boards rather than board-and-batten. The newer summer residences were often larger than the earlier board-and-batten cabins. These houses often featured hipped roofs and a combination of double-hung windows with a few six-light sliding windows. Buildings such as the Līhu'e Plantation Company Ltd. cabin, circa 1925 (TMK: 1-4-02:48), or the house at TMK: 1-4-02:23, circa 1930, were typical of the vertical-board vernacular houses that emerged by the mid 1920s. Other fine examples of the houses built during this time period are the structures on TMK: 1-4-02:52, TMK: 1-4-02:45, and TMK: 1-4-02:54. It is important to note that many board-and-batten structures continued to be built at Kōke'e.

Over the decades a wide variety of vernacular structures were built at the Kōke'e Camps and Pu'u ka Pele Lots. Some houses, as an example, those at TMK: 1-4-02: 30 and 32, are unique in Kōke'e. These vernacular buildings used the typical board-and-board construction, but also included unique architectural details such as larger windows and/or attic vents. A handful of Kōke'e cabins are shingle clad, although at least two of these buildings were originally vertical board and covered with shingles after 1983 (TMK: 1-4-04:14 and 43).

As a general rule, cabins and houses at Kōke'e were vernacular in style and built using vertical-board or board-and-batten construction until the end of the 1960s. Not until the late 1980s were houses using modern materials and building styles constructed. Some of these newer building styles are likely a result of the readily available and relatively inexpensive materials such as TI-Il siding and aluminum-framed windows and sliding doors. Stricter building codes may have also dictated what types of materials were permitted in new construction.

Changing Needs and Building Modifications

Over the years various modifications have been made to the Kōke'e cabins. Perhaps the most noticeable alteration is the addition of large decks, some of which are façade length or

wraparound and are a major portion of the relative house size. Many of these decks were built in a contemporary style typically found in urban subdivisions rather than the traditional Kōkeʻe rustic architectural style, which often was a porch with ʻōhiʻa railings. Another modification to many houses is the replacement of original windows with plate-glass windows or sliding-glass doors. The use of these larger windows most likely reflects the desire to allow more light into cabins with small windows and overhanging eaves, which can be quite dark during Kōkeʻe's frequent rainy weather. It is also likely that some of the windows were replaced with readily available, cheaper windows after hurricane or storm damage. One other very obvious change at Kōkeʻe is the addition of satellite dishes. These dishes provide a sharp, modern contrast to the old rustic cabins and also reflect the changing nature of activities at the Kōkeʻe camps.

While older cabins have been substantially altered in many cases, it is also important to note that some cabin owners have renovated and/or enlarged their cabins with in-kind repairs or sympathetic additions that have little impact on the historic character of the structure. A good example of a large addition added to an older cabin without impacting the historic character of the original cabin is the Plews Cabin, TMK: 1-4-04: 16, located in Rice Flats. The Plews built an unpainted addition on the back of the original 1920's structure. Since the addition complements the original structure and is not visible on the older structure's public façade, the original structure maintains its historic integrity. Another case of a new building that complements the adjacent 1920's cabin is the Wichman Cabin located at TMK: 1-4-04: 17, which is also part of Rice Flats. The cabin at TMK: 1-4-03: 5 has a porch that is not an in-kind replacement, but is very similar to the earlier porch and complements the building's rustic architectural style.

Exceptional Architecture at Kōkeʻe

Two houses at Kōkeʻe are exceptional architectural examples, the Danford House (TMK: 1-4-3: 13), circa 1938, and the Hagino House (TMK: 1-4-4: 40), circa 1937. Both houses are large and in great contrast to the small rustic cabins at Kōkeʻe.

The Danford House was built in the Tudor style and is a fine example of outstanding architecture. It features fine architectural details such as dormers, French doors with divided lights, and a rock chimney. The house has awning windows and a Hawaiian-style double-pitched roof with flared eaves. The "Hawaiian style double-pitched roof" design is attributed to C. W. Dickey, who modeled his double pitched, usually hipped, roofs on the traditional high pitched, thatched roof forms found in early Hawaiian architecture. Many of Dickey's roofs also featured flared eaves. The interior highlights include an open-truss ceiling. The Danford House was built by a notable Kauaʻi family that camped at Kōkeʻe as early as 1907 during Knudsen's tenure on the land. The architectural form of the Danford House is remarkably similar to the Caleb E. S. Burns Residence in Līhuʻe, which was designed by well-known Hawaiʻi architect C. W. Dickey in 1933.

The other exceptional house at Kōkeʻe was built in a more vernacular style, but like the Danford House, features fine architectural details and a much grander style than the average Kōkeʻe cabin. The Hagino house also has a Hawaiian-style double-pitched roof with flared eaves. It features large sliding windows on the front facade and a lovely "Kōkeʻe-style" rustic porch with ʻōhiʻa railings. During the 2003 survey of cabins, as with the early DLNR survey of recreation residences, the cabins were rated on a scale of 1 to 5. Five indicating that the cabin had retained all of the historic character of the period when it was built. Ratings of 1 and 2 indicated that the cabin had been modified to a point where historic elements were lost or the architecture is contemporary. Table 5-3 shows the rating the historic rating of the cabins by area.

Table 5-3

Historic Rating of Recreation Cabins

	Rating*				
Location	1	2	3	4	5
Kōkeʻe Lots	13	4	9	10	9
Halemanu	0	1	3	4	6
Puʻu ka Pele	21	4	13	10	7
Total	34	9	25	24	22

*Rating = 1=lowest rating in historic integrity, 5= highest rating in historic integrity

Recreation Residence Landscape Typologies

The residents of Kōkeʻe and Waimea Canyon State Parks modified the landscape around their camp lots and residences following a variety of influences. The most significant effects perpetrated upon the surrounding vegetation were arguably the result of two requirements of the lease: (1) that lease holders maintain an ample fire break around their cabins, thus necessitating clearing away forest vegetation; and (2) that lease holders plant a minimum of 50 trees on their property in conjunction with early forestry efforts.

Although the earliest leases for the Kōkeʻe Camps forbid campers to import alien plants without the consent of the territorial forester, it appears that the Territorial Forestry Division instead encouraged campers to help with reforestation. Supervising and approving campers' planting activities would probably have been an impossible task. Contemporary accounts report that campers were expected to plant fifty trees on their property; and evidence shows that campers mostly planted as they pleased.

Indeed, gardening was a popular pastime at Kōkeʻe. It is uncertain when the government began supplying water to the Kōkeʻe Camps, although a water system was provided by the County of Kauaʻi to the Puʻu ka Pele lots in the 1920's. Prior to the development of a water delivery

system, gardening was usually done adjacent to streams where roses, pansies, dahlias, and other flowering ornamentals could thrive, even during the dry summer months. Hydrangeas were frequently planted alongside the cabins as roof runoff would keep them watered and growing. Methley plum trees, introduced to Kōkeʻe by Kauaʻi forester J. MacDonald, became a favorite landscaping item for many cabin owners. The CCC also contributed by providing residents with seedlings of a variety of species, including California redwood, Sequoia, Eucalyptus, Sugi and Black Pine, and various fruit trees, including apple, plum, pear, and others.

Over time, the activities of the mountain residents have produced a mosaic of several distinct landscape typologies. Though each typology expresses a different relationship with the land, there is an apparent shared landscape characteristic of open lawn space defined and accented with natural and introduced tree plantings. This landscape feature is emblematic of Kōkeʻe and evident throughout the public space and lease lots within the two parks. It is most prominently reinforced by the open meadow space and monumental trees of Kanaloahuluhulu.

Forest Clearing Landscape – This landscape type is representative of the recreation residence origins in the early forest camps and hunters cabins. It is characterized by the cabin set within a small, grassed clearing from which the forest has been beaten back, but remains dominant. Surrounding vegetation is generally comprised of dense, untended, natural forest constituents. Landscape improvements are minimal. Planted trees are typically used to define lot entry drives and property boundaries. Tended vegetation (typically ornamental ti, ginger, hydrangea, and similar plants) is limited to the immediate perimeter of the cabin.

Woodland Park Landscape – This landscape type suggests a forested park in which scattered trees are set within a meadow-like environment to create a naturalistic woodland appearance. This landscape represents the integration of the forest through both selective clearing and introduced tree plantings. Trees are typically left untended. Planted trees are used also to define entry ways and property boundaries.

Orchard Landscape – This landscape type developed from agricultural experimentation conducted by the Civilian Conservation Corps. In this type, the forest is cleared to create open space for orderly plantings of fruit trees in rectangular or triangular rows. The landscape is controlled and the lot displays a functional organization of space with built elements sited for the convenience of orchard maintenance. Ornamental vegetation is typically limited to the periphery of built elements.

Cottage Landscape - This landscape type is suggestive of a formal, English garden style and may reflect early park residents' identification with cultural roots from both sides of the northern Atlantic. In this landscape, the forest is beaten back to create controlled, ornamental space. Characteristics include carefully tended flower and vegetable beds set within well-

manicured lawns surrounding the residence. The natural forest may be represented within the landscape by carefully groomed specimens of trees or shrubs .

Potential Impacts and Proposed Mitigation

In order to preserve the historic character of the area the recreation residences have been proposed as a "historic preservation and restoration project" under the provisions of Chapter 171-36.2. Rules and guidelines for the preservation of the recreation residences are in progress. A benefit being designated a historic preservation and restoration project is that the DLNR is able to directly negotiate with current lessees for their continued use of the cabins.

No impacts are anticipated to the historic structures within the two parks. In order that the historic character of the structures maintains their integrity, design guidelines will be developed to continue the rustic tradition of the area. This may require that structures be removed or demolished because it is out of character with the intended cultural landscape or a fuel break cannot be cleared without the cabin becoming a visual eyesore. Interpretive programs are proposed by DSP for TMK: 1-4-4: 24, the Kōkeʻe Ditch irrigation system, and the Puʻu Lua Ditchmans' cabin. The interpretive program should include the history of the ditch system and development of Kōkeʻe's cultural landscape, the role of the ditch in West Kauaʻi's agricultural economy, and individuals associated with the ditch history. Program elements may include signage, restoration of ditch facilities, and self-guided and docent-guided interpretive hiking trails along segments of the ditch.

5.2.2 Archaeological Resources

There are four recorded archaeological sites in Waimea Canyon State Park and one recorded site in Kōkeʻe State Park. The archaeological evidence recorded to date tends to support the idea that the upland area contained within the two parks was used largely as a resource gathering zone with limited habitation. Archaeological surveys conducted in the region include:

- In 1906, Thomas Thrum conducted an island-wide survey of heiau sites. Two sites were recorded in Kōkeʻe: Ahuloulu Heiau and Kaunuaiea Shrine.
- In 1928-29, Wendell Bennett recorded two house site complexes on or near Puʻu ka Pele Crater (Bennett, 1931).
- In 1993, State archaeologist Nancy McMahon conducted reconnaissance survey along Ridge Road in the Kōkeʻe Uplands. She recorded a single site (State No. 50-30-05-499) during the survey, interpreted to be a sweet potato planting area, at the end of Polihale Ridge Road outside of the project area.
- In 1993, Alan Carpenter recorded a site near the Waimea Canyon Lookout interpreted

to be a temporary habitation likely associated with canoe-making. The uplands of Waimea Canyon were known for harvesting and working logs for canoes.

- In a 1994 survey of Kahuama'a Flat in Kōke'e State Park, archaeologists Alan Carpenter and Martha Yent noted few archaeological sites. The area surveyed is generally thought to have been a resource gathering zone rather than an area of permanent habitation. Their report cites legends that suggest this type of use.
- In 1994, Martha Yent conducted a reconnaissance survey of the Kukui radio communication facility in Waimea Canyon State Park and discovered no archaeological sites or features.
- In 1994, Martha Yent conducted an archaeological reconnaissance survey of the former Army camp site near the Awa'awapuhi Trailhead. The survey identified one abandoned, standing concrete building and two concrete foundation slabs associated with the Army Camp, circa 1940-1950s. No other significant features were recorded.

Other archaeological surveys conducted in the study area include:

- 1978 reconnaissance of Kukui Trail by Francis Ching.
- 1982 reconnaissance of the Kōke'e Hydropower Project by Martha Yent.
- 1990 survey of USN Radio Telescope Project Area in Waimea by Paul H. Rosendahl.

These surveys did not result in the discovery of previously unidentified archaeological sites. Sites recorded as a result of these surveys are listed in **Table 5-4** and shown on **Figure 5-8**.

Potential Impacts and Proposed Mitigation

No impacts are anticipated to the archaeological resources within the two Parks. The archaeological sites are recommended to be preserved through stabilization. Further, as appropriate, the sites will be interpreted for the park visitors. Develop an interpretive program for the Pu'u ka Pele canoe builder's site. The site is reported to contain remnants of a heiau, an ahu (shrine), and two house sites. A portion of the site is currently occupied by the Verizon communication tower, which operates under a lease with the State. If the site is to be developed as a visitor interpretive site, the lease on the Verizon facilities will be terminated, the built facilities removed, and the area revegetated with native plants. Interpretive program content may include signage and guided tours to explain traditional Hawaiian silvaculture, canoe building practices and the role of upland resources in the Hawaiian community.

Table 5-4
Recorded Archaeological Sites within Kōke'e & Waimea Canyon State Parks

State No.	Site Description
50-30-01-19	**Ahuloulu Heiau** - (Thrum, 1906; Bennett, 1931).This heiau consists of a walled enclosure, the outside dimensions of which are 37 by 41 feet. The walls are 4 feet wide and badly broken. In front of this structure is a flat area about 50 by 50 feet without paving or boundaries. At the back of the enclosure there is a paved platform 8 by 12 feet. This platform is backed by a large rock containing several plugged-up holes which might have been used as a depository for umbilical cords.
50-30-01-20	**Pu'u ka Pele House Site** – (Bennet 1931).This site consists of house sites around the crater of Pu'u ka Pele. The remains of seven house sites are indicated by stones in line forming a terrace with a flat space behind. Some of these house sites measure 30 by 20 feet. A platform, interpreted to be a possible religious feature, is located at the top of the pu'u at the site of the microwave antennae. The platform measures 30 by 30 feet, is slightly terraced, and is recorded to contain river stones and coral. Pu'u ka Pele is associated with canoe making activities. The location also figures in one of the Pele legends.
50-30-01-21	**House Site** – (Bennett, 1931).Located towards the sea from Pu'u ka Pele on the north side of the road, the site consists of a series of house sites on top of a flat ridge, the edge of which is lined with stones for 50 feet or more. The site is crossed by several divisions. Fireplaces consisting of four of more stones placed in a rectangle are in evidence on several of these divisions.
50-30-01-22	**Kaunu'aiea Heiau** – (Thrum 1906, Bennett, 1931).Also identified as (Kaumuaiea heiau). This heiau was located in a small clearing above Halemanu in the forest of Miloli'i on the Kaunuohua Ridge. It is identified by Thrum as a small shrine. The name means literally "the small shrine built of 'aiea wood". 'Aiea is a native holly (*Ilex anomala*). The shrine is presumed to have existed at the current site of the NASA facility.
50-30-01-707	**Temporary Habitation Site** – (Carpenter and Yent, 1993). This site is located at Waimea Canyon Lookout. It consists of a single row of stones on three sides on a level area about 80 meters southwest of the men's restroom at the lookout. The stone outline measures approximately 3 meters by 5 meters The site is probably a temporary habitation site related to the logging of wood for canoes.

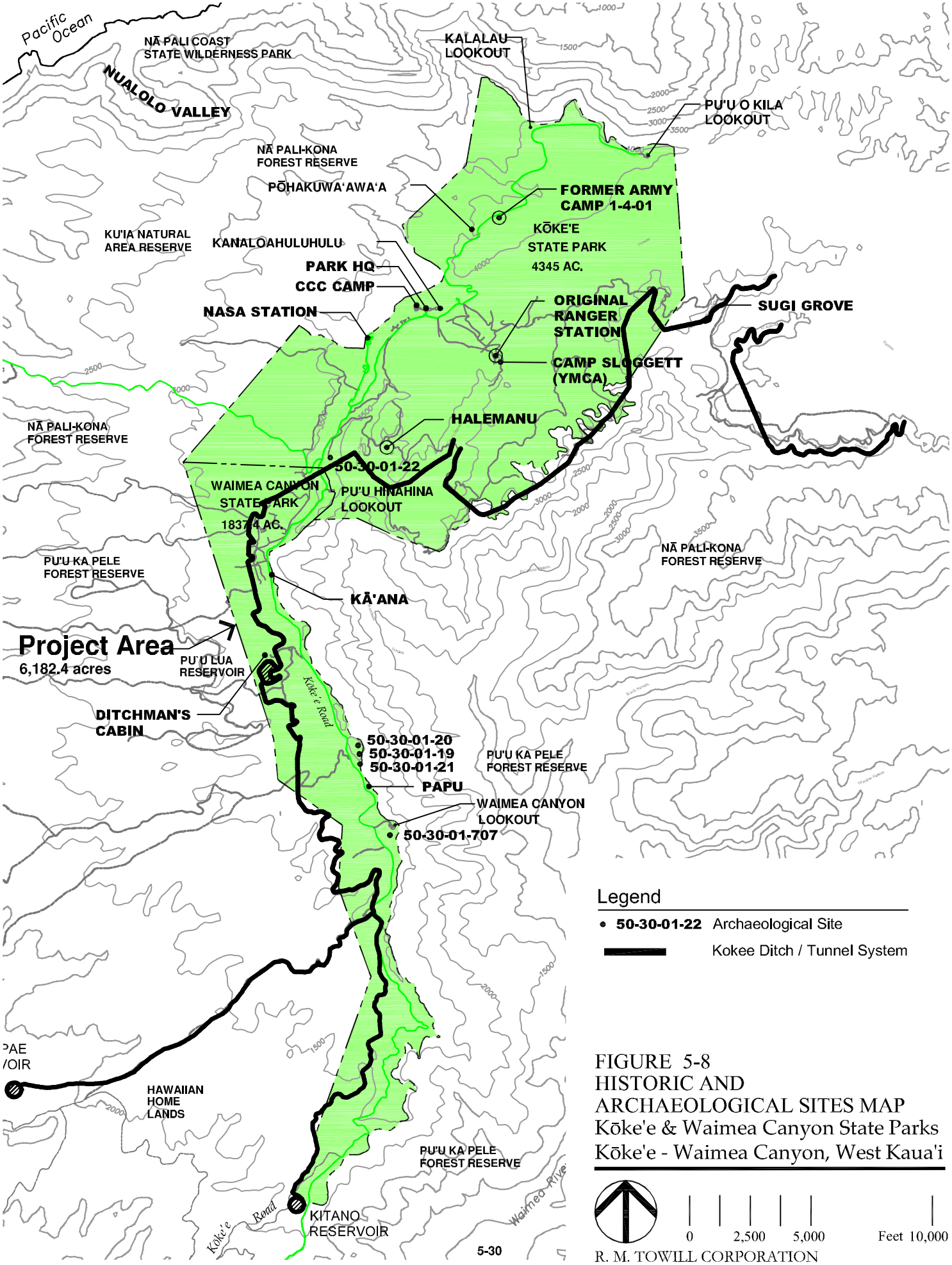


FIGURE 5-8
HISTORIC AND ARCHAEOLOGICAL SITES MAP
Kōke'e & Waimea Canyon State Parks
Kōke'e - Waimea Canyon, West Kaua'i

Table 5-5

Cultural and Seasonal Events Associated with Kōkeʻe & Waimea Canyon State Parks

Event Description	Calendar
Banana Poka Round-Up Kōkeʻe Museum's annual forest education fair featuring Hawaiian music, environmental exhibitions, forest craft workshops, and family activities.	May
Methley Plum Picking Season Pickers have favored sites to which they return year after year. It is a favorite for use in making cracked seed, umeboshi (Japanese salted plum), jams and jellies. Methley plum trees were originally planted in 1935 by the Civilian Conservation Corps.	July
Trout Fishing Season	August - September
Eo e Emalani Alakaʻi Festival Commemorating Queen Emmaʻs 1871 Visit to Waimea Uka and the Alakaʻi. Hosted by Hui o Laka. Event includes performances by hula halau, music, and food.	October
Hunting Seasons	Year-round on weekends and holidays

5.2.3 Cultural Events

Kōke'e and Waimea Canyon State Parks have long been the site of social gatherings with a variety of functions: recreation, religious practice, art and dance, resource collection, and community festivals. In addition, for countless residents of Kaua'i the Park has served as a "classroom" for handing down traditional practices related to hunting, resource gathering, and crafts. All of these activities instill value in the Park as a living cultural landscape with direct and ongoing links to pre- and post-contact histories and traditions. Cultural and seasonal events associated with Kōke'e and Waimea Canyon State Parks are listed in **Table 5-5**. The seasonal events noted attract large audiences and results in a lack of parking.

Potential Impacts and Proposed Mitigation

No impacts are anticipated to the continuation of the cultural events at the Parks, and therefore no mitigation is proposed. A study is recommend to determine event parking needs and require event organizers to provide parking and transportation alternatives. These alternative can include parking at the lookouts and providing a shuttle, or parking in Waimea town with a shuttle to the Park.

5.2.4 Cultural/Historic Landscape

Defining the Kōke'e Cultural Landscape requires identifying the various elements of the built and natural environment that make up the area, and characterizing the significance of each to the overall landscape. The cultural landscape is shaped through human activities and actions, planned and unplanned, over time. It is a reflection of the tangible and intangible values people hold in a place. This section reviews significant actions, people, and events that have taken place over time and identifies the elements that define the nature of the Kōke'e Cultural Landscape.

Defining the Cultural Landscape

Cultural Landscapes are defined by the National Park Service (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 persons or exhibiting other cultural or aesthetic values" (NPS, 1994). The NPS recognizes four general types of cultural landscapes: historic sites, historic designated landscapes, historic vernacular landscapes, and ethnographic landscapes (Ibid.). The NPS does not believe each of these environments to be mutually exclusive as each area defined but may share components of another.

A historic landscape "includes residential gardens and community parks, scenic highways, rural communities, institutional grounds, cemeteries, battlefields, and zoological gardens. They are composed of a number of character-defining features which, individually or collectively

contribute to the landscape's physical appearance as they have evolved over time" (Ibid.).

"*Historic Designated Landscape* is a landscape that was consciously designed or laid out by a landscape architect, master gardener, architect, or horticulturist according to design principles, or an amateur gardener working in a recognized style or tradition. The landscape may be associated with a significant person(s), trend, or event in landscape architecture; or illustrate an important development in the theory and practice of landscape architecture. Aesthetic values play a significant role in designed landscapes. Examples include parks, campuses, and estates."

"*Historic Vernacular Landscape* is a landscape that evolved through use by the people whose activities or occupancy shaped that landscape. Through social or cultural attitudes of an individual, family or a community, the landscape reflects the physical, biological, and cultural character of those everyday lives. Function plays a significant role in vernacular landscapes. They can be a single property such as a farm or a collection of properties such as a district of historic farms along a river valley. Examples include rural villages, industrial complexes, and agricultural landscapes."

"Historic Site is a landscape significant for its association with a historic event, activity, or person. Examples include battlefields and president's house properties."

"Ethnographic Landscape is a landscape containing a variety of natural and cultural resources that associated people define as heritage resources. Examples are contemporary settlements, religious sacred sites and massive geological structures. Small plant communities, animals, subsistence and ceremonial grounds are often components."

The methodology developed by the NPS for evaluating a cultural landscape begins with analyzing the landscape in order that changes over time can be understood. This may be accomplished by overlaying the various period plans with the existing conditions plan. Based on these findings, individual features may be attributed to the particular period when they were introduced, and the various periods when they were present (Ibid.).

It is during this step that the *historic significance* of the landscape component of a historic property and its integrity are determined. *"Historic significance* is the recognized importance a property displays when it has been evaluated, including when it has been found to meet the criteria of the National Register. A landscape may have several areas of historical significance. An understanding of the landscape as a continuum through history is critical in assessing its cultural and historic value. In order for the landscape to have integrity, these character-defining features or qualities that contribute to its significance must be present" (Ibid.).

"*Integrity* is a property's historic identity evidenced by the survival of physical characteristics from the property's historic or pre-historic period. The seven qualities of integrity are *location, setting, feeling, association, design, workmanship and materials*. When evaluating these

qualities, care should be taken to consider change itself. For example, when a second-generation woodland overtakes an open pasture in a battlefield landscape, or a woodland edge encloses a scenic vista. For situations such as these, the reversibility and/or compatibility of those features should be considered, both individually, and in the context of the overall landscape. "Together, evaluations of significance and integrity, when combined with historic research, documentation of existing conditions, and analysis findings, influence later treatment and interpretation decisions" (Ibid.).

Significance Determination and Treatment for Cultural Landscapes

The assessment of significance evaluates the qualities associated with the project area in accordance with guidance provided by the Department of Interior and Chapter 6E (HRS), and Chapter 13-8 (HAR). The significance in American (Hawaiian) history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

- That are associated with events that have made a significant contribution to the broad patterns of our history; or
- That are associated with the lives of persons significant in our past; or
- That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- That have yielded or may be likely to yield, information important in prehistory or history.

In addition, HAR provide for two additional criteria as follows:

> "(E) Environmental impact, i.e., whether the preservation of the building, site, structure, district, or object significantly enhances the environmental quality of the State; and
>
> (F) The social, cultural, educational, and recreational value of the building, site, structure, district, or object, when preserved, presented, or interpreted, contributes significantly to the understanding and enjoyment of the history and culture of Hawai'i, the Pacific area, or the nation."

Table 5-6 summarizes the significance evaluation criteria and denotes its applicability to areas within the Kōke'e and Waimea Canyon State Parks.

Table 5-6

Significance Assessment

Criteria		Region	Kōke'e	Halemanu	Pu'u ka Pele	CCC Camp	Kanaloa-huluhulu
A	Association with events in history	✔				✔	
B	Association with significant persons	✔	✔	✔	✔		
C	Embody distinctive characteristics of type, period or method of construction	✔	✔	✔	✔	✔	
D	Area yielded or likely to yield information on history or pre-history	✔			✔		
E	Environmental impact enhanced	✔				✔	✔
F	Social, cultural, educational, and recreational value	✔				✔	✔

Criteria A - Significance in American (Hawaiian) history, architecture, archeology, engineering, and culture that are associated with events that have made a significant contribution to the broad patterns of our history.

Significant Cultural Periods/Events

The history of the Waimea-Kōke'e region abounds with events that serves as milestones in the evolutionary development of Kōke'e and Waimea Canyon State Parks. Significant cultural periods and events in the area include:

- Early Hawaiian use of forest resources: Koa for canoes, birds, sandalwood, firewood.
- First Western Contact. Captain James Cook visits Waimea. Captain George Vancouver releases cattle into the wilds.
- Early market exploitation of forest resources: Sandalwood trade and whaling industry both created demand for forest products that led to changes in the natural landscape.
- Cattle ranching in west Kaua'i uplands: 1855, Valdemar Knudsen begins cattle ranching in Waimea-Kōke'e region. Forest devastation from grazing and fire.
- 1871 - Queen Emalani travels to Kōke'e and across the Alaka'i.

- Development of mountain retreats/summer homes in the Kōkeʻe and Puʻu ka Pele uplands starting with Valdemar Knudsen's summer camps. Leases for "summer camp" lots started by the Territory of Hawaiʻi in Kōkeʻe in 1917.
- Sugar industry growth results in rapid development of irrigation ditch systems and expansion of agricultural lands.
- Early forestry efforts by Territorial and County foresters, and the Civilian Conservation Corps spurred by concern for watershed protection.
- Development of military facilities – Air National Guard, Missile Defense; NASA, Mercury mission and space exploration during Cold War period results in changes to Kōkeʻe and Waimea Canyon landscape.
- Park Creation – Territory and State of Hawaiʻi recognize unique value of Kōkeʻe and Waimea Canyon.
- Period of emerging environmentalism reflected in increased interest in conservation, resource protection, historic preservation, and outdoor recreation.

Criteria B - Significance in American (Hawaiian) history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and that are associated with the lives of persons significant in our past.

The following are persons that contributed to the history of the Kōkeʻe and Waimea Canyon State Parks:

- Valdemar Knudsen (developed first recreation residence)
- Queen Emma (historic journey across the Alakaʻi)
- H.P. Faye (plantation manager and recreation residence lessee)
- Charles S. Judd (territorial forester)
- Joseph M. Souza (State Park Superintendent)

Criteria C - Significance in American (Hawaiian) history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction.

The Kōkeʻe Camps and Puʻu ka Pele lots achieve State and local significance in the areas of social and recreation history as well as architecture. The architectural inventory of the Kōkeʻe

Camps and Pu'u ka Pele lots conducted as part of this study indicates that eighty-one structures may be considered potentially historic. These buildings, taken together as a possible historic district, have historic integrity and meet the Secretary of the Interior's National Register significance criteria A and C.

Historic properties that meet criterion A "are associated with events that have made a significant contribution to the broad patterns of our history." The development of recreational tracts for summer homes ("camping" as it was historically termed in Kōkeʻe) played an important role in Hawai'i's social and recreation history. Started by outdoor enthusiast Valdemar Knudsen, but later modeled on the recreation residence areas in the U. S. National Forest Service, the summer camps at Kōkeʻe and Pu'u ka Pele are the only such areas in Hawai'i. The territorial government, later the State of Hawai'i, allowed public land to be leased to private individuals and organizations for leisure activities and refreshment of the human body and spirit. The camps served as retreats from everyday life and to provide relief from Hawai'i's hot coastal climates by means of an invigorating, cool mountain climate with numerous recreational opportunities. Over the years, local residents and organizations took advantage of outdoor activities, including hiking, swimming, hunting, trout fishing, and fruit picking. Some of these pursuits, especially trout fishing and plum picking, became uniquely identified with Kōkeʻe.

Historic properties that meet Criteria C "embody the distinctive characteristics of a type, period, or method of construction or represent the work of a master, or possess high artistic value, or represent a significant and distinguishable entity whose components lack individual distinction." Many of the cabins and houses built at Kōkeʻe have the distinctive characteristics of rustic vernacular architecture developed primarily between the 1870s and the 1960s. Individually, most of these buildings lack distinction and have a relatively simple architectural style. Taken together, many of the cabins become a distinguishable entity that represents a significant architectural achievement. Eighty-one cabins may be considered potential historic structures representing late nineteenth century and early twentieth century rustic vernacular architectural styles in Hawai'i.

Altogether, the cabins at Kōkeʻe and Pu'u ka Pele comprise a unique collection of early twentieth century vernacular structures. The majority of the cabins maintain historic integrity in their design, setting, location, workmanship, feeling and association.

The significant character-defining architectural features of the cabins include:

- Design - The typical architectural style was simple vernacular, with rustic features that complemented the natural landscape of Kaua'i's upland forests at Kōkeʻe.
- Construction Methods and Materials - Architectural styles were dominated by board-and-batten or vertical-board, post-on-pier construction. The cabins primarily feature

six-light wood-framed sliding windows or wood-framed double- hung windows. The post-on-pier foundations may feature log posts and rocks.

- Roofing - Roofs were traditionally gable, but by the 1920s some hipped roofs were used. Primary roofing material is corrugated metal, although the earliest houses appear to have been roofed with shake.
- Rustic Features and Craftsmanship - Rustic features included the use of ʻōhiʻa (or other tree) logs and branches that were fashioned into porch railings. Native materials were also featured in rock fireplaces and chimneys. Native materials were sometimes used in foundations. Numerous unpainted cabins also add a rustic touch to Kōkeʻe architecture.
- Setting and Location - The cabins are set in the upland forests of Kōkeʻe and Waimea Canyon State Parks and were originally part of the Nā Pali-Kona Forest Reserve and Pu'u ka Pele Forest Reserve. These reserves, and later the State Parks, were established to protect natural values and the Kaua'i watershed.

Criteria D - Significance in American (Hawaiian) history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, that have yielded or may be likely to yield, information important in prehistory or history.

Much of the study area has not been thoroughly investigated to determine if important historic information of the area still remains or has been lost. A few archaeological sites have been identified during previous studies, however, they were limited in scope and were site-specific.

Anecdotal information presented by past visitors to the area such as Captain James Cook, Captain Vancouver, and reports by Handy and Handy suggest that the area was populated, and in traditional Hawaiian fashion, the land was used from the mountains to the sea. Handy and Handy also note from historical records that the Waimea Canyon included a number of villages of the "kuaʻāina."

Though limited, the parks' archaeological resources add depth to the history of Kōkeʻe and Waimea Canyon and can be used to enhance a visitor's understanding of the region and enjoyment of their park experience. The collection of stories prepared by Fredrick Wichman, "Touring the Legends of Kōkeʻe," provides another rich resource for understanding the history of the area.

The significance of the trail network in the area can be traced back to early Hawaiians and their use of footpaths as a means of transportation and communication throughout the island. Forest resources are an important feature of the historic landscape because of the tradition of canoe building attributed to the area. The large stands of koa in the vicinity were reported by Captains

Cook and Vancouver. The specialized Hawaiian practice of gathering feathers for the capes of the ali'i is also documented in the accounts of V. Knudsen. The features about Pu'u ka Pele and history relating to the "canoe builders" require further research.

Criteria E - Significance in American (Hawaiian) history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and whether the preservation of the building, site, structure, district, or object significantly enhances the environmental quality of the State.

Whenever large expanses of space can be unified into a whole, the value of the entire space is enhanced beyond the sum of its parts. In the Kōke'e and Waimea Canyon State Parks, several ahupua'a could be administered as a single unit. Treated as a single unit, the area can be viewed as an educational tool, to teach geology, ecology, biology, zoology, biodiversity, history, architecture, engineering, communications, and more.

The area as a unit also provides opportunities for recreation from a coastal environment, to a mid-level forest environment, to a rain forest environment. Further, the entire area presents opportunities to recreate in different climate zones from the hot and dry coastal area, to the cool temperate zone (1,000 feet to 2,000 feet elevation), to colder climate zones that reach 4,000 feet in elevation.

Finally, the maintenance of the two parks as a single planning unit also maintains the biological biodiversity of the area. Kaua'i's forests contain plant and animal species not found on the other islands. The uplands around Kōke'e contain the most intact and pristine examples of native mesic forest to be found anywhere in the State (TNCH, 1996; DLNR NARS Program, 2003).

Criteria F - Significance in American (Hawaiian) history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and the social, cultural, educational, and recreational value of the building, site, structure, district, or object, when preserved, presented, or interpreted, contributes significantly to the understanding and enjoyment of the history and culture of Hawai'i, the Pacific area, or the nation.

There are three outstanding features of the Parks that define periods in Hawaiian history that embody works of architecture, engineering, and landscaping:

- Kōke'e Ditch System.
- CCC planted tree stands.
- Cabins, including the CCC Camp, of the plantation era.

The Kōke'e Ditch System made possible the extensive growing of sugar cane in the Waimea and Kekaha area. In addition, the ditch system was regarded as an engineering accomplishment. The entire system, with its power generation stations, is unique among all of Hawaiian sugar plantations.

The era of the CCC on Kaua'i is important, not only for what the program stood for, but for the work accomplished by the persons who served in the program. As noted earlier, the program was responsible for all of the major planted stands of introduced tree species in Kōke'e, which restored much of the forested landscape from one that was eroded from overgrazing and fires.

The leasehold cabins in Kōke'e include a variety of architecture examples with origins in the construction practices of the early Hawaiian plantation period. The single-wall construction that was used throughout the islands and reproduced in Kōke'e and Waimea Canyon State Parks, was well-suited to the Hawaiian environment. Currently, these unique homes are giving way to the modern double-wall construction with paneled siding and gypsum interior panels. The preservation of the homes in Kōke'e would be a means of preserving a part of Hawai'i's past that is quickly disappearing throughout the islands.

Potential Impacts and Proposed Mitigation

No impacts are anticipated to the continuation of the cultural historic landscape at the Parks, and therefore no mitigation is proposed.

5.3 SCENIC RESOURCES

5.3.1 Primary Scenic Views

Scenic resources within Kōke'e and Waimea Canyon State Parks are shown in **Figure 5-9**, and are described as follows:

A. Waimea Canyon Lookout

Waimea Canyon Lookout is the most heavily visited site in Waimea Canyon State Park. It offers 360-degree views from the upper platform that include the canyon, the Alaka'i Plateau, Mt. Wai'ale'ale, Pe'ape'a Summit, Ni'ihau, and the south and west coasts of Kaua'i. The audience at this location includes group tours, individual day visitors, amateur naturalists, campers, and hikers. Many bus tours stop here regularly every day, with pronounced increases on days when cruise ships are in port.

Recommended interpretive techniques include kiosks near the parking lot and signs along the railings. Given the large, consistent audience, this would be a good location to provide interpretive staff to interact with visitors and provide an introduction to the region. Interpretive material at this site should provide an overview of key themes of the entire park system: natural resources and processes, geology, history, and outdoor recreation activities.

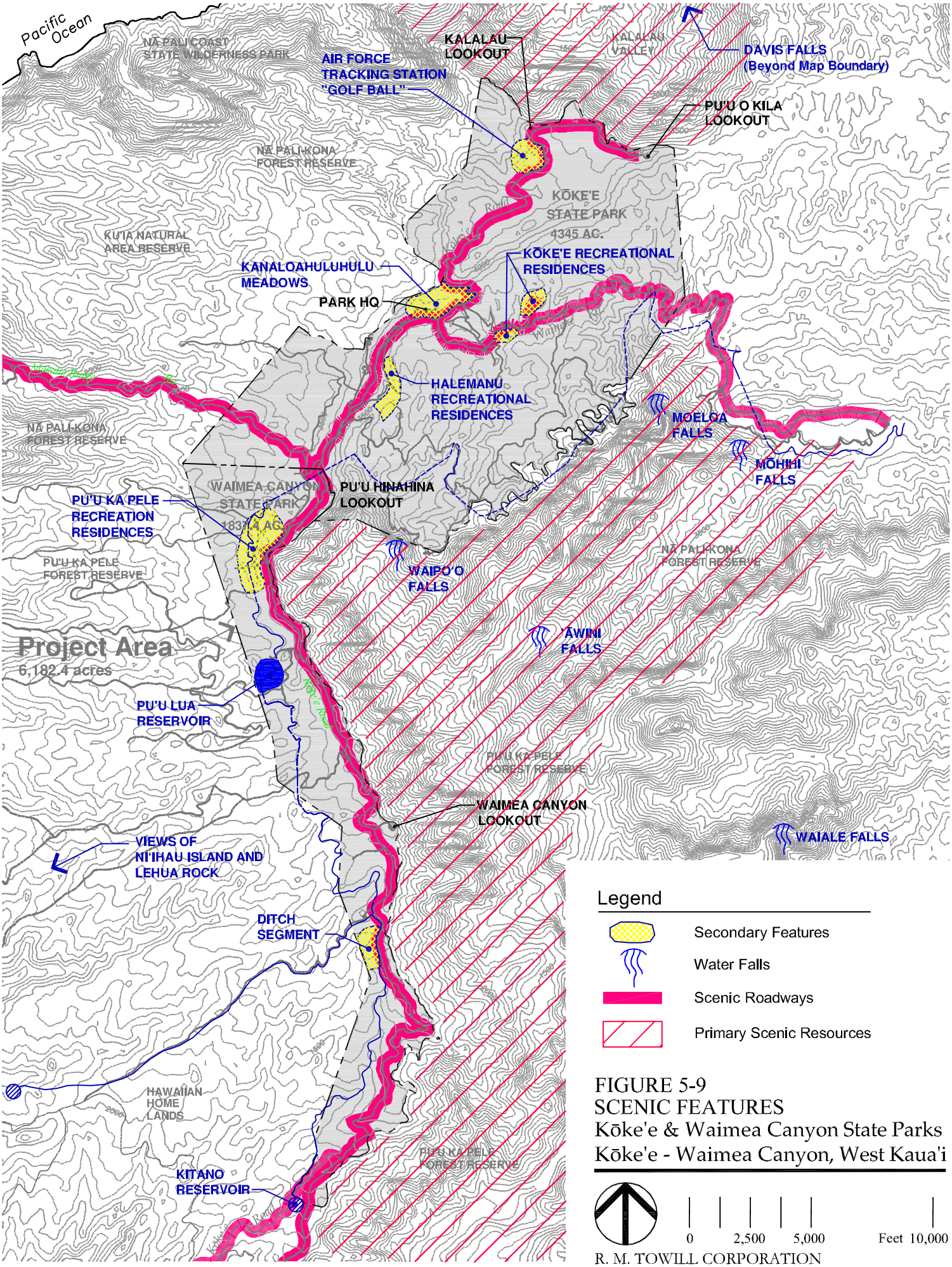


FIGURE 5-9
SCENIC FEATURES
Kōke'e & Waimea Canyon State Parks
Kōke'e - Waimea Canyon, West Kaua'i

R. M. TOWILL CORPORATION

With views spanning from the Alaka'i Plateau and Mt. Wai'ale'ale to the canyon floor and dry lowland regions, this location should provide interpretation of the natural communities in the region, including a contrast of the warmer, drier lowland shrublands and the wet forests at higher elevations.

The erosional forces that shaped Waimea Canyon are on excellent display along the surrounding canyon rim. The Kōke'e Stream empties into the canyon and provides a good subject for interpreting the effects of streams on the landscape, as well as offering a link into interpreting the unique formations underlying the headwater sources of the Alaka'i Swamp and Mt. Wai'ale'ale.

Interpretation of the geologic formation of Kaua'i should be linked at this site to interpretive material at Kalalau Lookout and Pu'u o Kila Lookout. Together, these sites offer views of geologic features that tell nearly the complete story of the volcanism and erosional forces that shaped the island.

The Waimea Canyon Lookout located between milepost 10 and 11 is the first formal facility and the most visited facility provided to the visitor within the park boundaries. The visitor has had glimpses into Waimea Canyon from milepost 3, but only had limited places to park and view the canyon. The Waimea Canyon Lookout provides the visitor with a paved parking lot for 35 automobiles and 5 buses or vans, restrooms, and viewing areas. The site does not have a potable water system. The bus parking area is also situated in a location that makes the area unattractive. The approach to and the lookout area itself is currently unattractive, and the landscaping appears not to be maintained and the vegetation is sparse. Accessibility to the comfort station is currently limited due to the terrain and is currently too close to the parking area. Access to the lookout is limited because of the grade to the top of the lookout. The existing comfort station is served by a cesspool that is not functioning properly, and therefore requires pumping.

The Division of State Parks has allowed a private concessionaire to operate a lunch wagon at this location. The wagon sells refreshments, cookies, candies, chips, post cards and small souvenirs.

Needed improvements at this facility include:

- Development of information and interpretive displays as Waimea Canyon Lookout as it is the first, and often the only experience visitors have of the Parks. Many visitors are unaware of the resources and amenities further up the mountain.
- Development of a common theme and building material for the following elements: wheelchair ramp, water tank, granite bench on lookout platform, stone and concrete on steps, and different architecture of bathrooms. Currently, development at Waimea

Canyon Lookout lacks cohesion. The facilities are comprised of many small elements that do not share a common identity-style.

- Redefinition of this area by function--pedestrian space, lookout, and access routes. Currently, the lookout platforms and comfort station are disconnected.
- Redesign of the curb stops for buses located near the base of the stairway because they are a significant pedestrian tripping hazard.
- A better bathroom layout since visitors tend to use the ADA bathroom adjacent to the parking lot and will queue up there even when the other bathrooms are vacant.
- Development of a concession that is part of the Waimea Canyon Lookout area, being that it is the most profitable concession location in the park.
- Provision of potable water at the lookout.
- Additional automobile parking stalls for peak periods. However, the existing lookout area has limited space for expansion. A large, relatively flat area at the lookout near the driveway intersection with Kōkeʻe Road might offer space to develop an additional parking area.
- Inclusion of landscape improvements along walkways, approaches to the lookout area, and throughout the general vicinity as these would enhance the visitor experience.
- Development of a septic system at this location in line with the implementation of new EPA rules.

B. Puʻu Hinahina Lookout

Puʻu Hinahina is one of the most popular lookouts in the two parks. It offers dramatic, distant views of Waimea Canyon, the Alakaʻi Plateau, Mt. Waiʻaleʻale, and the south shore of Kauaʻi.

The audience at this location includes tour buses, individual visitors, amateur naturalists, and hikers. Recommended interpretive techniques include kiosks and signs that build on the interpretive themes from Waimea Canyon Lookout. The Alakaʻi Plateau is visible on clear days, and the processes of orographic rainfall and moisture gradients can both be interpreted.

On the opposite canyon rim, the forest exhibits dieback sections, offering a good example to discuss dieback as a normal forest ecosystem process.

Signs of goats are evident throughout the barren terrain of the canyon. The theme of feral ungulates and their effect on native vegetation can be developed effectively at this location.

The Puʻu Hinahina Lookout is located near milepost 14. This lookout also provides views of Waimea Canyon to the north, east, and south. The view south out of the canyon is panoramic.

The area is provided with parking for 19 automobiles and vans, restrooms, and two view platforms. The site does not have parking spaces for tour buses. At the Ni'ihau viewing platform, the visitor is provided with an interpretive sign describing the view. The approach to the main lookout area is unattractive and not landscaped. The existing comfort station is currently working at capacity and therefore requires frequent pumping.

This lookout was the location of four former recreation residences which were removed when the leases expired in 1985. The site provides an opportunity for viewing the Canyon and its environs and provides a picnicking opportunity in an intimate setting. Parking and a comfort station will need to be developed. As an alternative, an existing forest path could be enhanced to connect the site to facilities at Pu'u Hinahina Lookout. The adjacent Pu'u Hinahina helicopter landing zone (LZ) (TMK: 1-4-02: 04) offers more expansive canyon views than the existing lookout site, as well as an open, park landscape setting well-suited for picnic use. For these reasons, the master plan recommends the future relocation of the Pu'u Hinahina Lookout facilities to the helicopter LZ site. The new facility would include parking for approximately 40 cars, ADA accessible pathways and restroom, view platform, interpretive signage, and picnic tables. The existing lookout would be converted to a trailhead for the Canyon Trail and the canyon rim view platform would be closed. The Ni'ihau Island View Platform would be maintained and an improved trail would connect the new Pu'u Hinahina Lookout and Canyon Trail trailhead facilities.

Potential improvements at this facility include:

- Develop a lookout plaza at the convergence of the lookout pathways. The view plaza will provide a setting for visitor amenities, including a covered kiosk with information and orientation materials, a new ADA accessible restroom and interpretive displays.
- Re-develop the pathways to both the Waimea Canyon and Ni'ihau viewing platforms to comply with ADA accessibility requirements.
- Redevelop existing lookout platform to meet park design standards and improve ADA accessibility.
- Construct a new ADA accessible restroom in the lookout plaza between the parking lot and canyon viewing platform. Locate the new restroom to minimize its visual impact at the lookout. Retain the existing restroom adjacent to the parking lot.
- Develop trailhead facilities and signage for the Canyon Trail (see Hiking Trails section).
- Expand the existing parking lot eastward towards the canyon rim to create additional parking for the Canyon Trail, and northward to create an additional row of angled

parking. Restripe the existing van drop-off zone to create additional angled parking stalls.

- Provide signage to designate short-term (1 hour) and long-term parking for, respectively, lookout visitors and hikers using Canyon Trail.
- Develop ADA accessible parking stalls at eastern end of parking lot where grades are suitable for pathway access to the view platform.
- Eradicate non-native vegetation around lookout facilities, stabilize soils and re-vegetate eroded areas with native plant species.
- Develop a low-density picnic area with tables along the canyon rim south-west of the existing view platform and including the nearby open-space lot. Connect the picnic tables with a pathway from Pu'u Hinahina Lookout plaza. Develop picnic area to comply with ADA accessibility requirements.
- Revegetate area with koa and associated native understory plants.

Interpretive program content proposed at this lookout includes:

- At the Ni'ihau viewpoint, use Ni'ihau to interpret the geological history of the islands' volcanic formation.
- On the opposite canyon rim, areas of forest dieback offer visual example for discussion of dieback as a normal forest ecosystem process.
- Signs of goats are evident throughout the barren terrain of the canyon. The theme of feral ungulates and their effect on native vegetation can be developed effectively at this location.
- Develop helicopter landing zone along the Canyon rim at the 12-mile marker for natural resource management activities.

C. Kalalau Lookout

The interpretive opportunities at Kalalau Lookout are shared by nearby Pu'u o Kila Lookout. The audience includes tourists, amateur naturalists, and hikers. Kiosks and/or interpretive staff are the most appropriate interpretive devices for these lookouts.

A nature trail near the Kalalau Lookout would be an excellent place to interpret montane wet forests. Topographic diversity and geologic history are also evident from the Kalalau Valley floor to the precipitous cliffs' razor edges, and stone spires of the valley rim to the inland expanse of the Alaka'i Plateau and Mt. Wai'ale'ale.

The Kalalau Valley Lookout at milepost 18 provides the visitor with a scenic vista of Kalalau Valley and view of the ocean, nearly 4,000 feet below. The lookout, situated at the head of the

valley provides excellent unrestricted views. The lookout area has a parking lot for 15 cars and restrooms. The restroom facility is served by a cesspool that has limited capacity. This site also has picnic tables, however, the use of the area for picnicking is limited due to the high rainfall in the region. A bus parking area is provided approximately 100 yards from the main entrance towards Puʻu o Kila Lookout. Kalalau Valley is part of the Nā Pali Coast State Wilderness Park and is accessed from Hāʻena on the north shore of Kauaʻi.

Needed improvements and/or opportunities at this facility include:

- Realign Kōkeʻe Road to create a stop-controlled T-intersection at the entrance to the Kalalau Lookout parking lot with right-hand turn towards Puʻu o Kila.
- Develop a gateway feature with signage to distinguish parking lot from Kōkeʻe Road continuation. Design gateway feature to meet Kōkeʻe vernacular design standards.
- Improve pathway system to comply with ADA accessibility requirements.
- Provide additional picnic tables along the south and west edge of the open lawn area.
- Expand parking lot towards the west to triple existing capacity. Resurface existing parking lot.
- Resurface the Kalalau Lookout bus parking area located along the side of Puʻu o Kila Road past the new T-intersection. Upgrade the trail between the parking area and lookout to comply with ADA accessibility standards.
- Provide dedicated pad site for truck concession within the parking area.
- Redesign and expand the scenic lookout to take full advantage of the sweeping views along the cliff face.
- Redesign the lookout guardrails to comply with Kōkeʻe vernacular design standards. Include in guardrail design a feature to intercept trash blowing from the lookout into the valley.
- Identify location for package plant septic system leach field (potential in center lawn of parking area).
- Develop a potable water system and restore the existing drinking fountain. A new well source is required for potable water at this location.
- Expansion of the existing lookout area (extend view platform) and renovate existing paths.
- Partial renovation of the lookout area.
- Redesign-reconstruction of the existing restroom to comply with ADA standards and

to provide an accessible route for the handicapped to the lookout.

- Improved landscaping (i.e., grading, planting) to re-vegetate the large scarred/eroded area between the main (paved) parking lot and the picnic grounds.
- Improved pathways and signage between the secondary roadside parking and the picnic area.
- Development of interpretive displays focusing on the surrounding native forest environment and native birds. Information, available at the park headquarters, should forewarn park visitors of the misty conditions that are often encountered at the lookout.

Interpretive program content proposed at this lookout includes:

- Develop interpretative materials about early island development, including the original volcanic dome formation, the early erosional forces that created the amphitheater-headed North Shore valleys, and the running waters that formed the fluted cliffs of the Nā Pali Coast.
- Montane wet forests and the resident plant and animal species;
- Hawaiian settlements in Kalalau Valley and traditional mauka-makai resource use.

D. Pu‘u o Kila Lookout

The Pu‘u o Kila Lookout is located at the end of the mile-long Pu‘u o Kila Road and is also the highest point in the park. It is a simple lookout facility consisting of a paved parking area that can accommodate 16 cars and vans and a short but steep pathway leading to a two-tier lookout platform. The lookout provides another view of Kalalau Valley, Mount Wai‘ale‘ale, and south and west views. Due to the location of the viewing platform, conformance to ADA accessibility requirements poses a formidable challenge and may require alternative viewing areas.

The lookout area also serves as the trailhead for the Pihea Trail. The first mile follows the rim of Kalalau Valley and provides spectacular views and opportunities to see native birds. No other amenities are provided.

Necessary improvements and/or opportunities at this location include:

- Re-paving the parking lot and providing curbs for the planting islands.
- Regrading the parking area and adjoining areas to improve drainage at the parking lot.
- Developing interpretive signs and displays to interpret the native forest environment and views of Alaka‘i Swamp) and the cultural history of Kalalau Valley. Providing a linkage with the nature trail proposed in the vicinity between the Kalalau and Pu‘u o

Kila Lookouts to enhance the attraction at this upper end of Kōkeʻe State Park.

- Redesign and renovate lookout platform to take full advantage of 360-degree view, to increase capacity, and to meet park design standards.
- Remove fence barrier at end of platform and construct lateral connection to Pihea Trail.
- Provide interpretive signage at lookout platform.
- Install lookout facility signs.
- Reconstruct and restripe parking lot. Correct drainage problem.
- Designate reserve stalls for short-term (30 minute) parking for use by visitors to the lookout. Pihea Trail hikers should be directed by signs to use unreserved stalls. If parking use by hikers impacts parking availability for lookout visitors, DOFAW will be required to develop and maintain additional parking to support trail use.
- Improve walkway from parking lot to viewing platform and Pihea Trailhead.
- Renovate viewing platform to provide direct access to Pihea Trail along valley rim alignment.
- Improve landscaping around parking lot and lookout using appropriate native vegetation.
- Revegetate erosion scars along canyon rim.
- As part of the proposed Pihea Trailhead improvements, DOFAW will develop and maintain composting toilets for the convenience of hikers. The composting toilets will be located at the edge of the parking lot away from the canyon rim and situated to minimize intrusion on the landscape.

Interpretive program content proposed at this lookout includes:

- The role of Pacific Ocean weather patterns and their affect on Hawaii's environment. Highlight the climatic changes between the Kōkeʻe uplands and the valley floor.
- Montane wet forests and the resident plant and animal species.
- Topographic diversity and geologic history evident in views spanning from the Kalalau Valley floor to the expanse of the Alakaʻi plateau and Mt. Waiʻaleʻale.
- Man-made structures, particularly the Air Force tracking station "golf ball", and the distant views of Kauaʻi's south-shore settlements.

E. Waipo'o Falls Viewpoint

Visitors stopping to picnic at this site are most likely to be local residents. Stopping for viewing at the roadside lookout should not be encouraged due to hazards posed by traffic and erosion damage caused by parking on the shoulder. Additionally, no safe crosswalk exists between the picnic area and the viewpoint.

This viewpoint (across the road from the Pu'u ka Pele Picnic Area) consists of a viewing area adjacent to the road. It has no parking other than a vehicular "pull off" onto an unimproved shoulder. The shoulder can accommodate 3-4 cars off the pavement, though its close proximity to the roadway is a potential hazard. Except for a guardrail along the rim of Waimea Canyon there are few physical improvements at this site. Visitors frequently use the Pu'u ka Pele Picnic Area for parking when visiting the viewpoint. There is no signage, striping, or other traffic safety features to facilitate pedestrian crossing at the site.

In combination with other facilities nearby, the Pu'u ka Pele roadside viewing point has the potential of being further enhanced and utilized as a more prominent visitor facility. Improvements are needed to mitigate the erosion occurring at the site. A low retaining wall and stairs (ADA) or similar type of improvements should be considered. Signage and shoulder improvements to better accommodate roadside parking and alert traffic to the presence of pedestrians are also needed. Proposed improvements to the Pu'u ka Pele Picnic Area/Waipo'o Falls Viewpoint includes:

- Improve walkway and viewpoint to comply with ADA requirements.
- Replace existing railing with fencing that meets current safety standards and conforms to park design guidelines. Design railings to intercept trash blown towards the canyon.
- Pave driveway and parking area.
- Provide landscape planting to screen parking lot and picnic facilities from Kōke'e Road.
- Expand open lawn area adjacent to large picnic pavilion for use as a play area.
- Provide identification and pedestrian crossing signage on Kōke'e Road.
- Develop interpretive signage about the legends of Pu'u ka Pele and Kā'ana in order to enhance site identity.
- Long-term improvements should consider realignment of Kōke'e Road to create room for a small picnic area adjacent to the viewpoint. Additional topographic study is required to assess the feasibility of road realignment.

F. Honopu, Awa'awapuhi and Nu'alolo Valleys

Moderately strenuous ridge trails lead to spectacular views of these Nā Pali Coast valleys. The likely audience for these views include the more adventurous hikers, amateur naturalists, and those with an interest in Hawaiian history. Views at the ends of these trails reach deep into the past history of Hawai'i, particularly at Nu'alolo Valley which was once densely cultivated in taro to support a substantial resident population.

Interpretation of the history, archaeology, and ethnobotany of the original inhabitants of the valleys, and their resource link between the ocean and mountains is recommended. Interpretive opportunities at these trails also includes native flora and fauna, and native natural communities. The presence of goats along the ridges provides an opportunity for discussing ungulate control.

Because of the wilderness character of these trails, interpretive facilities should be limited to the trailhead and major junctions. Trail guide brochures would be a good means of educating visitors about the features found in this area.

Potential Impacts and Proposed Mitigation

The lookouts are the most visited of the park facilities and as a result are the most impacted by their use. Improvements are proposed for each of the existing lookouts, and creation of new viewing areas are recommended. Improvements proposed will impact the environment by introducing new facilities. These new facilities will be in the form of new buildings, restrooms, parking areas, walkways, landscaping, and interpretive signs. Impacts to the environment will be temporary, and confined to the construction period. Long-term impacts are anticipated to be beneficial in that the new facilities will better accommodate the visitors, provide for additional interpretation, and provide restroom facilities that are clean and energy efficient (e.g., use of solar power and use of non-potable water for the toilets).

5.3.2 Secondary Scenic Views

Secondary scenic resources within the Kōke'e-Waimea Canyon State Parks include:

A. Scenic Roadways

The 18-mile Waimea Canyon Drive and Kōke'e Road (State Route 550) possess scenic attributes that deserve special recognition and, where necessary, protection from visual impacts. The entire length of both of these roadways has been designated as a scenic roadway corridor in the Kaua'i County General Plan.

Waimea Canyon Drive - This road follows the rim of the Waimea Canyon from Waimea Town to the intersection with Kōke'e Road, inside the entrance of Waimea Canyon State Park. The

road offers unparalleled views of the lower canyon regions. Numerous turnouts along the drive provide vantage from Mt. Wai'ale'ale to the canyon floor and of the numerous taro farms that use water from the Waimea River. Sections of the Waimea Ditch System are also visible. To the west, the long, sloping flanks of Kaua'i's original shield volcano guide views to the coastal areas of Kekaha and the Mānā Plain, and offer distant views of Ni'ihau and the Pacific.

Numerous sites along this roadway provide opportunity for development of improved lookouts. Interpretive themes could take advantage of these sites as transition zones between the inhabited coasts and the rural upland areas to tell the story of Kaua'i's social transformation as written in the agricultural landscape.

Waimea Canyon Drive offers several shoulder areas suitable for developing lookout facilities. A lookout at a lower elevation site would enhance the parks' ability to visually present the complete story of west Kaua'i, from mauka to makai. Promising locations identified for further assessment include:

- Mile Marker 1.1, Elevation 360 feet
- Mile Marker 2.0, Elevation 920 feet
- Mile Marker 2.3, Elevation 980 feet
- Mile Marker 3.3, Elevation 1,100 feet
- Mile Marker 3.5, Elevation 1,300 feet
- Mile Marker 3.6, Elevation 1,310 feet
- Mile Marker 4.5, Elevation 1,480 feet
- Mile Marker 5.4, Elevation 1,800 feet
- Mile Marker 6.4, Elevation 2,260 feet

These sites have wide shoulder areas suitable for development. Each of these locations offers views of Waimea Bluffs, Waimea Canyon and River, Menehune Ditch, Kekaha Ditch, Taro Cultivation, coastal settlements on the southeastern shoreline, sugar cane fields, and Ni'ihau. The views tend to improve with elevation gain. The promising locations for the proposed lower elevation lookouts were selected for the following reasons: a) great views; b) relatively level ground suitable for ADA accessibility; c) adequate space for the lookout facility, parking lot, and roadway; and d) absence of sensitive natural and cultural resources.

Kōke'e Road - The long, winding Kōke'e Road cuts through several distinctive forest communities on its way to the upper elevations of the park. Lined with both native and exotic plant material, this lengthy drive establishes a subtle and lasting impression of the park and its natural setting. The view from the road is enhanced by the rolling terrain and lateral views into

Waimea Canyon, distant views of the south and west coasts of Kaua'i, and of the island of Ni'ihau. The scenic experience starts below the 8-mile marker near the Hunter Check-In Station and continues for approximately 11 miles to the Pu'u o Kila Lookout at the end of the road.

B. Scenic Locations and Features

Kanaloahuluhulu Meadow - The meadow, located near the Kōke'e State Park headquarters, is the primary developed open space of the park. Its size and contrast to the thick surrounding forest makes the Meadow a distinct and important landmark and the natural central gathering place for activities in the Kōke'e region.

Pu'u Lua Reservoir - Pu'u Lua Reservoir is located in an isolated, rustic setting. The site offers scenic views of the reservoir as an open water feature in contrast to the dense forest surroundings. The ditch inlet creates a picturesque waterfall into the reservoir. Distant views of west Kaua'i are visible through the trees along the impoundment.

Other Features

Numerous scenic views of sites that highlight the Parks' natural and historic resources are afforded from turnouts and short walks adjacent to the roadway. These include:

Ditch Views - Views of the Kōke'e Irrigation System are embedded throughout the park landscape, providing a tangible sense of history within the natural environment.

Tree Stands - Trees are one of the primary visual cues to ecological changes within the park. The dominant tree types within the different vegetation zones not only provide aesthetic scenery, they also provide a narrative of Kōke'e's history as the forest landscape shifts between introduced and native species. Significant tree stands are discussed in **Section 4.5.2.** Natural communities are discussed in **Section 4.5.1.**

Air Force Tracking Station - The "golf ball" antennae housing is an imposing feature that challenges Kōke'e State Park's wilderness character. The feature dominates the inland view from Kalalau Lookout, and is a distinct feature in the otherwise natural vista from Pu'u o Kila Lookout and various spots on Kōke'e Road.

Potential Impacts and Proposed Mitigation

The views that are located within the Parks are important assets that are to be preserved and protected. New lookouts are proposed as a means of providing a safe viewing location, rather than relying on the informal view spots along the roadway to the Parks. The primary impact to the environment will be construction related and will be short-term. Implementation of erosion control measures and the requirement of best management practices will mitigate the short-term construction impacts. The potential impact and mitigation proposed for secondary scenic views includes: a) the lookouts at

mile markers 2.3 and 3.5 require less taking less than an acre of land away from sugar can cultivation; b) the proposed lookouts at mile markers 2.0 and 3.3 require the realignment of Waimea Canyon Drive and would take less than an acre of land away from sugar can cultivation; and c) the proposed lookouts are proposed not only to provide a safe viewing location, but also to direct sightseers to the better view points. Lon-term benefits include the development of safe viewing areas along the road to the Parks.

5.4 RECREATION RESOURCES

5.4.1 Fishing

The Division of Aquatic Resources (DAR) manages fishing resources and recreational fishing activities within Kōkeʻe and Waimea Canyon State Parks. The DAR operates a fish hatchery at Puʻu Lua Reservoir. In 2002, DAR released 40,000 rainbow trout into Kōkeʻe State Park's streams, ditch system, and reservoir. DAR typically releases 20,000 fish each year and anticipates an initial natural loss of 20 percent of the total stock. Released fish have an average life span of two years. During the 2002 fishing season, 1,033 anglers reported into the fishing check-in station and recorded a total catch of 1,937 fish for the season.

The Kōkeʻe Public Fishing Area includes designated streams, reservoirs, and ditches in Kōkeʻe State Park, as shown in Figure 5-2. The principal fishing areas are located west of Kōkeʻe Road centered around Puʻu Lua Reservoir. Designated streams include Koaiʻe, Mōhihi, Waiʻale, Kawaikōī, Waikoali, Kōkeʻe, and Kauaikinānā Streams and the entire ditch system. Fishing is prohibited in Kōkeʻe Stream and its tributaries above Camp Sloggett.

Fishing is permitted with a valid Freshwater Game Fishing License. Fishing licenses are obtained from the DLNR office in Līhuʻe, and the DLNR main office in Honolulu. Money from fishing licenses go into the special fund. The license permits an individual to fish during the open fishing season beginning on the first Saturday in August and continuing for a period of 16 consecutive days, and then only on weekends and holidays for the remainder of August and September. The season provides a total of approximately 30 days of fishing each year unless otherwise suspended by the Division of Aquatic Resources, DLNR.

Fishing is one of the most popular seasonal events in Kōkeʻe and Waimea Canyon State Parks. There is strong public support for expanding the season and developing year-round fishing resources. To have year-round fishing, a change is required in Hawaiʻi Administrative Rules (HAR), Title 13, Subtitle 4 - Fisheries, Chapter 64 - Kōkeʻe Public Fishing Area, Kauaʻi.

Potential Impacts and Proposed Mitigation

No impacts to the existing fishing program are anticipated, and no mitigation is

proposed or required.

5.4.2 Hunting

DOFAW manages public hunting on all forest reserve lands on Kaua'i by the regulation of hunting seasons, bag limits, and hunting methods. Rules related to hunting within Kōke'e State Park are contained in Chapters 122 and 123 of Title 13, DLNR rules pertaining to public hunting on Kaua'i. Enforcement of hunting regulations is the responsibility of DOCARE.

Game animals hunted within the Kōke'e and Waimea Canyon region include:

Mammals

- Feral Pigs (*Sus scrofa*)
- Feral Goats (*Capra hircus*)
- Black-tailed Deer (*Odocoileus hemionus columbianus*)

Birds

- Common (Ring-Necked) Pheasant (*Phaisanus colchicus*)
- Erckel's Francolin (*Francolinus erkelii*)
- Black Francolin (*Francolinus francolinus*)
- Chukar Partridge (*Alectoris graeca*)
- Lace-necked Doves (*Streptopelia chinensis*)
- Barred Doves (*Geopelia striata*)

Public hunting is permitted within certain areas of Kōke'e and Waimea Canyon State Parks, and throughout the surrounding forest reserves and natural area reserve. Hunting area boundaries are shown in **Figure 5-10**. Hunting areas within Kōke'e and Waimea Canyon State Parks are listed in **Table 5-7.** Hunting activities are limited to the fall and winter months of September and February (bow and arrow hunting only, no dogs); October through November and March and April (bow and arrow or knife hunting only, dogs permitted). Hunting in all forest reserve areas is restricted to weekends and State holidays only.

Potential Impacts and Proposed Mitigation

No impacts to the existing hunting program are anticipated, and no mitigation is proposed or required.

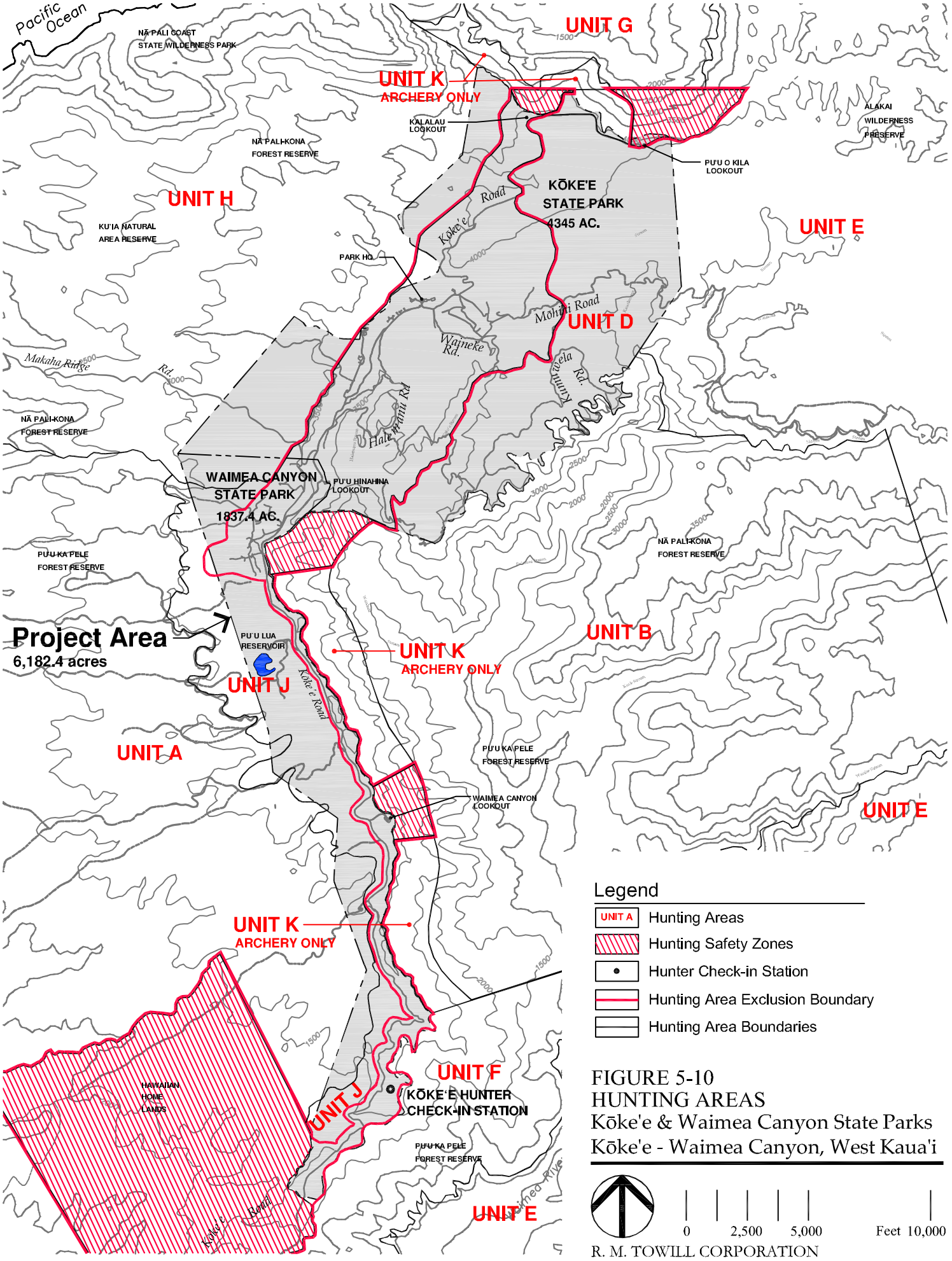


FIGURE 5-10
HUNTING AREAS
Kōke'e & Waimea Canyon State Parks
Kōke'e - Waimea Canyon, West Kaua'i

Table 5-7

Hunting Areas in the Kōke'e and Waimea Canyon State Parks

Hunting Unit	Game Animals	Permitted Method	Special Conditions
A	Pigs/Goats/Deer All Game Birds	Rifles, Muzzle Loaders, Bow and Arrow	Dogs not permitted.
B	Pigs/Goats All Game Birds	Rifles, Hand Guns, Muzzle Loaders, Bow and Arrow	Dogs permitted October through February only.
D	Pigs	Bow and Arrow, Dogs and Knife	State Park. Firearms prohibited.
E	Pigs/Goats All Game Birds	Rifles, Hand Guns, Muzzle Loaders, Bow and Arrow, Dogs and Knife	Dogs permitted for pig hunting only.
F	Pigs/Deer All Game Birds	Bow and Arrow, Dogs and Knife	State Park. Firearms prohibited. Dogs permitted for pig hunting only.
G	Pigs/Goats	Bow and Arrow	State Park. Firearms prohibited. Dogs not permitted.
H	Pigs/Goats/Deer All Game Birds	Rifles, Hand Guns, Muzzle Loaders, Bow and Arrow, Dogs and Knife	Dogs permitted for pig hunting November through June only.
J	Pigs/Deer All Game Birds	Bow and Arrow	State Park. Firearms prohibited. Dogs not permitted.
K	Pigs/Goats	Bow and Arrow	State Park. Firearms prohibited. Dogs not permitted.

Source: Title 13, Chapter 122 - Rules Regulating Game Bird Hunting, Chapter 123 - Rules Regulating Game Mammals.

5.4.3 Hiking

Hiking trails in Kōke'e and Waimea Canyon State Parks are developed and maintained by the DLNR, Division of State Parks, and DOFAW under their Nā Ala Hele Program. Trails are listed in **Table 5-8** and shown in **Figure 5-11**.

A variety of trails offer dramatically different recreational opportunities to hikers. Views of Waimea Canyon, the Pacific Ocean, waterfalls, native forest or scented pine trees are such possibilities. The opportunity to see an endangered plant, taste a wild native strawberry, see native birds or to just experience the forest awaits each hiker. Trail maps and hiking information are available to hikers at the Kōke'e Natural History Museum and State Parks offices. Many of the hiking trails are located in Kōke'e State Park and navigate through various portions of the area between the Kaunuohua and Kumuwela ridge areas. A few exceptions include the Awa'awapuhi-Nu'alolo Trails which loop together to explore the west sector of the Park; the Pihea and Alaka'i Swamp Trails which enter the Alaka'i Swamp area; and the Iliau Loop Trail that provides sweeping views of Waimea and Wai'ale Canyons. Four-wheel drive trails lead down to Sugi Grove and out along ridges from Waimea Canyon State Park into the forest reserve.

All trails are not signed. Iliau Nature Loop Trail in the Waimea Canyon State Park and the Nature Loop Trail along the Kaunuohua Ridge behind Kōke'e Natural History Museum have plant name signs and interpretive posts, respectively, along their routes. The Awa'awapuhi Trail also has numbered markers keyed to a vegetation guide map; however, the map has long been out of print. According to The Nature Conservancy (1996), other trails have good potential for development of interpretive materials and/or informational signage. Their recommendation cites Kaluapuhi Trail and Halemanu-Kōke'e Trail, as well as Waineke Road and Halemanu Road as candidates for such improvements.

In addition to dispensing trail information, Kōke'e Natural History Museum offers guided hikes during the school year to student groups along some trails and "Wonder Walks" for residents and visitors alike on a variety of trails. These hikes are conducted from June to September by volunteer interpreters.

Commercial Activities

DLNR permits commercial tours on select public Nā Ala Hele (NAH) trails and access roads throughout Kōke'e State Park provided the commercial activity is conducted in an environmentally and culturally responsible manner. The selection of features eligible for commercial tour activities and the general condition for allowing tour activities is based on the following standards developed by the Nā Ala Hele Program:

- The offered trail or access road is currently managed and regulated by the NAH

Program and is available for public use.

- There are no legal or jurisdictional impediments to trail, road access, and/or parking.
- The trailhead is accessible by small passenger vans, and public parking will not be impacted by commercial vehicles.
- The trail or road resources will not be degraded by the commercial tour activity.
- There are minimal impacts to local residents from allowing commercial tours.
- Commercial tours are limited to weekdays only, sunrise to sunset.
- Commercial tour activity is limited to a maximum daily capacity established by NAH.
- DLNR staff will be able to monitor the offered hiking program for environmental or social impacts. Commercial tours must be conducted by a guide.

Potential Impacts and Proposed Mitigation

No impacts to the existing hiking resources are anticipated, and no mitigation is proposed or required. Improvements planned to the trail system include: improved signage and trail markers and the creation of trail hubs. Additional trail improvements are described in Section 2. The trail hub will be centered around existing parking areas. The parking area will also be provided with composting toilets to remove the necessity of developing cesspools or leach fields. The DSP will open selected trails for commercial tours once the trails are brought up to standards and adequate parking can be provided.

Table 5-8

Hiking Trails and Trailhead Amenities

Trail Type And Name	Lead Agency	Mileage	Trail Features: Comfort Station	Parking	Trail Interpretation	Shelter
Nā Pali Overlook Trails:						
Honopū Route	NAH	2.5	No			
Awa'awapuhi	NAH	3.25	No	30	Yes	No
Nu'alolo	NAH	3.75	No	6	No	No
Waimea Vista Trails						
Canyon	SP	2.2	No	Limited	No	No
Ditch	SP	1.5	No	Limited	No	No
Po'omau Canyon Lookout		0.3	No	Limited	No	No
Kohua Ridge		2.5	No	Limited	No	No
Forest Trails						
Black Pipe	SP	0.75	No	Limited	No	No
Faye	SP	0.25	No	Limited	No	No
Kumuwela	SP	0.8	No	Limited	No	No
Pu'u ka 'Ōhelo	SP	0.4	No	Limited	No	No
Berry Flat	SP	0.7	No	Limited	No	No
Waininiua	SP	0.6	No	Limited	No	No
Halemanu- Kōke'e	SP	1.1	No	Limited	No	No
Kaluapuhi	SP	1.2	No	No	No	No
Nature Trail	SP	0.1	Yes	Yes	Yes	No
Alaka'i Swamp Trails						
Alaka'i Swamp	NAH	3.5	Yes	Limited	No	No
Mōhihi-Wai'alae Route	NAH	4.0	No	Limited	No	No
Pihea	NAH	3.7	No	Yes	No	No
Waimea Canyon Trail						
Kukui	NAH	2.5	No	Limited	No	No
TOTAL TRAIL MILES		35.6				

Source: DLNR and Hui o Laka

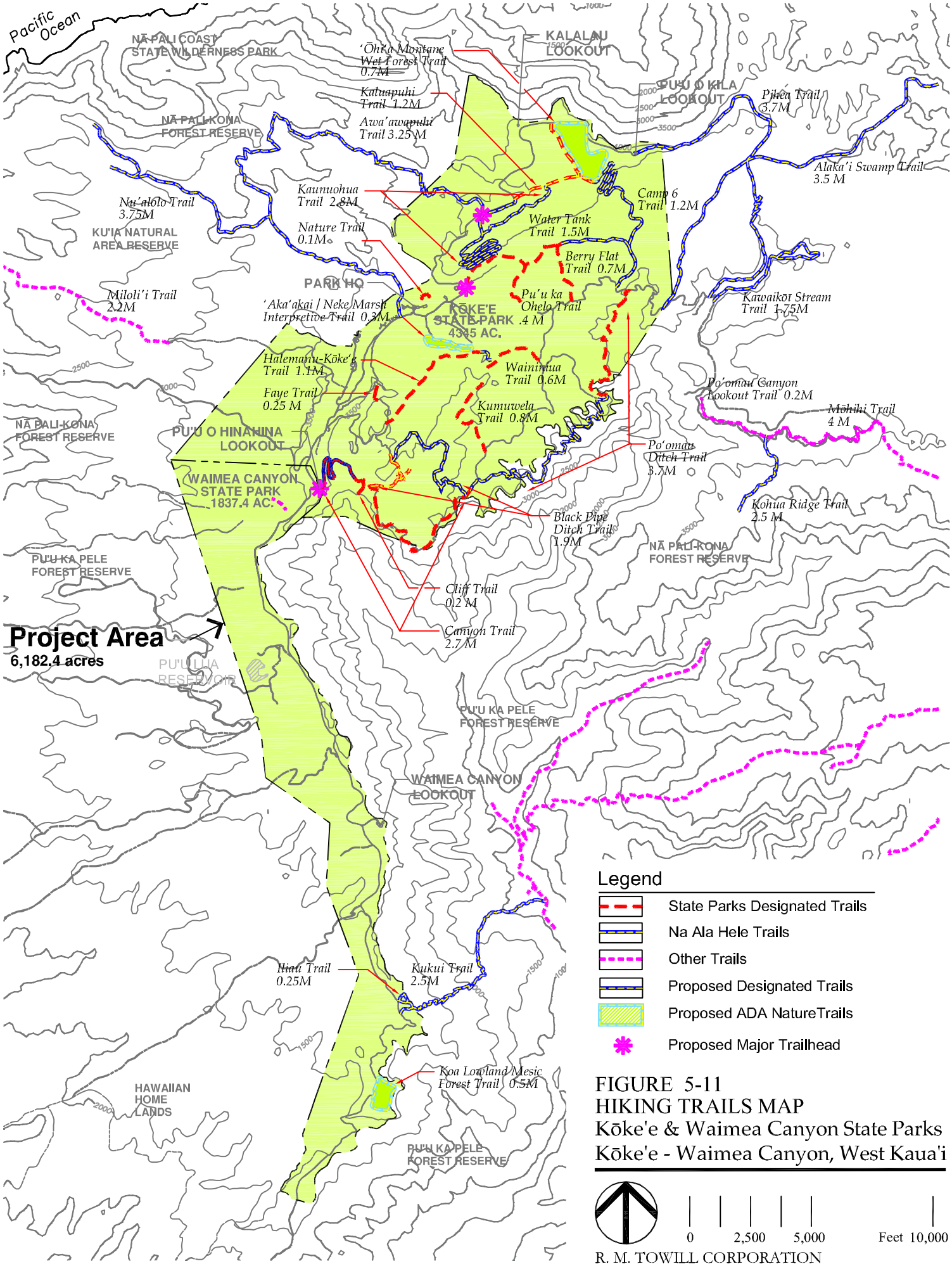


FIGURE 5-11
HIKING TRAILS MAP
Kōke'e & Waimea Canyon State Parks
Kōke'e - Waimea Canyon, West Kaua'i

R. M. TOWILL CORPORATION

5.4.4 Resource Gathering

Many people use the forest to gather plant materials for a variety of purposes. Gathering Methley plums is allowed by permit only. This popular fruit is characterized by a deep, red color at maturity. The flesh is sweet, while the skin is bitter. It is a favorite for use in making cracked seed, umeboshi (Japanese salted plum), jams and jellies. Pickers have favored sites to which they return year after year. Pockets of Methley plum trees are found along the road to the Kalalau Lookout from the Kōkeʻe State Parks Headquarters. They were planted in 1935 by the Civilian Conservation Corps. The plum trees along the road from the Kalalau Lookout to the Puʻu o Kila lookout were planted in 1954 when the road was constructed. Currently in Kōkeʻe, they range across a variety of trails in the study area, and there are special places favored by pickers. The season for plum picking traditionally starts in late June or early July. Permits are also required to pick maile, mokihana, ferns, dead wood and other plant material, including weeds such as banana poka. Permit applications are available at the Division of State Parks office in the State building in Līhuʻe. Maile and mokihana gathering normally occurs in the area above the Puʻu ka Pele cabins. (Chu, May 1998).

Potential Impacts and Proposed Mitigation

No impacts to the existing resource gathering program are anticipated, and no mitigation is proposed or required.

5.4.5 Picnicking & Rest Areas

There are 11 picnic facilities available in Kōkeʻe and Waimea Canyon State Parks and the surrounding forest areas. Eleven are shown on **Figure 5-12;** an additional picnic area located further down Makaha Ridge Road in the Pine Forest Loop Picnic Area is not shown. Three picnic areas are located within the State parks, two in Kōkeʻe and one in Waimea Canyon.

A. Kōkeʻe

Kanaloahuluhulu Meadow – The most popular site is Kanaloahuluhulu Meadow, where tables near the road are often sought by residents and visitors alike to have a meal followed by a rest or play in the open meadow. Also at Kanaloahuluhulu Meadow, the stone pavilion with approximately 10 picnic tables accommodates large groups, up to 100 people, or those who desire shelter from the elements.

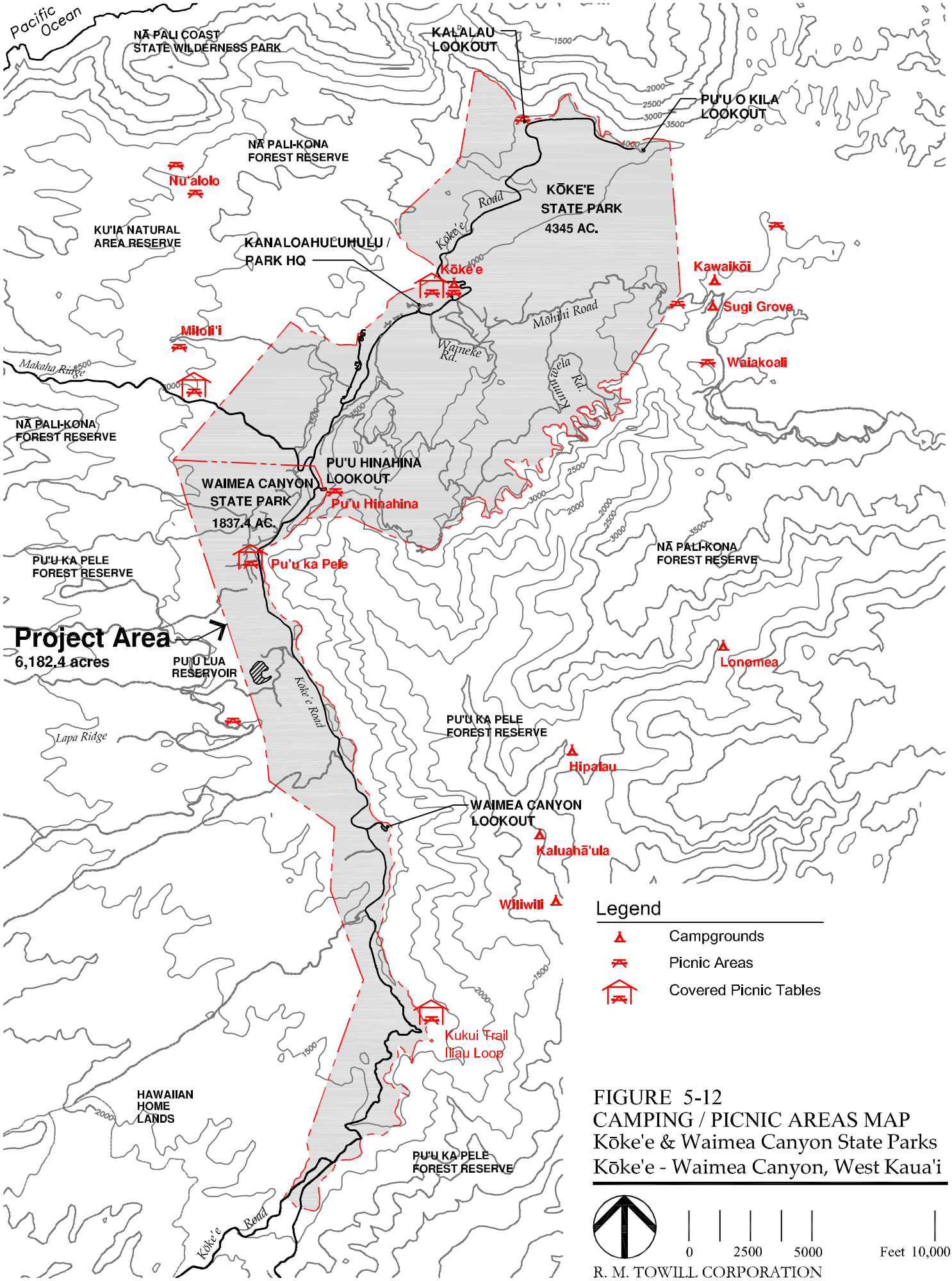


FIGURE 5-12
CAMPING / PICNIC AREAS MAP
Kōke'e & Waimea Canyon State Parks
Kōke'e - Waimea Canyon, West Kaua'i

The area also has adequate parking, restrooms, grills, potable water, and telephones. The proximity to the Lodge with its food and beverages also encourages picnicking when the weather is nice. Accessibility is limited because of the lack of paved walkways.

Kalalau Lookout – The Kalalau Lookout is another location that has uncovered picnic tables that are used by visitors and residents alike. This site also has adequate parking and a restroom. There are no shelters or potable water.

B. Waimea Canyon

Pu'u ka Pele – The Pu'u ka Pele Picnic Area has picnic facilities primarily used by residents who come to hunt or gather. This picnic area has a restroom, potable water, adequate gravel parking, telephone, grills, picnic shelters for small family groups, and a picnic pavilion for larger groups.

Forest Reserve Picnic Facilities – Additional picnic facilities are maintained by DOFAW within the forest reserve areas. These include:

Camp 10 Road – Provides access to several picnic facilities in the neighboring forest reserves include Alaka'i Picnic Area and Waikoali Picnic Area, both on Mōhihi Road in the direction of Camp 10.

Kukui Trail – Facilities include two covered picnic tables approximately 1/8 mile from the trailhead. The tables are surrounded by koa trees and other native and non-native plant species and offer striking views into the canyon. There are no restroom, water, trash, or communication facilities at this location. Parking is limited to the paved shoulder on Waimea Canyon Drive. There is no signage designating the site for picnic use.

Mākaha Ridge Road – This site has unpaved parking, trash cans, picnic tables and a shelter. The site does not have a comfort station, potable water, or communications.

Ha'ele'ele Picnic Area - This site has unpaved parking, trash cans, picnic tables and sheltered picnic tables. It is used mostly by hunters and local residents.

Nu'alolo and Miloli'i Picnic Sites – Picnic tables are provided on Nu'alolo and Miloli`i Trails for the convenience of recreational hikers and hunters. The locations have no other developed picnic facilities.

C. Areas for Potential Picnic Development

Pu'u Hinahina – A vacant lot area adjoining Pu'u Hinahina Lookout offers excellent opportunity to picnic near the canyon rim in a relatively warmer and drier area with shade trees. It would cater to family type picnicking rather than large group picnicking. The picnic area could take advantage of the existing lookout facilities, including a comfort station with men's and women's lavatories, and limited parking. The existing facilities are not ADA

accessible.

An additional site for canyon rim picnicking is identified near Puʻu Hinahina on a vacant house lot identified by TMK: 1-4-2: 04 and 05. The 2-acre site is well landscaped with an open, manicured lawn surrounded by shade trees. Development potential is discussed in Section 2.

Potential Impacts and Proposed Mitigation

No impacts to the existing picnicking resources are anticipated, and no mitigation is proposed or required.

5.4.6 Camping

Camping opportunities in Kōkeʻe and Waimea Canyon State Parks include backcountry camping, individual car and tent camping, individual cabins, and group camping in developed campground facilities. Camping facilities are described in detail in the Facility Inventory Assessment Report, submitted under separate cover. Campsites are shown in **Figure 5-12.**

A total of eight group camping facilities accommodating up to 338 individuals currently exist within the park boundaries. A ninth facility, consisting of 12 State cabins (sleeps up to 75 persons) is available for public use.

Nonprofit Group Camping

The Kōkeʻe area provides camping opportunities for individuals and groups in a number of settings from group living facilities in cabins to individual tent sites that are provided by nonprofit organizations.

A listing of these nonprofit groups includes the following:

- Hawaiʻi United Methodist Center, 3.05 ac./Puʻu ka Pele
- Hawaiʻi Association of the 7th Day Adventist Church, 4.06 ac./Puʻu ka Pele
- Honpa Hongwangi Mission, 1.06 ac./Puʻu ka Pele
- Boy Scouts of America - Aloha Council, 29 ac./Puʻu ka Pele
- Hawaiʻi Conference of the United Church of Christ, .5 ac./Kōkeʻe
- YWCA of Kauaʻi, Camp Sloggett, 3.6 ac./Kōkeʻe

These group camp facilities are typically barracks-type structures that are used seasonally to accommodate small groups of campers. They are available exclusively to members and invitees. The sites are in semi-isolated locations grouped together with the leasehold cabins. Reservations for these sites are handled by the respective organizations.

The most recently developed group camp facility is the Kōkeʻe Discovery Center, constructed in 1994 and operated by the Department of Education (DOE). It is located off Kōkeʻe Road above

the Kanaloahuluhulu Meadow. This facility was built for the purpose of teaching environmental education to island students. The facility can accommodate up to 30 students in the sleeping quarters, a kitchen, and outdoor activity areas. Support (maintenance, janitorial, food service, and administration) for this facility is provided by Kalaheo School.

The program offered at the Discovery Center supplements classroom activities. While at camp, the students continue their education with writing exercises, science experiments, excursions-hikes into the area, and occasionally become involved in volunteer projects in the park.

The public may make arrangements with the DOE to use the facilities during weekends and holidays.

Individual and Group Camping

Public camping accommodations are available at the northern end of the Kanaloahuluhulu Meadow. This is the only tent campground available in Kōkeʻe and Waimea Canyon State Parks. The campsite is on "high ground" and not subject to the soggy soil conditions that plague much of the Meadow. The site contains 9 campsites (8 family campsites, and 1 large group campsite). A camping permit ($5 per site, per night) is required. The paved parking and comfort station makes this area very convenient and accessible. This campsite, however, is small and may not be able to accommodate heavy camping demand. The site is located close to the main road, subject to traffic noise and activities that take place on Kanaloahuluhulu Meadow. During the winter season, the area is often cold and wet.

Back-Country Camping

For the fit and adventuresome, backpacking and back-country camping is available in Waimea Canyon. The area is developed with shelters and camping areas for individual and small groups. Besides the shelters, each site is provided with a composting toilet. No other amenities are present.

The Sugi Grove Area has potential for development as a new primitive individual and group camping and picnicking area. Access to the site would be via the Camp 10 Road. In order for the site to become usable, potable water would be required as well as the development of a comfort station and shelters.

Cabin Lodging

The Kōkeʻe Lodge operates 12 cabins in 10 structures for rent to the general public. They have a combined capacity for housing 75 people. The cabins are provided with basic housekeeping furnishings, beds, kitchen, hot and cold running water, and a wood-burning stove. The wood can be purchased at the Lodge. The cabins are operated in a manner likened to a motel where renters can drive up to their respective units. Housekeeping is provided on a daily basis. The Lodge operates a laundry adjacent to the former Ranger's Cabin. In addition, supplies and

wood are stored adjacent to the laundry.

The Lodge notes that occupancy is nearly 100 percent. Fishing season and holidays have the highest demand for the cabins. Generally, these dates are booked nearly a year in advance and there is usually a waiting list.

The cabins rent from $35 per night for the duplex structure to $45 per night for the single cabins.

Findings

The following are general findings and recommendations relating to hiking, camping, and picnicking:

- None of the facilities are ADA accessible.
- Parking areas at Pu'u ka Pele should be paved and properly drained to prevent the accumulation of water during wet periods and to prevent soil erosion.
- One-Stop Permitting - Currently, visitors to the area are required to make reservations with the different agencies for different activities. The public would be better served by consolidating the permit process for different activities and different jurisdictions into a "one-stop" permit source.
- Nonprofit agencies should be required to provide open-public rental periods for groups and families. These dates should be made known to the DLNR annually.

Potential Impacts and Proposed Mitigation

No impacts to the existing wilderness camping resources are anticipated. Camping or lodging in the State cabins is anticipated to change in the long-term as a new lodge is constructed. As noted earlier, the new lodge will be constructed in approximately the same location as current facilities and therefore impacts to the environment will be short-term and construction related. Long-term impacts will be beneficial to park users and the environment in general. New energy-efficient facilities will be designed to be within the rustic theme of the park. See Section 2 for additional proposed improvements and proposed mitigation.

5.4.7 Equestrian Use

All trails within Kōke'e and Waimea Canyon State Parks are closed to equestrian use, except for the Kukui Trail and the Nu'alolo Trail. Several of the lease cabins are developed with private stables leftover from the old days when horseback riding was a more common form of travel in the mountains.

Nearly all of the trails in Waimea Canyon State Park and the lower regions of Kōke'e State Park are well-suited for horseback riding. Two trails in particular are popular with hunters and

recreational equestrians:

- **Kukui Trail** in Waimea Canyon State Park provides access to the canyon floor, numerous bottom land trails, and several major hunting areas. There are no equestrian facilities at the trailhead, nor facilities for trailer parking.
- **Nu'alolo Trail** in Kōke'e State Park provides equestrian access to the Ku'ia Natural Area Reserve and Hunting Unit H. There is limited space for trailer parking in a small, undeveloped parking lot at the trailhead.

The conditions of signage on these interpretive trails varies and should be reevaluated by a qualified botanist. Signs on the Iliau Loop Nature Trail are in particularly poor condition, often being illegible, and in some cases, indicating plants that no longer exist. Guide pamphlets used to interpret coded signs on the Awa'awapuhi Trail are currently out of print.

Proposed facility improvements at these trailheads are described in **Section 2** of this document.

Potential Impacts and Proposed Mitigation

No impacts to the existing resources for equestrian use within the Parks are anticipated, and no mitigation is proposed or required.

5.4.8 Bicycling

Off-road bicycling is currently prohibited within Kōke'e and Waimea Canyon State Parks. Numerous conflicts with mountain bike use, including damage to trails in sensitive ecological areas, erosion, introduction of seeds and plant material, encounters with hikers and hunters, and noise that frightens game in hunting areas, are cited as the reasons for prohibiting mountain bikers from park trails and natural areas. The prohibition is announced on a sign posted at the entrance of Waimea Canyon State Park on Kōke'e Road.

Mountain biking is allowed on dirt roads in the two parks and in the State Forest Reserves. **Table 5-9** lists the trails and roads open to non-motorized vehicle use, including bicycles, within the forest reserves of western Kaua'i. All of these roads are accessed through Kōke'e and Waimea Canyon State Parks. Mountain bikers access Waimea Canyon Trail from Waimea Town. All other trails in the State forest reserves are closed to all wheeled vehicles.

Representatives of mountain biking groups have requested access to the park, and development of designated mountain biking trails. A suggestion has been made to designate mountain biking tracks within timber groves where native natural communities are not likely to be impacted.

The dirt roads of Kōke'e, Halemanu, and Pu'u ka Pele provide a pleasant environment for recreational bicycling, but have not been promoted for such use. It would be difficult to regulate different classes of recreational bicyclers to allow low-impact recreational uses while

prohibiting high-impact mountain biking.

Commercial tour operators conduct downhill bicycling on Kōkeʻe Road (State Route 550). All downhill bicycling operations are staged within the State right-of-way, thus are outside the jurisdiction of the Division of State Parks.

Potential Impacts and Proposed Mitigation

No impacts to the existing resources for recreational bikers are anticipated, and no mitigation other than an education program is proposed or required to inform bikers on the need to stay on the roads and to prevent conflicts with hikers.

Table 5-9

Forest Reserve Trails and Roads Open to Mountain Bike Use

Trail Location	Miles
Waimea Canyon Trail	11.5
Papaʻalai Road to Contour Road	1.25
Contour Road	1.25
Lapa Loop Road	6.25
Hāʻeleʻele Ridge Road	3.50
Kepapa Spring Road	6.50
Polihale Ridge Road	1.25
Kāʻaweiki Ridge Road	5.25
Kauhao Ridge Road	4.25
Pine Forest Drive	5.00
Mākaha Arboretum	1.25
Miloliʻi Ridge Road	1.00
Mōhihi-Camp 10	7.30
Total	55.55

5.4.9 Motorized Vehicle Use

Motorized recreational vehicle use is currently not permitted off road within the two State Parks. Four-wheel drive vans were permitted in the past to operate tours of Camp 10 Road and

Halemanu Road under commercial license. Due to the extremely heavy impact of the commercial vehicles on these roads, lack of funding for maintenance, and liability concerns, off-road tours are no longer permitted within the Parks.

Off-road motorcycle riders regularly trespass into the Parks, particularly at lower elevations near the entrance to Waimea Canyon State Park and via Waimea Canyon Trail. Illegal motorcycle use is credited with destroying ground cover, causing erosion, creating unauthorized trails, spreading weed species, disturbing native birds and game animals, and conflicting with hunters and hikers using the parks. Enforcing prohibitions on motorcycle use within the Parks is difficult due to their mobility and the large areas in which they are known to operate.

Potential Impacts and Proposed Mitigation

No impacts to the existing resources are anticipated because off-road motorized use is prohibited in the Parks. To prevent unauthorized use of unpaved roads and trails, gates will be installed.

5.4.10 Proposed Activities - Nature Trails

The unique environment and diverse plant and animal life found in Kōkeʻe and Waimea Canyon State Parks attract many amateur naturalists. Trails throughout the parks provide access to the complete inventory of natural communities, geologic formations, and climatic zones within the parks, and provide an opportunity to encounter rare and endangered plants and animals that inhabit the area.

Develop new ADA-accessible interpretive trails to highlight the four main forest types found in Kōkeʻe and Waimea Canyon State Parks:

- ʻAʻaliʻi Lowland Dry Shrubland
- Koa Lowland Mesic Forest
- Koa / ʻŌhiʻa Montane Mesic Forest
- ʻŌhiʻa Montane Wet Forest

A fifth interpretive trail is proposed to interpret the ʻAkaʻakai / Neke plant community located along the road running parallel to Waineke Stream. The ʻAkaʻakai / Neke Interpretive Trail will provide access to a section of native wetland consisting of the bulrush ʻakaʻakai (*Bulboschoenus*) and the Neke (*Thelypterus gongliodes*) fern for which Waineke Stream is named. Neke may either be indigenous or a Polynesian introduction. It is a benign occupant of wet kalo fields, which were much more common in the past.

The Waineke Stream site is a good location to provide interpretation on wetlands and native wetland vegetation. The healthy ʻAkaʻakai/Neke association at this site can be highlighted in

contrast with lower elevation wetlands in which native plants have largely been supplanted by introduced weed species.

Trail facilities at all five locations will include parking and interpretive signage. Hikers will be directed by signage to the nearest comfort station facilities at major lookouts or trailheads.

Interpretive facilities at the parks are limited given the rich natural resources found in the region. Trails that provide interpretive signage, include:

- Awa'awapuhi Trail
- Nature Trail at Kōke'e Lodge
- Iliau Loop Nature Trail

Potential Impacts and Proposed Mitigation

No impacts to the existing resources are anticipated, and no mitigation is proposed or required as most of the interpretive work will be confined to existing trails; and signs or placards will be placed next to trees and shrubs.

5.5 TRAFFIC AND ROADWAYS

The entire study area has approximately 69 miles of roads that are maintained by either the Department of Land and Natural Resources or the Department of Transportation. The road types (paved or unpaved), maintenance, jurisdiction, condition, and improvements previously identified are described below.

5.5.1 Existing Paved Roadway

The drive from the Kaumuali'i Highway into Waimea Canyon and Kōke'e State Parks originates from two locations. The first and more convenient route from the east is via the Waimea Canyon Drive (SR 550). Starting in Waimea Town, the road climbs steeply for seven miles where it intersects the wider Kōke'e Road, just above the present park boundary (milepost 3.8). The alternate route, located to the west, is the Kōke'e Road. It starts its ascent from Kekaha and climbs through Waipio Valley at a less steep incline and is therefore the favored route for tour buses and other heavy vehicles. **See Figure 5-13.** The roadway is asphalt with lanes averaging 10-11 feet. The roadway does not have any paved shoulders or lights, except at certain pull-off areas. Guardrails are located at various locations.

Both roads converge at a tee intersection below the 7 mile marker at an elevation of 2,300 ft. This intersection is not lighted. From this intersection, Kōke'e Road continues for another 11 miles through the Parks and ends at Kalalau Lookout (Milepost 18). Pu'u o Kila Road intersects Kōke'e Road at Milepost 18 and ends one mile away at Pu'u o Kila Lookout.

Mākaha Ridge Road is the only other paved road within the study area. This road is approximately 4 miles long and connects the State Park with the Pacific Missile Range Facility (PMRF) at Mākaha Ridge. The road is maintained by the military.

The drive along Waimea Canyon Drive and Kōke'e Road provides scenic vistas once one leaves Waimea Town. The road skirts the western rim of Waimea Canyon and, in the process, affords the visitor occasional views of the Canyon. At the one-mile mark above Waimea Town, the visitor is afforded a view of the plains below that extend from Hanapēpē towards Mānā. As one continues to higher elevation (800+ feet), the view of Ni'ihau and Nihoa becomes the center of attraction, next to the canyon views. The vegetation along the drive changes from urban foliage to remnant sugar cane fields to a mixed forest of introduced trees. The first sign of native vegetation is apparent at the 7.5 mile marker (2,400-foot elevation) where koa trees (*Acacia koa*) can be seen interspersed within stands of eucalyptus. A mile further up the road, the forest is dominated by native trees with new growth koa and 'ōhi'a crowding a few interspersed eucalyptus trees. The majority of the drive through the Parks is flanked by a mixture of introduced and native tree species in varying dominance. The Kaunuohua Ridgeline at Halemanu is dominated by native trees and shrubs including pūkiawe and 'ōhelo'ai.

Kōke'e Road is the main conduit in both Parks, providing primary access to all points within the Parks and surrounding forest reserves and natural areas. The activity areas (lookouts, trailheads, picnic areas, Lodge, and access road intersections) form the major nodes along the roadway.

Maintenance of Paved Road Sections

Jurisdiction and maintenance responsibilities of the roadway system are split between the State Department of Transportation (DOT), Highways Division, the DLNR/State Parks Division and the Kaua'i County/Public Works Department.

The County is responsible for Kōke'e Road from Kekaha to the Waimea Canyon Drive intersection (6.8 mile marker). The State DOT is responsible for the Waimea Canyon

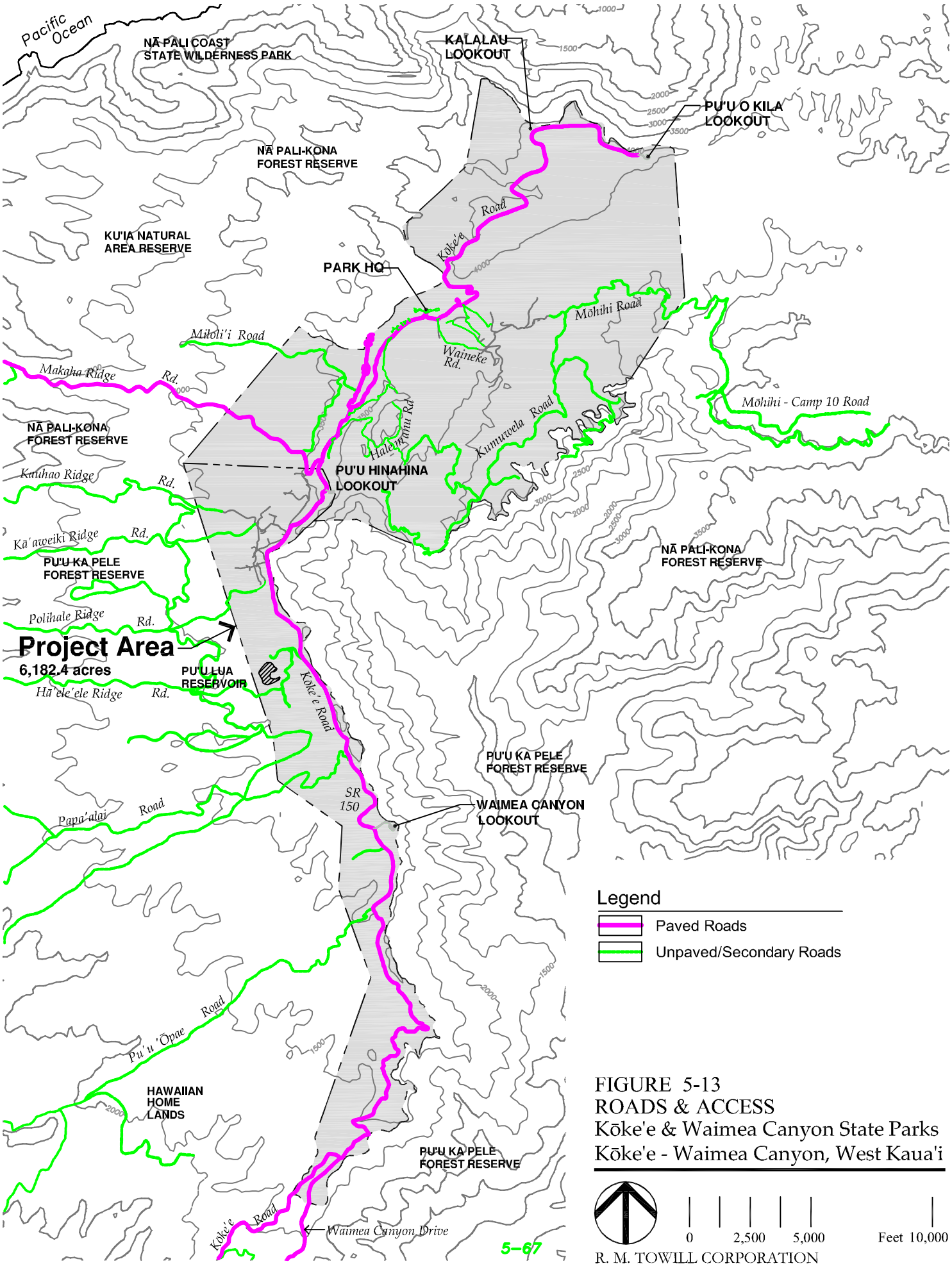


FIGURE 5-13
ROADS & ACCESS
Kōke'e & Waimea Canyon State Parks
Kōke'e - Waimea Canyon, West Kaua'i

Drive/Kōkeʻe Road from Kaumualii Highway to milepost 14. Jurisdiction and maintenance responsibilities for Kōkeʻe Road from the 14-mile marker to the end of the road at the Puʻu o Kila Lookout is with the DLNR, State Parks (approx. 5 miles).

Informal discussions with the Kaua'i DOT District Engineer indicate that the DOT may be willing to assume this responsibility; however, the DOT would first insist that the roadway be improved to meet minimum State standards before they would accept responsibilities. Improvements are roughly estimated to cost $4 to $5 million dollars, or approximately $1 to $1.2 million per mile.

According to DOT officials, general maintenance (i.e. resurfacing) is normally scheduled every 8 to 10 years. The Waimea Canyon Drive was resurfaced in July 2002. The DOT maintains a road crew that repairs potholes and trims vegetation along the roadway shoulders. The County maintained segment is also in good condition. Due to its lower elevation and dryer environment, less effort is needed to maintain the vegetation along the roadway shoulders.

The segment from milepost 14 to the end of the road at Puʻu o Kila Lookout is maintained by the DSP. Currently, maintenance is limited to grass cutting and pothole patching.

The roadway from the Halemanu Road intersection to the Kanaloahuluhulu Meadow is in fair condition with occasional potholes. There are no paved shoulders and the road is not lighted. The segment between the Kanaloahuluhulu Meadow to the Kalalau Lookout is in poor condition with several potholes that make driving during fog or heavy rain conditions hazardous. This segment of road also does not have any paved shoulders. The segment between the Kalalau Lookout and the Puʻu o Kila Lookout is as poor as the previous segment. This section of road is also potholed and without shoulders. During fog or rain conditions, driving is also hazardous because the depth of the potholes are masked by the water in the holes. DLNR staff has indicated that this latter segment of road cannot handle large vehicles such as tour buses, because the road grade was not designed to accept the heavier load.

5.5.2 Unpaved Roads

The majority of the Kōkeʻe study area is served via a series of unpaved dirt-gravel roads. An approximate total of 49.5 miles provide access to various parts of the study area, excluding driveways and service roads. The longest being the Mōhihi-Camp 10 Road covering approximately 8 miles. The roadway system is shown in **Figure 5-13**. Of the 49.5 miles, approximately 10 miles of roads are used to access the recreation residences.

Maintenance of Unpaved Road Sections

Of the total unpaved road sections, 10.5 miles is under the jurisdiction of the DSP and the remaining 39 miles is under the jurisdiction of the DOFAW. Maintenance of the unpaved roadways consists of patching the roadway with additional gravel when needed and occasional

re-grading. In addition, the drainage structures (swales, ditches, and culverts) are cleaned and vegetation cutback in order to keep rainwater from flowing across or along the roadway. This latter action causes the gravel surface to wash away, causing potholes.

DLNR staff report that road maintenance is an ongoing activity. The consequence of not maintaining the roads, especially during the rainy periods is to risk complete deterioration of the road bed leading to re-grading, or worse, reconstruction of the road. During the last four fiscal years (since 1999), very little has been expended to maintain the road network.

5.5.3 Roadway Conditions

A qualitative evaluation of the existing road network was performed as part of this project. The evaluation mainly entailed visual inspection of the road surface; no structural evaluations were performed, nor were the cross-sections of the roads analyzed. The evaluation examined the paved and unpaved roads and a nominal rating was assigned to the road. The rating was as follows:

1 - Good - no potholes, smooth riding surface, road well-drained.

2 - Fair - some ruts and potholes, worn or damaged surface, worn topping, patches with no gravel, drainage features in need of maintenance.

3 - Poor - roadway potholed to subbase course, no gravel, drainage not functioning - water drains on the road, and water ponding on the road.

In addition to the qualitative rating of the road, an inventory of road deficiencies and hazards were compiled. The measure examined safety enhancements, such as guardrails, increasing sight distances, shoulders, and maintenance concerns, such as unmaintained drainage features.

The evaluation of the roads was based on a sampling of road network. Nearly 100 percent of the paved roads were examined and approximately 40 percent of the unpaved roads were examined. Conclusions based on the evaluations are as follows:

The DLNR segments are in poor and hazardous condition. The surface needs repaving or possible reconstruction; there is no center line stripe or markers, the overall travelway pavement width is less than 16 feet, and there are no paved shoulders for most of the roadway. Pedestrians are forced to walk in the travelway because there are no sidewalks or shoulders. Most of the steeper and more heavily used unpaved roads are badly rutted and eroded, especially in the Kōkeʻe, Halemanu and Puʻu ka Pele lease lot areas. During rainfall events, water ponding and muddy conditions cause significant problems on the unpaved roads, making the depth of the potholes indiscernible. Maintenance of the dirt roads does not appear to be performed on a regular basis as drainage swales and ditches alongside the roads are overgrown with vegetation or are silted in.

From 1986 to 1994, a total of 68 traffic accidents were reported on Kōkeʻe Road with 2 fatalities. Another 33 accidents occurred along Waimea Canyon Drive with no fatalities. The statistics indicate that the majority of accidents involved a single car. Only one accident involved a pedestrian (MP 2000).

5.5.4 Parking Areas

Formal parking areas are principally associated with the developed areas in the Parks, namely, the lookouts, picnic areas, and the Kanaloahuluhulu Meadow.

Most of the parking areas are designed for automobiles and small vans. The Waimea Canyon Lookout is the exception where five stalls have been created for large tour buses. The parking areas at the Lodge and Puʻu ka Pele Picnic Area are not paved, but are periodically graveled. The driveway and parking surfaces at the Puʻu ka Pele Picnic Area were showing signs of erosion damage and in need of new gravel during site visits in fall 2002. Each of the parking areas, except for the Puʻu ka Pele Picnic Area is provided with handicap parking stalls.

Nominal conditions using the roadway evaluation criteria at the parking areas are as follows:

- Good - Waimea Canyon Lookout, Puʻu Hinahina Lookout, and Kalalau Lookout.
- Adequate - Kōkeʻe Lodge area and Puʻu ka Pele Picnic Area during dry periods.
- Poor - Puʻu o Kila Lookout parking lot is currently rutted.

5.5.5 Findings

The following is a summary of this section:

- The roadway provides a potential medium for interpreting the changing vegetation zones, from the lowland environment affected by agricultural activities and coastal processes, through mid-level mixed forests, to native-dominant rain forest.
- Center line and pavement edge night reflectors are installed on only limited segments of Kōkeʻe Road, and cease altogether at the intersection of Halemanu and Kōkeʻe Road. Installation of reflectors along the entire length of Kōkeʻe and Waimea Canyon Drive would greatly improve safety, especially at night and during foggy or rainy conditions.
- Re-grading and repair is needed at many dirt road segments. If performed periodically, this form of maintenance may be adequate for some of the less traveled roads. A more permanent treatment, such as AC paving should be considered at the roads that are more heavily utilized.
- Demand for parking is evident at the Kukui/Iliau Loop Trailhead and at the Kōkeʻe/Halemanu Road intersection. Currently, cars park on the unimproved

shoulder. Parking space is particularly limited at the Kukui/Iliau Loop Trailhead.

- Off-road parking accommodations should be planned in coordination with the trail interpretation program.

Potential Impacts and Proposed Mitigation

No impacts to the existing roadway (paved and unpaved) network is anticipated as no new roads are proposed in the next 5 years, nor are existing roads to be closed. Improvements to existing roads and parking areas in the short-term are limited to repair and maintenance work. Short-term impacts to the environment will result from the paving and grading activities. These impacts include runoff from the graded road sections. These impacts are proposed to be mitigated through the use of best management practices and good housekeeping during construction. Future improvements include: a) widening the travelway to 20 feet to increase safety; b) providing shoulders (up to 10 feet) to allow space for pedestrians and the ability for vehicles to pull-off; c) clearing of shoulders for fuel breaks and controlling flammable grasses alongside Kōkeʻe Road, Camp 10-Mohihi Road, Kumuwela Road, and Mākaha Ridge Road; d) designing and re-constructing Kōkeʻe Road to accommodate large buses; and e) expanding parking lots at Waimea Canyon Lookout, Puʻu Hinahina Lookout, Kanaloahuluhulu Meadow, and Kalalau Lookout.

5.6 UTILITIES

5.6.1 Water Supply Facilities

Kōkeʻe and Waimea Canyon State Parks are serviced by three water systems, one for potable water, and two for non-potable water.

A. Potable Water System

The DSP on Kauaʻi operates its own potable water system that serves existing park facilities that include the DLNR facilities, the lease lots, Kōkeʻe Lodge and Kōkeʻe Natural History Museum, the lookouts and Kōkeʻe Discovery Center. The existing potable water facilities (Public Water System No. 425) in Kōkeʻe State Park consists of two wells, pumps and chlorination system, a 200,000-gallon storage tank (3,760 feet above sea level (asl)) and a distribution system that includes most of the developed areas within the Park boundaries. See **Figure 5-14**.

Prior to the installation of the well and storage system, potable water was taken from ʻElekeninui Stream. The well and storage system using potable water from ʻElekeninui Stream was abandoned. State Well No. 2-0739-01, is located at 3,560 feet asl and has a pump capacity of 30 gallons per minute (GPM). A second well at approximately the same elevation has a pumping capacity of 43 GPM.

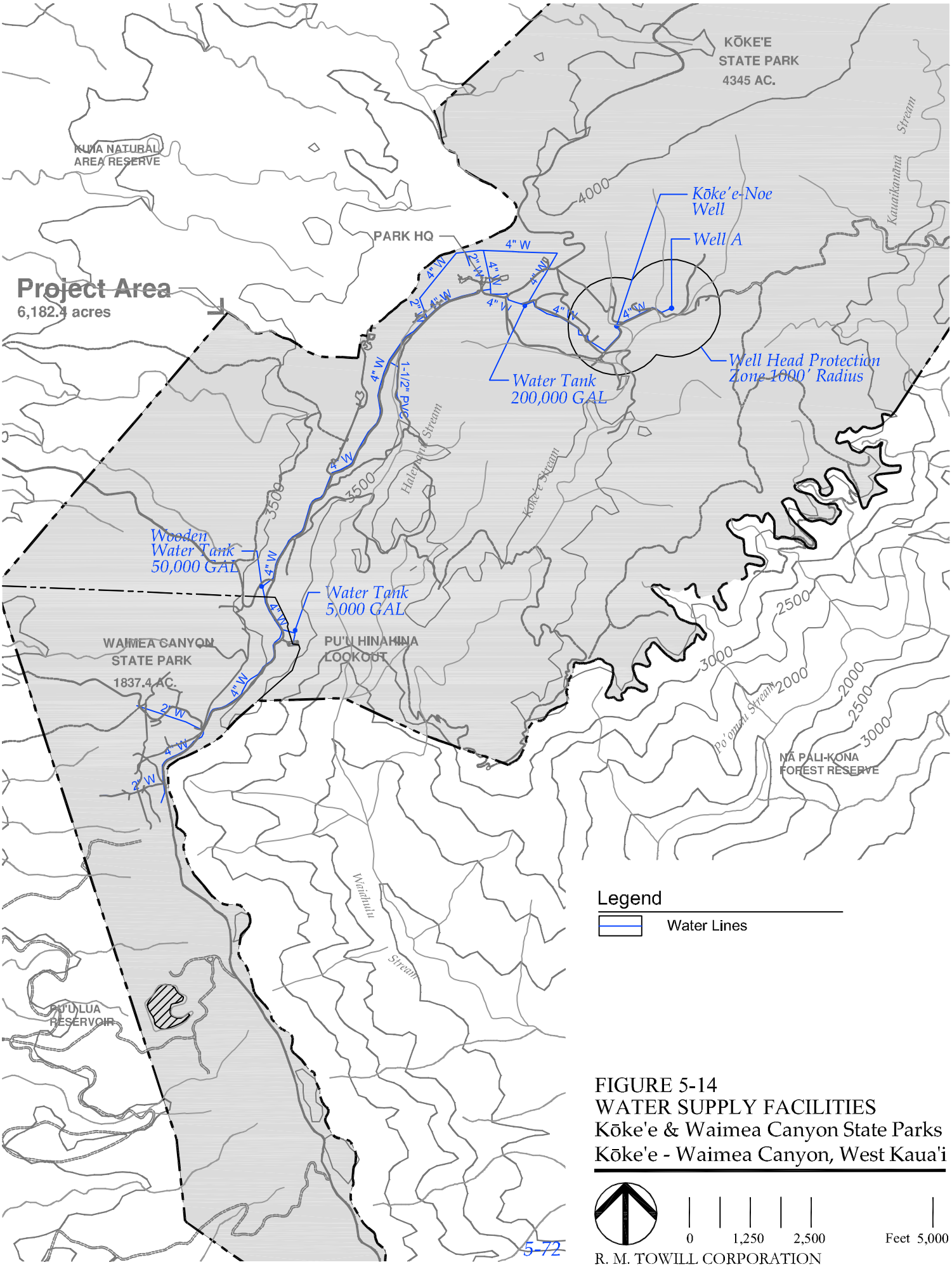


FIGURE 5-14
WATER SUPPLY FACILITIES
Kōke'e & Waimea Canyon State Parks
Kōke'e - Waimea Canyon, West Kaua'i

R. M. TOWILL CORPORATION

The water from both pumps feed to a 200,000-gallon storage tank located within the Kōkeʻe lease lots. The existing potable water system wells (Well A and Noe Well) are located in a basin along the Mōhihi Road in the vicinity of ʻElekeninui Stream. The wells are at a depth of approximately 39 and 150 feet below ground level, respectively. The water source is considered "perched" because the water source is located above an impervious rock layer which was part of the caldera that was once part of the volcano that formed the Island of Kaua'i. The existing aquifer is a perched system. The maximum yield per well is estimated at 50 GPM (Commission on Water Resources, 2002).

Water distribution for the potable water system is primarily within the Kōkeʻe area. A water line feeds a 5,000-gallon tank (3,500 feet asl) at Puʻu Hinahina and a 50,000-gallon tank (3,580 feet asl) at Mākaha Road that services the lots in the Puʻu ka Pele area and the Navy at Mākaha Ridge.

The potable water monitoring includes:

- Coliform monitoring program
- Lead and copper monitoring program
- Chemical monitoring
- Phase II and Phase V monitoring program
- Water quality parameter sampling

The quality of the water from the wells is much better than the surface catchment system previously used and currently meets DOH standards based on monthly data. An optional Corrosion Control Treatment Plan was developed and implemented to correct the lead problem. The potable water system is designed to accommodate 2,000 persons and currently has 93 service connections (communications from State Parks). This number does not include all of the lease lots. The Kōkeʻe Air Force Station and the Kalalau Lookout are serviced by a separate well operated by the Air Force.

Based on available meter reading data between January 1999 to January 2001, a total of 12,918,024 gallons was used by metered users. An additional 265,000 gallons per month was estimated to be used, on average, by the non-metered users which includes the Kōkeʻe Lodge, its maintenance facilities, laundry, and the Kōkeʻe Discovery Center. Average water usage (for 24 months) was estimated to be 803,251 gallons per month. Pumping data (6 months, July 2001 to January 2002) indicate that an average of 1,408,333 gallons per month were pumped into the storage tank (47,000 gallons per day). Based on the supply (1,408,333 gallons per month) and the demand (803,251 gallons per month), there is approximately 605,082 gallons being either used by a non-metered users, or the water is lost due to leaks in the system, or the meter readings are faulty. State Parks staff suggest that the pump meter reading is faulty because the

pumps measure pump activity and not water being pumped.

The metered users are charged $0.35 per 1000 gallons used. The amount collected averages $188 per month (538,251 gal. per month/1000 x $0.35) or $2,260 per year. In contrast, the County of Kaua'i Water Department charges $2.10 per 1,000 gallons below 20,000 gallons charged bi-monthly. Therefore the equivalent charge for the 803,251 gallons used, the County would charge $843 per month (803,251/1000 x $2.10/2) or $10,121 per year.

B. Kōke'e Irrigation System

The Kōke'e-Waimea area has three ditch irrigation water systems: the Kōke'e, Kekaha, and Waimea Ditch Systems. Each system played an important role in the development of agriculture in the "lowlands."

The Kōke'e Ditch, completed in 1926, intercepts flow from the Mōhihi, Waiakoali, Kawaikōī, Kauaikinānā, Halemanu and Kōke'e Streams at a peak altitude of approximately 3,400 feet. The Kōke'e system consists of a 21-mile collection and conveyance system including 48 tunnels averaging 1,000 feet in length, with the longest being 3,000 feet. The system also includes a 260-million-gallon reservoir (Pu'u Lua), a second 63-million-gallon reservoir (Pu'u 'Ōpae), and a third reservoir (Kitano Reservoir) located 2.5 miles south of the Pu'u Lua Reservoir. Between Camp 8, within the Alaka'i Swamp, and Pu'u Lua Reservoir, the ditch system draws a maximum capacity of 70 mgd. When the system appears to be reaching capacity, water is spilled off into Kauhao Stream to prevent overflow. Between Pu'u Lua Reservoir and Pu'u 'Ōpae and Kitano Reservoirs, the ditch has a capacity of 26 mgd, with the Pu'u 'Ōpae segment accommodating up to 7 mgd and the Kitano segment carrying the remaining capacity of 19 mgd. The system was originally built to provide for the water needs of the sugar operations in the low lands surrounding Waimea and Kekaha. See **Figure 5-5, Ditch and Tunnel System**, and **Figure 5-14, Water Supply System**.

The Waimea Canyon Lookout comfort station is provided with non-potable water from the Kōke'e Ditch System via a 10,000-gallon wooden water tank.

The Waimea System, construction in 1903, diverts portions of the flow of the Waimea River from an elevation of approximately 200 feet and travels through open ditches to the west side of the Waimea River for approximately 3 miles to the coastal plains north of Waimea Town, and for another 4 miles to the west.

The Kekaha System, built in 1901, diverts water from the Koai'e and Waiahulu Streams and conveys the water to an irrigation system in Waimea.

The irrigation water system currently serves the diversified agricultural users located in the Kekaha Agricultural Park. The system is managed by the Agribusiness Development Corporation which has jurisdictional control and management of the ditch based on a

December 9, 2005 Executive Order setting aside lands that contain the Kōkeʻe Ditch.

C. Findings

The following is a summary of findings relating to the water systems in the Kōkeʻe area. Basic improvements to the water system are also identified.

- The capacity of the existing well and storage system is not sufficient to meet the demand nor expansion of existing facilities.
- Development of water features for the park can be considered through the use of the existing Kōkeʻe Ditch System, expanding the ditch system to include additional reservoirs, or new ditch segments.
- Recreational opportunities for the non-potable water systems can be developed, i.e., fishing in streams and the use of Puʻu Lua Reservoir as a visitor attraction--interpretive site for viewing and learning about the Kōkeʻe Ditch System.
- Many of the main lines of the system are old and in poor condition. A detailed analysis should be performed and necessary replacement/repair work be performed as soon as possible.
- Potable water for the existing restrooms at the Waimea Canyon Lookout and Kalalau Lookout are needed.
- Backup sources of potable water are needed for the park to service existing uses (recreation residences, Kōkeʻe Lodge and Kōkeʻe Natural History Museum, State cabins, and CCC Camp), as well as provide additional capacity for park development. Well exploration should continue as a high priority.
- Establish a Well Head Protection Zone of 1,000 feet from cesspools for potable well sources.
- Non-potable water supply for fire fighting purposes. According to the DOFAW, a fire engine's water carrying capacity is 750 gallons and its pump operates at 1,500 gallons per minute. The rescue truck carries 200 gallons and pumps at 125 gallons per minute. If thirty minutes of fire fighting capacity is required for the engine, 45,000 gallons of water storage will be required.
- Clear access to Puʻu Lua Reservoir is required for helicopters to access this water supply for fighting wildland fires. In addition, development of dip tanks in open areas will also facilitate fighting wildland fires.
- Water meters should be installed for all major users, i.e., Kōkeʻe Discovery Center, Kōkeʻe Lodge, Kōkeʻe Natural History Museum, etc.

- The water source and treatment systems might best be managed by outsourcing to a private operator.

Potential Impacts and Proposed Mitigation

The existing potable water system at the Parks will be impacted by the proposed improvements. Additional demand will require the development of additional storage capacity and the development of new wells to support the demand. As part of the water source development, no building of wastewater disposal system within the well-head protection zone will be enforced. In addition, the fire protection system at the Parks is currently inadequate. Therefore, a non-potable system is proposed for fire control. The existing Kōkeʻe Ditch System is proposed to support fire control. In order for these systems to be put in place, land will need to be set aside for storage tanks. Ground disturbing activities, such as trenching for new waterlines, will require the installation of erosion control measures to prevent water pollution. Further, best management and good housekeeping practices will be required for the contractors who perform this work. During construction activities traffic impacts are anticipated due to work on the roadways. In order to promote conservation, user fees will be initiated.

5.6.2 Wastewater Facilities

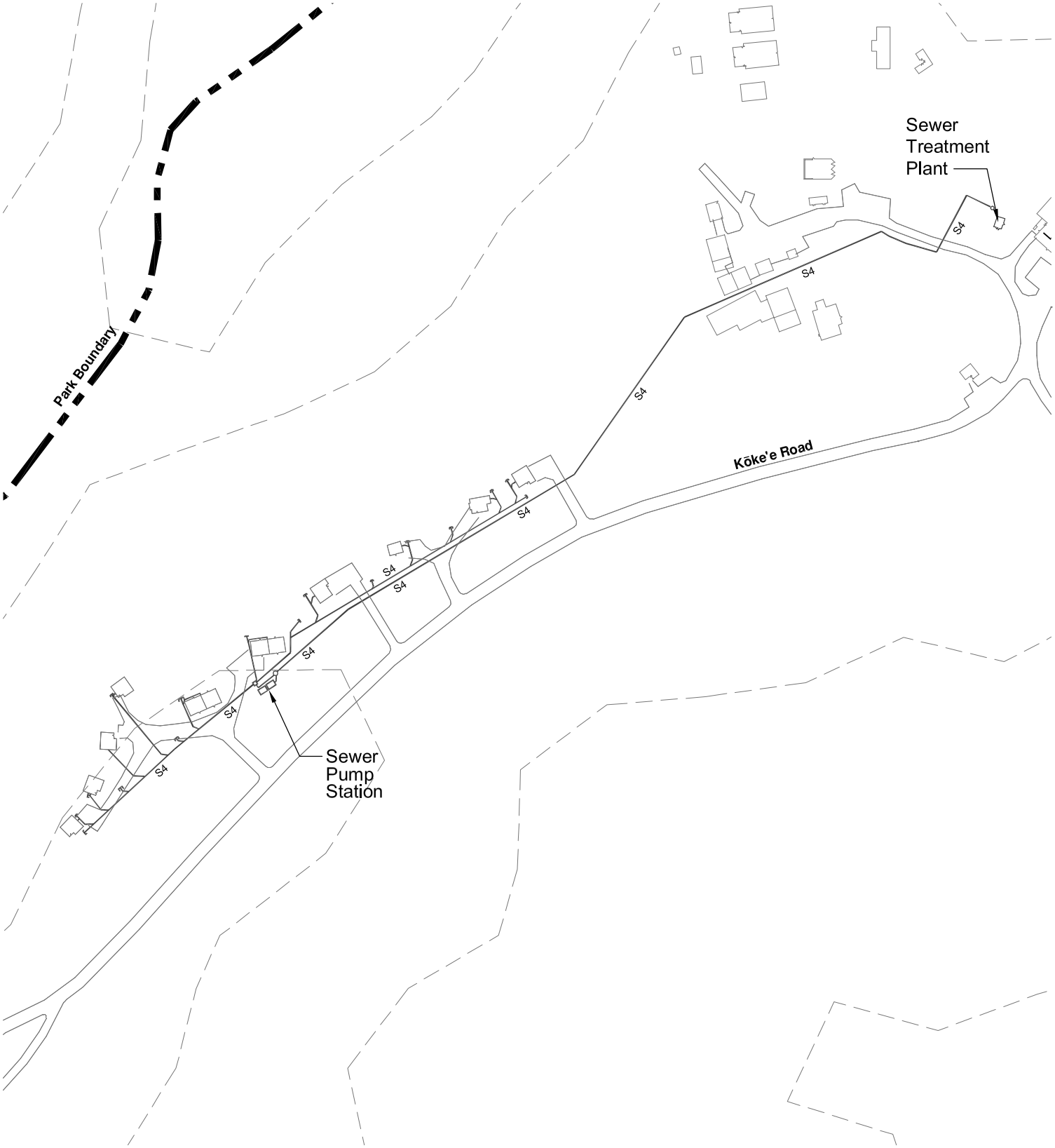
A. Existing Collection and Treatment

Cesspools are the primary method for disposal of wastewater within the Waimea Canyon and Kōkeʻe State Parks, and are presently utilized at all leased lots. The only treated sewer system in the parks is located near the Kōkeʻe Lodge. The treatment system utilizes a leach field system with a design capacity of 12,000 gallons per day. Current utilization is approximately 3,000 to 4,000 gallons per day. See **Figure 5-15**.

The system services the Kōkeʻe Lodge, the Kōkeʻe Natural History Museum, the Kōkeʻe Picnic Pavilion, the comfort station in the camping area, and the 12 rental cabins. A pump station is located at the rental cabin complex to move the effluent to the treatment facility. In doing so, the problem of frequent pumping of the cesspools, and the potential for cesspool leakage in these areas has been alleviated.

The current system is designed to pump the effluent up to the leach field for treatment. During power outages the system shuts down. During periods of high rainfall, the leach field cannot operate properly because the ground becomes saturated.

The Environmental Protection Agency (EPA) instituted Underground Injection Control regulations on December 7, 1999, which prohibit the construction of new large-capacity cesspools. The ban on large-capacity cesspools, effective April 5, 2005, will impact the operations at the Park. A large-capacity cesspool is defined as "a system that has the capacity to



Legend

Sewer Lines

S4 = 4" Sewer Line

FIGURE 5-15
WASTEWATER FACILITIES
STATE RENTAL CABINS
Kōke'e & Waimea Canyon State Parks
Kōke'e - Waimea Canyon, West Kaua'i

0 100 200 Feet 400

serve 20 or more persons per day, such as a cesspools at a rest stop, crew quarters or school" (EPA 909-F-00-004, May 2000). The cesspools are being banned because of their "likelihood of releasing pathogens (disease causing organisms) and nutrients, such as nitrate, into the ground-water." **Figure 5-16** shows the location of known large capacity cesspools. The known facilities with large-capacity cesspools include: Waimea Canyon Lookout, Pu'u Hinahina Lookout, Kalalau Lookout, Pu'u ka Pele Picnic Grounds, CCC Camp, NASA facility, and the Air Force facility. In addition to these sites, private systems have been developed at the private camping sites operated by the YWCA, United Methodist Camp, Boy Scouts Camp, Hongwanji Camp, Seventh Day Adventist Camp, and United Church of Christ Camp.

Another reason for the conversion of the existing cesspools to a treatment system is that failures to the cesspools could result in contamination of the ground water. Lots located near the water wells pose a risk if there are failures of their cesspools. Therefore, a well-head protection zone of 1,000 feet is proposed in accordance with DOH policy.

Currently, the Kōke'e Discovery Center operates with three tanks for sewage waste disposal. The tanks have a combined capacity of 3,500 gallons. These are periodically pumped out. Grey water drains into a leach field.

B. Findings

Lots that are located above the current treatment system in Kanaloahuluhulu Meadow may be at a sufficient elevation to collect and gravity feed to the treatment system.

- Leach field expansion is required to handle effluent in ground saturation conditions during periods of high and prolonged rainfall. Because the potable water source for the Kōke'e area is located down gradient of the buried caldera, and because lease lots have been developed up-slope of the drinking water source, use of cesspools at individual cabin lots in the Kōke'e area should be discontinued unless alternative treatment systems are implemented, such as individual wastewater systems.
- Cesspool failures occur at the Kalalau, Waimea Canyon and Pu'u Hinahina Lookouts.
- Plans to eventually tie the Kōke'e Discovery Center (DOE) into this sewer system have been formed but no timetable for implementation has been established.
- The remaining large users within the Kōke'e lease lots should convert to individual wastewater treatment systems--septic tank systems as a condition of the 2006 lease renewals.
- Expansion of the leach field will be necessary to handle periods of high rainfall.
- Provide the sewer treatment system with emergency power, and/or relocate the

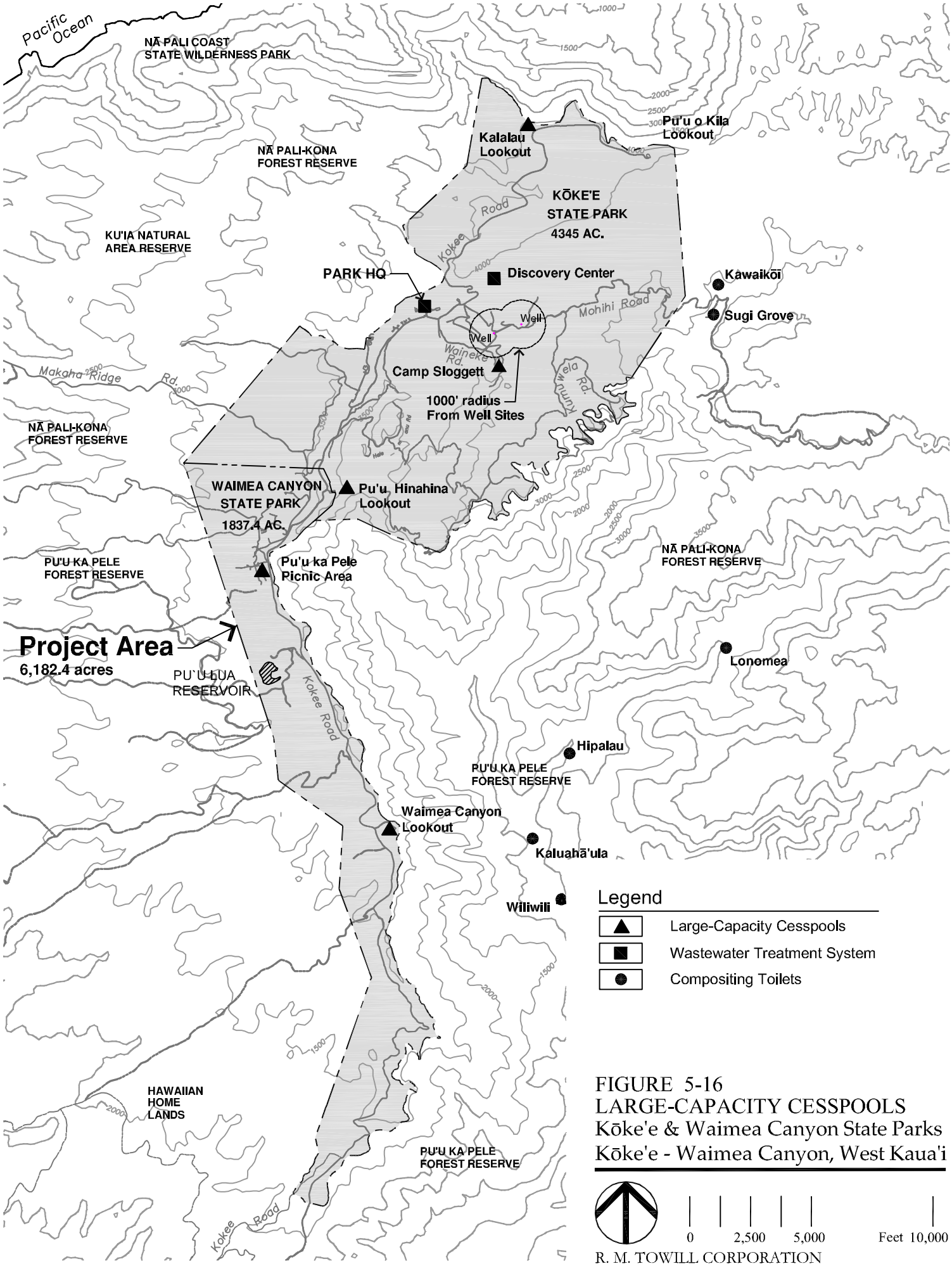


FIGURE 5-16
LARGE-CAPACITY CESSPOOLS
Kōke'e & Waimea Canyon State Parks
Kōke'e - Waimea Canyon, West Kaua'i

leach field below the treatment plant thereby allowing the effluent to gravity feed into the leach field.

- Develop individual treatment plants for Waimea Canyon and Pu'u Hinahina Lookouts.

Potential Impacts and Proposed Mitigation

Existing sewage disposal methods at the Parks fall into two categories: cesspools and individual waste treatment systems. In order to protect groundwater in the area, no new cesspools are being allowed; and where large capacity cesspools are located, they will be converted to individual waste treatment systems. Further, depending on the proximity to the Parks' treatment system, those uses are proposed to be connected to the treatment system, such as the Kōke'e Discovery Center. Further, uses within 1,000 feet of the potable water wells will also be required to connect to the Parks' waste treatment system, or be placed on individual treatment systems. Ground-disturbing activities, such as trenching for the new sewer lines, will require the installation of erosion control measures to prevent water pollution. Further, best management and good housekeeping practices will be required for the contractors who perform this work.

5.6.3 Electrical Facilities and Communication Facilities

Primary electrical service is provided by Kaua'i Island Utility Cooperative (KIUC) via overhead power lines and a substation located at approximately a half mile before the Kukui Trail. See **Figure 5-17**. Communications services are provided by Hawaiian Telecom. Both power and communications services are available from overhead lines located along Kōke'e Road and in the lease lot areas. Service into the lease lot areas do not necessarily follow the dirt roadways and in many cases cut through the forest in a somewhat random manner and usually without the benefit of established easements. Currently, not all lease lots are connected to the power grid. The decision to connect to the power grid is a choice of the individual lessee.

Public phone service is limited to pay phones at the Kōke'e Lodge and at Pu'u ka Pele Picnic Area. Cellular phone coverage is unreliable through most of Waimea Canyon State Park, and unavailable in Kōke'e State Park past the intersection of Kōke'e Road and Halemanu Road.

A. Hawaiian Telcom Communication Tower at Pu'u ka Pele.

The Hawaiian Telcom antenna stands high atop Pu'u ka Pele. This repeater site provides services to the Pacific Missile Firing Range at Barking Sands and Kukui o Lono. The site also provides communications links for the NASA facility and the Navy facilities in the Park. The facility includes an equipment building (approximately 10 ft. by 15 ft.), electrical generator, and a parking lot for four vehicles. The building is located approximately 50-75 feet above the Kōke'e Road grade. Approach to the building is via a concrete driveway. The building is

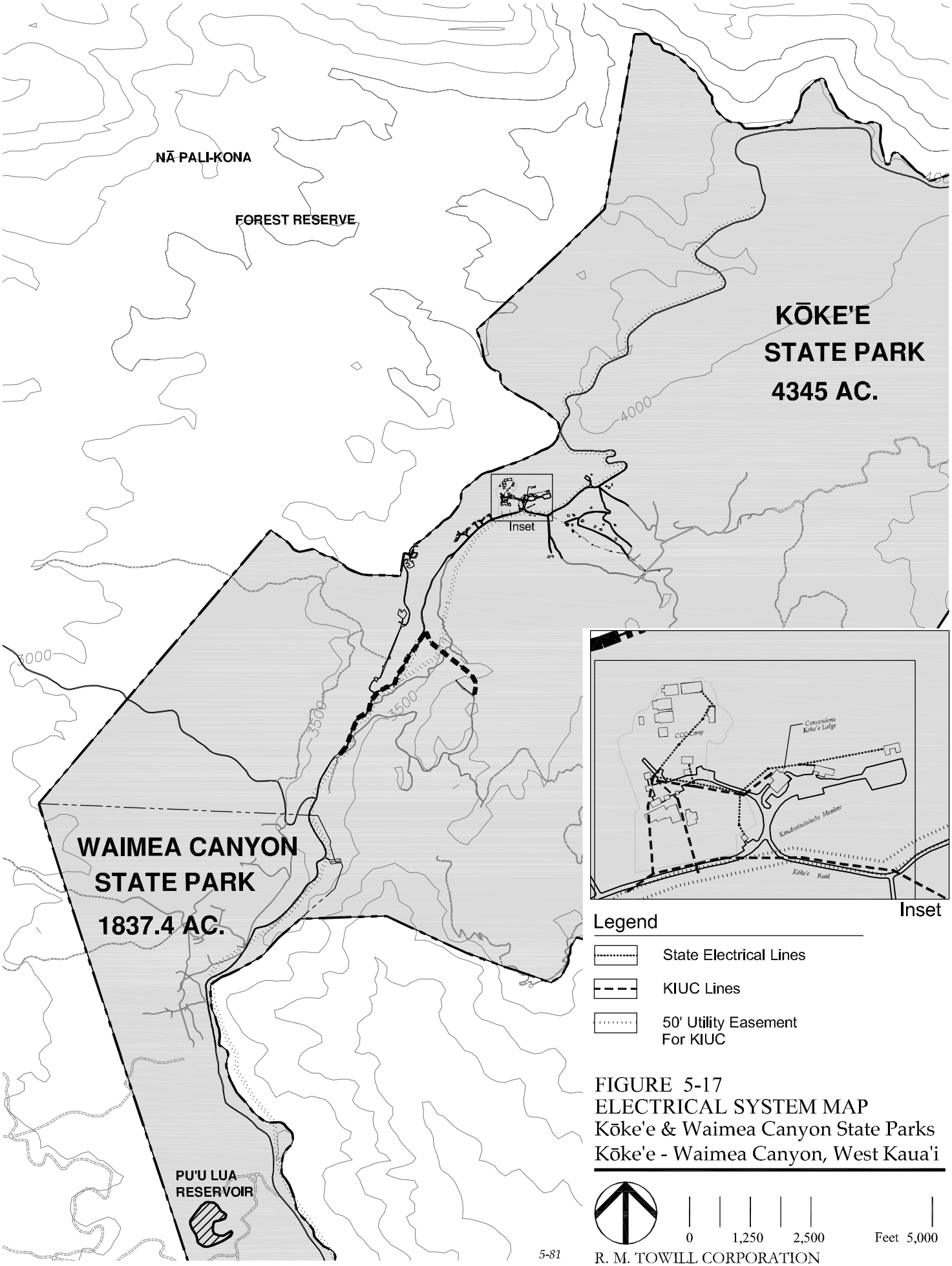


FIGURE 5-17
ELECTRICAL SYSTEM MAP
Kōke'e & Waimea Canyon State Parks
Kōke'e - Waimea Canyon, West Kaua'i

R. M. TOWILL CORPORATION

screened from view from the roadway by existing vegetation. From the building, there is a series of steps (near vertical) to the top of Puʻu ka Pele where the antenna is located. The elevation change from the building to the top of Puʻu ka Pele is approximately 200 feet. A "raceway" for the communication lines is located adjacent to the walkway.

Past archaeological surveys of the area have found three sites at Puʻu ka Pele that are now being grouped together and called the Puʻu ka Pele Complex. The sites include the Ahuloulu Heiau and the remains of two separate groupings of house sites.

B. Kukui Communication Facility

This facility consists of a 180-foot high communication tower surrounded by several buildings that contain repeater equipment owned by federal, State and county agencies. This facility is located within a 1.25-acre parcel situated along the west side of Kōkeʻe Road at about the 9-mile marker. The site contains three buildings. The main structure is approximately 12 feet by 15 feet. A parking area is located in front of the building and is large enough to accommodate 6 to 9 cars. To the east of the main building is a small trailer that is approximately 6 feet by 6 feet. To the west and at a lower elevation is another building which contains a generator. The buildings, except for the trailer, is enclosed within a chain link fence.

C. Nā Pali Communications Links

The DLNR is proposing the installation of a repeater for their radio system to provide communications in Kalalau Valley. This service will be available to the Divisions of State Parks, Forestry and Wildlife, and Conservation and Resources Enforcement. Currently, there are no means of establishing communications from workers along the Nā Pali Coast, especially during emergencies. A repeater site is proposed to be installed in close proximity to the Puʻu o Kila Lookout. The facility will include an antenna and an equipment vault.

D. Findings

- The Kukui Tower site has potential as a parking and trailhead for the Kukui Trail and Iliau Nature Trail.
- Limited parking at Puʻu ka Pele; and the site does not have a potable water source or comfort station.
- Use of archaeological features at Puʻu ka Pele as an interpretive site is problematic due to the presence of the microwave antennae tower. Also, the site is difficult to monitor. Drawing public attention to an isolated archaeological site subjects the site to the potential for vandalism and destruction. The interpretation of this site can be revisited if the site is no longer needed for communications purposes.
- The existing Kukui Tower is a visual intrusion into the landscape. The tower is visible from the Puʻu Hinahina and Waimea Canyon Lookouts. Mitigating this issue

will require the cooperation of multiple agencies with jurisdiction over the site, including DLNR, and the U.S. Air Force.

- The risk of losing power and communications, and creating a safety hazard exists because of the potential for trees or branches falling onto overhead power lines.
- Undergrounding of the power and communication lines is an expensive solution. An alternative to undergrounding the power and communication lines is to re-route lines to less visible areas.

Potential Impacts and Proposed Mitigation

No short-term impacts to the existing power and communications facilities are anticipated. Long-term, however, overhead power and communications lines are proposed to be placed underground, or be located away from public rights-of-ways to reduce visual impacts. Further, utility buildings are proposed to be screened from the public through the use of landscaping.

5.6.4 Emergency Services

A. Police

Primary law enforcement within the Parks is the responsibility of the DLNR, Division of Conservation and Resources Enforcement (DOCARE). The Division, with full police powers, enforces all State laws and rules involving State lands, State Parks, historical sites, forest reserves, aquatic life and wildlife areas, the Conservation District, as well as county ordinances involving county parks. The Division also enforces laws relating to firearms, ammunition, and dangerous weapons.

B. Fire

Kōkeʻe and Waimea Canyon State Parks are designated as a Fire Management Co-Response Area. Under this designation, primary responsibility for fighting fires within the park boundaries falls to the Kauaʻi Fire Department (KFD). DOFAW will respond to fires within the Parks only at the direct request of the KFD, but retains primary fire-fighting responsibility for Conservation lands outside the park, including the forest reserves, natural area reserves, and wilderness preserve.

Requests for DOFAW assistance must come from the Kauaʻi Fire Department through the County Civil Defense to State Civil Defense to DOFAW. The DOFAW Administrator or State Fire Protection Forester will then contact the respective DOFAW Kauaʻi Manager who will then mobilize his resources to assist the County Fire Department.

Potential Impacts and Proposed Mitigation

No impacts are anticipated for police services. Fire control services, however, will be impacted by the additional demand due to new facilities. DOFAW currently provides fire control services as they relate to wildland fires. In order to facilitate fire control, non-potable water sources and storage tanks near to the build-up areas are proposed. Impact to the environment will be short-term and limited to the construction period. Long-term beneficial impacts are the prevention of spreading of fires within the Parks and a higher level of protection for park users.

SECTION 6

RELATIONSHIP TO POLICIES, PLANS, AND CONTROLS

6.1 APPLICABLE ENVIRONMENTAL RULES AND REGULATIONS

The Environmental Impact Statement (EIS) preparation and review process is conducted pursuant to applicable State of Hawai'i environmental statutes, rules, and regulations. This includes Chapter 343, *Hawai'i Revised Statutes* (HRS) and Title 11, Chapter 200, State of Hawai'i, Department of Health, *Hawai'i Administrative Rules* (HAR).

6.2 FEDERAL LAND USE PLANS AND POLICIES

Land use policies, plans, and controls administered by the Federal government which affect the proposed action are described in the following sections.

6.2.1 Clean Water Act (CWA)

The Clean Water Act, Section 404: (a) Defines requirements for discharges of dredged or fill materials in waters of the United States; and (b) Sets limits on such discharges.

Permit approvals are obtained from the Army Corps of Engineers (ACOE). None of the proposed Master Plan improvements involve dredge or fill material within the waters of the United States, thus a CWA Section 404 permit will not be required.

6.2.2 Safe Drinking Water Act

The Safe Drinking Water Act (SDWA) was originally passed by Congress in 1974 to protect public health by regulating the nation's public drinking water supply. The law was amended in 1986 and 1996 and requires many actions to protect drinking water and its sources: rivers, lakes, reservoirs, springs, and ground water wells. SDWA does not regulate private wells which serve fewer than 25 individuals. Originally, SDWA focused primarily on treatment as the means of providing safe drinking water at the tap. The 1996 amendments greatly enhanced the existing law by recognizing source water protection, operator training, funding for water system improvements, and public information as important components of safe drinking water. This approach ensures the quality of drinking water by protecting it from source to tap. The SDWA applicability to Kōke'e and Waimea Canyon State Parks is the drinking water system that the DLNR operates.

Federal Requirements:

- Safe Drinking Water Act of 1974, P.L. 92-523

- Safe Drinking Water Act Amendments of 1986, P.L. 99-339
- Lead Contamination Control Act of 1988
- Safe Drinking Water Act Amendments of 1996, P.L. 104-182
- 40 Code of Federal Regulations(CFR) Parts 35, 124, 141, 142, 144, 145, 146 and 148

State Law:

- *Chapter 340F (HRS)*

Administrative Rules:

- *Title 11, Chapter 19, HAR, Emergency Plan for Safe Drinking Water*
- *Title 11, Chapter 20, HAR, Potable Water Systems*
- *Title 11, Chapter 21, HAR, Backflow and Cross-Connection Control*
- *Title 11, Chapter 23, HAR, Underground Injection Control*
- *Title 11, Chapter 25, HAR, Certification of Operating Personnel in Water Treatment Plants*

6.2.3 Water Quality Certification (Section 401 Clean Water Act)

A Water Quality Certification (WQC) is required when proposed construction or operation may result in discharges into State waters pursuant to the Federal CWA. In Hawai'i, the State Department of Health (DOH) has authority for project review and issuance of the WQC under Chapter 342D (HRS) and associated Title 11, Chapter 54 (HAR).

Since it has been determined that the proposed action will not result in the discharge of fill materials, a CWA Section 401 WQC is not required.

6.2.4 NPDES Permit (Section 402 Clean Water Act)

Discharges of point sources of pollutants into surface waters of the U.S. are regulated under the National Pollutant Discharge Elimination System (NPDES) program, pursuant to CWA, Section 402. In Hawai'i, the DOH administers the NPDES program under Title 11, Chapter 55 (HAR).

NPDES permits are available under General or Individual categories. General permits are available for activities that affect inland waters designated as "Class 2" and coastal waters designated as "Class A". Individual permits are required for activities that affect inland waters designated as "Class 1" and coastal waters designated as "Class A". The Individual Permit has greater flexibility, but involves a longer process, including Public Notice of Permit Application.

Separate Notices of Intent (NOIs) are required for NPDES General Permit coverage for hydrotesting, dewatering, or discharges to surface waters of construction-related stormwater from sites equal to or greater than 1 acre in size. The NOI submitted with the NPDES permit application requires development of a Best Management Practices plan, in accordance with Title 11, Chapter 55 (HAR). Discharges for storm water associated with construction activity, hydrotesting, dewatering and any industrial discharge under the proposed project will require NPDES permit approvals from DOH.

NPDES permits will be required for various improvements proposed under the master plan.

6.2.5 Endangered Species Act

The endangered species in the two Parks are projected by the federal Endangered Species Act of 1973 and Chapter 195, HRS, which requires that actions not jeopardize the continued existence of endangered or threatened plant and animal species. The U.S. Fish and Wildlife Service (USFWS) has jurisdiction over certain federally-listed threatened and endangered (T&E) species. DLNR has similar responsibilities as provided by HRS.

It is not anticipated that there will be any significant impacts to T&E species as a result of the proposed project.

6.2.6 National Historic Preservation Act

Section 106 of the National Historic Preservation Act, as amended, and Chapter 6E, HRS, and implementing regulations (36 CFR 800) and Chapter 13-300, HAR, are intended to provide for the protection and use of historic properties for the benefit of the public. DLNR, Historic Preservation Division (SHPD), oversees the historic preservation compliance process. The SHPD determines whether any historic sites exist and their historical significance.

The archaeological field inspection prepared for the Master Plan determined that there were no significant historic structures on the project sites. Should the SHPD determine otherwise, then appropriate mitigation and preservation measures will be developed.

6.2.7 Americans with Disabilities Act

The Americans with Disabilities Act of 1990 (ADA) is a civil rights law which prohibits discrimination on the basis of disability. Title II of the ADA requires newly constructed and altered State and local government buildings, places of public accommodation, and commercial facilities to be readily accessible to and usable by individuals with disabilities.

Accessibility guidelines for outdoor developed areas are currently being developed by the U.S. Access Board. These new guidelines will cover access to trails, beaches, and picnicking and camping areas and will be incorporated into ADAAG for outdoor

developed areas. The guidelines will provide new construction and alteration scoping and technical criteria that address unique constraints specific to outdoor environments.

Requirements contained within these new guidelines are developed around the following basic principles:

- Protect resources and the environment
- Preserve experience
- Provide for equality of opportunity
- Maximize accessibility
- Be reasonable
- Address safety
- Provide Equivalent Experience of Major Park Themes

Proposed accessibility guidelines for outdoor areas recognize that both the quality of the environment and the nature of the outdoor experience may be significantly altered or harmed by the imposition of accessibility enhancing facilities, equipment, or technologies. Many environmental factors, including terrain, vegetation, hydrology, and soils, influence the ability to provide fully accessible facilities at the Parks. Departures from the standards are allowed where compliance would:

- Cause substantial harm to cultural, historic, religious, or significant natural features or characteristics.
- Substantially alter the nature of the setting or the purpose of the facility, or portion of the facility.
- Require construction methods or materials that are prohibited by Federal, State, or local regulations or statutes.
- Not be feasible due to terrain or the prevailing construction practices.

In such instances where outdoor facilities cannot be made accessible, efforts will be made to provide an "equivalent experience". Equivalent experience may be in the form of an alternate facility that provides a similar environment, view, or interpretive encounter. For example, Kalalau Lookout provides a view of Kalalau Valley similar to the view from Pu'u o Kila. Where access is not possible, an equivalent experience may also be provided through an interpretive program that presents the experience through alternate media, such as audio-visual displays, written material, and interactive displays involving other senses.

There are four (4) major themes embedded in the Kōke'e and Waimea Canyon State Parks Master Plan for the public to experience; and these will serve to focus development of "equivalent experiences." These themes include:

- Historic Landscape
- Geologic Story
- Natural Resources and Processes
- Wilderness

Alterations and Maintenance

With respect to outdoor facilities, it is important to distinguish between alterations, as defined in the ADA, and routine repair and maintenance. Outdoor settings, trails, picnic areas, and campgrounds require routine upkeep to maintain the original purpose, intent, and design of the facility. Such maintenance and repair are not considered as alterations by the ADA. Accessibility requirements for "alterations" to existing facilities do not apply.

Trails

Certain trails may not provide suitable accessibility for the disabled due to potential impacts to the natural setting, or risk factors associated with the trail category, such as precipitous terrain. An inventory of trail conditions and experiences will be conducted to meet the following objectives:

- Define categories of trails:

  Wilderness/Backcountry

  Nature/Interpretive

  Accessible

- Define trailhead. The trail and all related facilities within the first 500 feet of the designated accessible trailhead must be accessible.
- Identify linkages to other program areas along with accessibility requirements.
- Trailhead interpretive facilities must include copies of the same interpretive elements provided on the trail.

DLNR – Transition Plan for Compliance with ADA Requirements

Department of Land and Natural Resources' Self-Evaluation and Transition Plan for Compliance with the Requirements of Title II of the Americans with Disabilities Act of 1990 (October 2002).

6.3 STATE LAND USE PLANS AND POLICIES

6.3.1 Hawai'i State Plan (*HRS* 226)

The Hawai'i State Plan is provided for under Chapter 226, HRS, (1995) to serve as a guide for the future growth of the State of Hawai'i. The Hawai'i State Plan identifies goals, objectives, policies, and priorities for the State's development and growth. It provides a basis for prioritizing and allocating the State's limited resources, including public funds, services, human resources, land, energy and water. The Hawai'i State Plan establishes a system for the formulation and program coordination of State and County plans, policies, programs, projects, and regulatory activities and facilitates the integration of all major State and County activities.

Objectives, policies, and implementing action identified in the Hawai'i State Plan that are relevant to proposed Master Plan actions are as follows:

Objective

- *Plan, develop, and promote recreational activities and facilities in mauka and other areas to provide a wide range of alternatives.*

Policy

- *Plan and develop camp sites, picnic facilities, equestrian paths and other recreational amenities at Kōke'e and Waimea Canyon State Parks.*

Implementation Action

- *Subject to availability of funds, a planning start date was scheduled for fiscal year 1991-92.*

Objective

- *Increase access to State Forest Reserve lands over federal property, leased State lands, and other government lands.*

Policy

- *Assure access to recreational areas in Forest Reserve lands.*

Implementation Action

- *Initiate discussions with the military and other federal agencies which restrict access over their lands to Forest Reserve areas.*
- *Work with the water departments to open up selected watershed areas and resource subzones for hiking, hunting, bird watching, and freshwater fishing (which would not jeopardize the water supply).*

Objective

- *Assure adequate support for priority outdoor recreation programs and facilities.*

Policy

- *Explore alternative funding strategies and resources.*

Implementation Action

- *Establish more user fees to supplement regular appropriations and help cover operations and maintenance cost. Increase existing user fees.*

Objective

- *Explore innovative ways to manage and maintain recreation resources.*

Policy

- *Increase recruitment and mobilizing of volunteers for community work days and renovation projects. Target businesses, nonprofit organizations, youth/teen groups, community associations, etc.*

The objectives, policies and implementing actions above provide a broad basis for pursuing park improvements. In addition to specifically identifying both Kōkeʻe and Waimea Canyon State Parks, strong emphasis is placed on efficiency in management and maintenance practices, the importance of revenue generation and the utilization of volunteers, nonprofit organizations and other community groups.

6.3.2 State Functional Plans

State Functional Plans are the primary guidelines for implementing the Hawaiʻi State Plan. In contrast to the Hawaiʻi State Plan which establishes long-term objectives, the State Functional Plans serve to establish objectives for shorter-term actions. Described below are specific sections of State Functional Plans which contain overall themes, goals, objectives, and policies, that relate to the Master Plan.

The *State Comprehensive Outdoor Recreation Plan (1996)* outlines the outdoor recreation needs for the State of Hawaiʻi. The Plan includes an inventory of the existing supply of recreation area and facilities available on each island. The Plan also identifies issues that would prevent meeting the recreation demand for each island. Finally, an action program was developed to indicate the action to be taken to meet recreation demand, and an identification of the governmental agency responsible for fulfilling the recreation requirement. Specific actions applicable to the Kōkeʻe and Waimea Canyon State Parks are as follows:

A. Resource Protection and Sustainability

- *Establish carrying capacities and limits of acceptable changes for both shoreline and mauka recreation areas.*
- *Require land use permit applications to fully address the impact of proposed projects on trails and public access.*
- *Comprehensive plans should include a means to balance the recreational components with the resources management and conservation components.*
- *Provide facilities such as Public Fishing Areas as an alternative to ocean recreation activities.*
- *Develop park education and interpretive programs.*
- *Hire coordinator, separate from interpretive staff, to manage volunteer and "adopt a resource" programs.*
- *Develop interpretive programs, as deemed appropriate, for areas of historic and cultural significance.*
- *Promote and coordinate the development and implementation of environmental education and information programs.*

B. Strategies to Address Funding Reductions

- *Establish more user fees to supplement regular appropriations. The user fees should be placed in a special fund to directly benefit the resource to help cover operations and maintenance costs.*
- *Consider the establishment of impact fees paid by developers to support the acquisition, development, and/or maintenance of parks, open space, and public access.*
- *Earmark revenues from various sources for recreation purposes.*
- *Establish conservation easements and land trusts as alternatives to direct land acquisition.*
- *Lobby and support the reauthorization of ISTEA funds for transportation enhancement projects.*
- *Share the responsibility for recreation resource management with the private sector through lease agreements.*
- *Establish a private, nonprofit corporation to expand public agency capabilities to provide recreational services.*

- *Focus on groups as well as individual volunteer development programs (e.g., military, youth groups, small businesses).*
- *Expand "adopt-a-park," "adopt-a-beach," and "adopt-a-trail" programs to get the public involved in caring for public recreation facilities.*
- *Increase recruitment and mobilizing of volunteers for community work days and renovation projects.*

C. Meeting the Needs of Recreation Users

- *Plan and develop facilities and programs to provide freshwater recreational fishing opportunities.*
- *Plan and develop the demonstration and priority trails identified by the Nā Ala Hele Program, and respond and assist with other trail and access projects and issues initiated by organizations and the counties, as Nā Ala Hele staff time permits.*
- *Plan and develop camp sites and other recreational amenities in mauka areas.*
- *Request adequate funding on a continuing basis for the Nā Ala Hele Program (Statewide Trails and Access System), including permanent staff positions.*
- *To develop, via the Nā Ala Hele program, a trail and access network and management system which: (a) provides a broad range of recreational, cultural, religious, and subsistence opportunities for all of Hawai'i's people, and (b) helps to conserve Hawai'i's cultural heritage and environment.*
- *Develop the recreational potential of streams and other open areas which are within close proximity to existing urban areas.*
- *Use existing linear corridors (utility, roadways, agriculture roads, stream easements, etc.) to develop greenways and bikeways.*
- *Establish links with existing community groups and establish procedures for these groups to advise on recreation matters.*
- *Request funds for recreation agencies to work with social services agencies, police, and other appropriate agencies on non-recreation demands, as needed.*
- *Work with private sector, both non-profit and for-profit organizations, to provide recreation opportunities to members of the community with special needs.*

D. Management

- *Establish preventive maintenance programs in the State and County recreation agencies.*
- *Increase funding and staffing for maintenance of State and County parks and recreation facilities.*
- *Continue the park exchange program between the State and Counties to more efficiently manage and maintain parks.*
- *Establish a program similar to the Neighborhood Watch program, whereby the local community assists DOCARE.*
- *Coordinate enforcement efforts with the counties, Federal Government, and private entities.*
- *Provide increased funding support for enforcement.*
- *Provide increased security measures at high priority parks by working with police and other appropriate agencies to provide secure parks.*
- *Work with police, social services, and other agencies to deal with non- recreation demands.*
- *Use Internet web sites as a tool to communicate with the recreation users.*
- *Work with appropriate government agencies, private landowners, business interests, and community organizations to update the Statewide Ocean Recreation Management Plan (ORMP).*
- *Conduct periodic reviews of fishing laws, rules, and regulations, as needed.*
- *Establish and monitor Fishery Management Areas to regulate fishing in areas with especially heavy use.*
- *Establish both formal and informal structures and methods for cooperative ventures on specific projects.*
- *Continue the regular coordination meetings among the various DLNR outdoor recreation related divisions in each County.*
- *Establish periodic meetings at each County among representatives of the various recreation agencies.*
- *Incorporate safety design measures at new or renovated parks.*
- *Coordinate safety information programs targeted at visitors.*
- *Coordinate hiker safety information programs targeted at visitors.*

- *Support hiker safety education.*

E. Constraints to Recreation Access

- *Research the potential impacts of native Hawaiian issues on the provision of outdoor recreation facilities.*
- *Coordinate with DLNR Land Division and Department of Hawaiian Home Lands to assure access through leased lands to Forest Reserve areas.*
- *Work with the water departments to open up selected watershed areas and resource subzones for hiking, hunting, and freshwater fishing (which would not jeopardize the groundwater quality).*
- *Continue working with Federal agencies to expand access to federal lands and waters.*
- *Continue to promote and improve existing public trails.*
- *Seek legislative reform of landowner liability laws to expand the provision of public access over public and private lands.*
- *Initiate discussions with major landowners to work toward eliminating obstacles that prevent them from allowing access.*
- *Assure that all new facilities meet the Uniform Federal Accessibility Standards for Handicapped Access.*
- *Design recreation programs that accommodate the needs of the disabled.*
- *Set timetable and increase funds available for the retrofitting of existing parks and recreation facilities, as mandated by federal and State laws.*

F. Ecotourism/Commercial Use

- *Prepare an ecotourism master plan that addresses the use of public recreation lands for multiple user groups, i.e., ecotour groups, residents, etc., and produces minimal impacts on natural resources.*
- *Formulate policies and processes to guide the use of public recreation facilities and areas by commercial operators.*
- *Implement permitting, leasing, licensing, and other procedures to allow ecotourism use of selected public recreation lands.*
- *Coordination between the agencies marketing ecotourism and the resource management agencies.*

- *Explore solutions to conflicts between commercial operators and residents for use of beaches and facilities.*

6.3.3 State Land Use Law (HRS 205)

The State Land Use Commission classifies all lands in the State of Hawai'i into one of four land use designations: Urban, Rural, Agricultural and Conservation. Both Parks are within the State Conservation District. Land uses in the Conservation District are regulated by DLNR. Hence, the project must conform to requirements of Title 13 (HAR), Subtitle 1 Administration, Chapter 5, "Conservation District," which regulates all Hawai'i lands within the conservation land use designation. Chapter 13-5 divides the Conservation District into subzones and provides for identified land uses in each subzone.

6.3.4 Coastal Zone Management Program (Special Management Areas)

Enacted as Chapter 205A, HRS, the Hawai'i Coastal Zone Management (CZM) Program was promulgated in 1977 in response to the Federal Coastal Zone Management Act of 1972. The CZM area encompasses the entire State including all marine waters seaward to the extent of the State's police power and management authority, including the 12-mile U.S. territorial sea and all archipelagic waters.

The CZM program includes a permit system to control development within a Special Management Area (SMA) managed by the Counties and the Office of Planning; a Shoreline Setback Area which serves as a buffer against coastal hazards and erosion, and protects view-planes; and the Marine and Coastal Affairs. Finally, a Federal Consistency provision requires that federal activities, permits and financial assistance be consistent with the Hawai'i CZM program.

6.4 DLNR PLANS AND POLICIES

6.4.1 Management and Disposition of Public Lands, HRS § 171

§171-13 Disposition of public lands. Except as otherwise provided by law and subject to other provisions of this chapter, the board may:

(1) Dispose of public land in fee simple, by lease, lease with option to purchase, license, or permit; and

(2) Grant easement by direct negotiation or otherwise for particular purposes in perpetuity on such terms as may be set by the board, subject to reverter to the State upon termination or abandonment of the specific purpose for which it was granted, provided the sale price of such easement shall be determined pursuant to section 171-17(b).

No person shall be eligible to purchase or lease public lands, or to be granted a license, permit, or easement covering public lands, who has had during the five years preceding the date of disposition a previous sale, lease, license, permit, or easement covering public lands cancelled for failure to satisfy the terms and conditions thereof.

6.4.2 Public Lands for Historic Preservation and Restoration, Chapter 171-36, HRS,

(a) Any law to the contrary notwithstanding, the board may lease public lands in the State for use in historic preservation and restoration projects:

(1) Through negotiations; and

(2) For a price which shall be determined by the board.

(b) The department shall adopt rules pursuant to chapter 91 to determine what constitutes historic preservation and restoration projects for the purposes of this section; provided that no definition or criteria established shall conflict with any federal, state, or county law.

(c) All subleases of land disposed of pursuant to this section shall be subject to the approval of the board. [L 1985, c 33, §2; am L 2002, c 114, §1]

6.4.3 Division of State Parks

"The Mission of the Division of State Parks is to properly manage and protect Hawai'i's natural and cultural heritage values found within the State Parks system, provide a broad range of outdoor recreation opportunities, promote a safe, high-quality park experience for Hawai'i's residents and visitors and preserve Native Hawaiian gathering and cultural access rights."

6.5 COUNTY LAND USE PLANS AND POLICIES

6.5.1 General Plan for the County of Kaua'i

Objectives, policies, and implementing actions identified in the Kaua'i General Plan that specifically or generally affect Kōke'e or Waimea Canyon State Parks are as follows:

Section 2 - Vision for Kaua'i 2020

Community Values

- *Protection, management, and enjoyment of our open spaces, unique natural beauty, rural lifestyle, outdoor recreation and parks.*
- *Access to and along shorelines, waterways and mountains for all. However, access should be controlled where necessary to conserve natural resources and to maintain the quality of public sites for fishing, hunting, recreation and wilderness activities valued by the local community.*

- *Recognition that our environment IS our economy, our natural capital, the basis of our economic survival and success.*
- *Balanced economic growth promoting good jobs and a strong economy, without sacrificing our environment or our quality of life.*
- *Preservation of our cultural, historical, sacred and archaeological sites.*
- *Appreciation and support for the traditions of the Native Hawaiian host culture and the many other cultural traditions and values that make up the Kaua'i community.*
- *Protection of Kaua'i's unique character.*

Section 3 - Caring for Land, Water and Culture

Heritage Resource Maps

- *Kōke'e and Waimea Canyon State Parks are identified as Heritage Resources on the Kaua'i General Plan Heritage Resources Island Map. The map also identifies Kōke'e Road and Waimea Canyon Rim Road as scenic roadway corridors.*
- *The Heritage Resources Map depicts resources that are important to the County of Kaua'i and that are intended to be conserved.*

Scenic Views

- *Preserve public views that exhibit a high degree of intactness or vividness. Intactness refers to the integrity of visual patterns and the extent to which the landscape is free of visually intruding man-made elements. Vividness refers to the memorability of the view, caused by contrasting landforms which create striking and distinctive patterns.*
- *Preserve the scenic qualities of mountains, hills, and other elevated landforms.*
- *Preserve the scenic quality of lowland/open space features.*
- *Historic and Archaeological Resources*
- *Preserve important archaeological and historic sites and provide: (1) a buffer area between the site and adjacent uses; and (2) public pedestrian access, as appropriate to the site.*

Native Hawaiian Rights

The County recognizes the rights of native Hawaiians and the laws concerning lands and waters that have been established through the State Constitution, State and Federal laws, and State and Federal court decisions:

- *Native Hawaiian water rights provided under the State Water Code, HRS Chapter 174C.*
- *Kuleana lands, water rights and access rights provided under the Kuleana Act of 1850, as recognized in current statutes, rules and court decisions.*
- *Konohiki and hoa'āina fishing rights provided under the 1839 Law of Kamehameha, as modified by subsequent legislative acts and court decisions.*
- *Traditional and customary rights of Native Hawaiians, such as for access and gathering, provided under the State Constitution and Hawai'i Revised Statues, as interpreted by the courts (i.e., the PASH case).*
- *Burial rights provided under the Hawai'i Historic Preservation Act and the federal Native American Graves Repatriation Act.*
- *Preservation of historic properties and archaeological resources provided under the federal Archaeological Resources Protection Act of 1979; the National Historic Preservation Act of 1966; and the Hawai'i Historic Preservation Act.*

Section 4 - Developing Jobs and Business

Visitor Industry

Alternative Visitor Programs and Facilities

- *The County of Kaua'i encourages the development of alternative visitor accommodations, such as B&Bs, vacation rentals, inns, cabins, and retreat centers, as a means of promoting locally-owned business, and providing unique experiences for visitors to learn about Hawai'i from a community setting.*

Visitor Impact on Parks and Natural Resource Areas

- *Encourage the development of public-private partnerships involving the County and the Department of Land and Natural Resources in order to manage and improve Kaua'i's valuable parks and natural areas.*
- *Manage parks and natural resource areas according to the following policies, in order of priority:*

Conserve resources

- *Provide for use by the general public - i.e., individuals, families, ohana.*
- *Allow for group use (including commercial tours and equipment rentals) within conservation limits.*

- *To enhance the visitor's experience of Kaua'i and to provide meaningful jobs and income to Kaua'i residents, the County shall develop or support development of the following programs by Federal, State, or private agencies:*
- *Regional visitor centers to provide guidance and assistance to visitors, as well as information about the region, its history and culture.*
- *First-person interpretation of natural areas, historic and archaeological sites, traditional agricultural and cultural practices, towns and communities.*
- *Study and practice of Native Hawaiian and other ethnic cultural traditions and languages, including the development of cultural learning centers.*
- *Improve facilities, maintenance, and management of activities at State and County parks. Specific actions include:*
- *Commit the necessary resources to ensure adequate levels of park maintenance, repair, and hygiene and to improve signage and interpretation of natural and cultural features.*
- *In resource parks that receive heavy visitation, such as Kōke'e, plan and improve specific areas to support larger numbers of visitors; manage other areas for moderate or low use, based on conservation objectives. Prepare and update master plans for major parks.*
- *Clearly define roles and responsibilities in managing commercial recreational activities among County and State agencies, in order to provide efficient and effective licensing and regulation. Eliminate overlap between State and County agencies, or between State DLNR divisions, and streamline management by making a single State or County administrative unit primarily responsible for all activities within a specific park.*
- *State and County agencies should work together to provide efficient and effective management, licensing and regulation of commercial activities within public lands and waters.*
- *To pay for better park maintenance and needed improvements to programs and facilities, the State should develop dedicated tax or user fee income from out-of-State visitors. Such income should be restricted for use in State parks and reserved for the purpose of improving State parks and facilities.*
- *To secure adequate long-term funding for major resource parks such as the Waimea Canyon State Park and Nā Pali Coast State Wilderness Park, the State should explore the feasibility of securing federal funds to support major parks.*

Agriculture

- *The policy calls for preserving important agricultural lands as an essential resource base. It also calls for conserving irrigation systems for existing and potential future agriculture and aquaculture use.*

Section 5 - Preserving Kaua'i's Rural Character

Open Lands

- *Preserve, maintain, or improve the natural characteristics of non-urban land and water areas that:*
  - *(1) are of significant value to the public as scenic or recreation resources;*
  - *(5) perform essential physical or ecological functions important to the welfare of surrounding lands, waters, and biological resources; or*
  - *(6) form a cultural, historic, or archaeological resource of significant public value.*
- *Such lands shall remain open and free of development.*

Scenic Roadway Corridors

- *In the Kaua'i General Plan, scenic corridors policy generally pertains to preservation values along the most heavily traveled routes in urban areas. However, Kōke'e Road and Waimea Canyon Drive are identified as scenic corridors on the General Plan Heritage Resources Map. Relevant General Plan policies include the following:*
- *In planning, designing and constructing highway and road improvements, transportation agencies shall balance conservation of the area's natural, historic, and scenic qualities with transportation objectives.*
- *Manage the development of lands within scenic corridors to conserve open space and scenic qualities.*
- *Develop appropriate programs and/or land use regulations to conserve unique qualities and scenic values along designated corridors.*

Section 6 - West Side Planning District

- *Kōke'e and Waimea Canyon State Parks are significant assets to the West Side Community Planning District and the island community as a whole. A selection of the unique resources associated with the parks includes:*
- *Mountains for hunting and gathering maile and mokihana;*

- *Ancient Hawaiian sites, rich heritage and history;*
- *Camping grounds and trails; and*
- *Kōkeʻe and Waimea Canyon State Parks could support increased visitors and new business opportunities on the West Side. However, park roads, wastewater disposal, trails, and other infrastructure need to be upgraded to support expected increases in use.*
- *Economic opportunities created by the visitor traffic through West Side towns enroute to Kōkeʻe and Waimea Canyon State Parks include:*
  - *outdoor recreation and cultural tours; and*
  - *lodging and visitor accommodations.*
- *The slopes and crest of the bluffs above Waimea town shall be preserved free of buildings. Views of the bluffs from the highway shall be preserved.*

6.5.2 County of Kauaʻi Zoning and Land Use Regulations

Kōkeʻe and Waimea Canyon State Parks are located entirely within the State Conservation District, therefore County zoning does not apply.

SECTION 7

NECESSARY PERMITS AND APPROVALS

The following permits and approvals may be required prior to construction of individual Master Plan projects. As individual projects are budgeted and designed, DLNR will continue its consultation with the appropriate agencies to ensure that all required permits are obtained prior to construction.

Permit or Approval	Jurisdiction	Granting Agency	Why Required
Department of the Army Permit	Federal	U.S. Army Corps of Engineers	Construction of structures or work within navigable waters and work within wetlands
Section 7, Endangered Species Act	Federal	U.S. Fish and Wildlife Service	Impact to endangered species
401 Water Quality Certification	State of Hawai'i	Dept. of Health	Work near a body of water
National Pollutant Discharge Elimination System (NPDES) Permit	State of Hawai'i	Dept. of Health	Increasing the quantity of any discharge and storm water runoff
Historic Preservation Review	State of Hawai'i	Dept. of Land and Natural Resources	Sites over 50 years old
Conservation District Use Permit	State of Hawai'i	Dept. of Land and Natural Resources	Lands within the State's Conservation District
Public Land Dispositions	State of Hawai'i	Board of Land and Natural Resources	State-owned lands
Stream Channel Alteration Permit	State of Hawai'i	Commission on Water Resources Management	For projects involving alterations to stream banks
State Highways Permit	State of Hawai'i	Dept. of Transportation	Construction work within or next to State Highway right-of-way
Non-Covered Source Air Permit	State of Hawai'i	Dept. of Health	Minor source of air pollution (during construction)

Permit or Approval	Jurisdiction	Granting Agency	Why Required
Permit to Construct a Wastewater System	State of Hawai'i	Dept. of Health	Construction of waste water system
Hazardous Waste Permit	State of Hawai'i	Dept. of Health	Treatment, disposal and storage of hazardous waste
Asbestos Regulations	State of Hawai'i	Dept. of Health	Removing or managing asbestos
Flood Hazard Controls	County of Kaua'i	Dept. of Public Works	Any development in a flood zone area
Grading, Grubbing, Excavating, and Stockpiling Permits	County of Kaua'i	Dept. of Public Works	Any excavation or fill, the removal of vegetation from the surface of the ground, or purposeful accumulation and set-aside of loose soil
Building Permit	County of Kaua'i	Dept. of Public Works	Erecting, constructing, enlarging, demolishing, or altering any building or structure

SECTION 8
RELATIONSHIP BETWEEN SHORT-TERM USE AND MAINTENANCE OF LONG-TERM PRODUCTIVITY

No short-term exploitation of resources have been identified that will have negative long-term consequences. The proposed projects, which are necessary to meet increased demand for services in the State Parks, will be implemented over a twenty-year period. The Master Plan is a logical extension of current facilities that was conceived and supported by a consortium of government and community leaders. The improvements will be designed and constructed to last for decades.

The principal long-term benefits of the Master Plan are:

- To provide adequate infrastructure to meet the demand for recreation opportunities;
- Ensure the protection of natural resources represented within the two Parks; and
- Ensure the preservation and interpretation of the historic resources represented in the Kōkeʻe cultural landscape.

Development of the Parks is not expected to pose any long-term or short-term risks to health and safety. The Division of State Parks will follow Best Management Practices in implementing all improvements and mitigation measures. Access roads will be improved to provide acceptable future traffic conditions. The projects at Waimea Canyon State Park will improve visitor facilities by creating an environment that protects the natural resources and provides interpretation of the area.

Improvements at Kōkeʻe State Park will include facility improvements at the Kanaloahuluhulu Meadow such as a visitor center, lodge and museum.

As discussed throughout Section 5, specific measures to mitigate potential adverse environmental impacts will be implemented by the Division of State Parks in the design, construction and operations phases of the proposed Park improvements. No long-term losses of resources are anticipated. Significant historic and cultural sites will be preserved and, where appropriate, interpreted for public consumption.

Foregoing or delaying park improvements would mean less than optimum use of the facilities and would result in lower service and satisfaction levels by park users.

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SECTION 9
ANY IRREVERSIBLE OR IRRETRIEVABLE COMMITMENT OF RESOURCES

Implementation of the Kōkeʻe and Waimea Canyon State Parks Master Plan and its associated construction of facilities will result in the irreversible and irretrievable commitment of certain natural and fiscal resources. Major resource commitments include: 1) the land on which the various improvements will be located; 2) use of public funds; 3) construction materials; 4) manpower; 5) increased fuel consumption; and 6) water. These commitments were weighed against the projected benefits which will be derived from the projects, the consequences of taking no action, or implementing other less beneficial uses of the project site.

The commitment of resources required to accomplish the proposed improvements includes building materials which are irretrievable. Construction of improvements and travel to the parks by visitors would require the consumption of petroleum products and petroleum-based electrical generation.

Implementation of the project will not result in the significant loss of natural or cultural resources. The site is a significant wildlife habitat, however, no Federal- or State-listed endangered species will be directly impacted by the proposed improvements. There are known archaeological and historic sites in the two parks, but these resources will not be impacted. The mitigation measures as proposed in this EIS are intended to protect those sites against any negative adverse impacts. Cultural resources and the use of the Parks for recreational purposes will also not be adversely impacted.

After construction activities are completed, it is expected that the site will continue to remain as an open space and cultural resource.

The long-term use of the two Parks will preclude development of the site for other urban related purposes.

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SECTION 10
UNRESOLVED ISSUES

1. Disposition of the Recreation Residences

The recreation residences will continue as they were initially conceived, however, the method of disposition will be approved by the BLNR. In addition, the terms and conditions for the new leases will also be approved by the BLNR.

2. Historic District Designation

The BLNR has approved rules for the creation of a "historic district" within the Kōkeʻe and Waimea Canyon State Parks. A part of the condition for approval is the creation and implementation of design guidelines for the continued upkeep and preservation of the historic structures in the Parks.

The Historic Preservation Division will be consulted and their concurrence sought on the historic district and the design guidelines.

3. Additional BLNR Actions

The BLNR will also decide on many other proposals identified in the Master Plan that are not administratively approved or allowed by regulations. Notably, because the lands in the Parks are within the State's Conservation District, a Conservation District Use Permit will be required to construct the proposed improvements.

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SECTION 11
ADVERSE IMPACTS THAT CANNOT BE AVOIDED

There are no adverse impacts that cannot be avoided, lessened, or mitigated through implementation of features of this plan, best management practices, good housekeeping and law enforcement.

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SECTION 12
AGENCIES, ORGANIZATIONS, AND INDIVIDUALS CONSULTED IN THE PREPARATION OF THE ENVIRONMENTAL IMPACT STATEMENT

12.1 KŌKEʻE INTERAGENCY TASK FORCE

The Kōkeʻe Interagency Task Force (KITF) was organized to identify issues, opportunities and constraints, and to provide guidance and review during the development of the Master Plan and environmental impact statement for Kōkeʻe and Waimea Canyon State Parks. The KITF includes representatives from the following agencies:

State of Hawaiʻi, Department of Land and Natural Resources:
- Board of Land and Natural Resources
- Division of Aquatic Resources
- Division of Conservation and Resources Enforcement
- Division of Forestry and Wildlife
- Division of State Parks
- Land Division
- State Historic Preservation Division

12.2 FEDERAL AGENCIES

Army Corps of Engineers (ACOE)
U. S. Fish and Wildlife Service (USFWS)

12.3 STATE AGENCIES

Department of Hawaiian Home Lands
Department of Health - Clean Water Branch
Department of Defense - Hawaiʻi Air National Guard
University of Hawaiʻi - Environmental Center
Representative E. Kanoho
Office of Hawaiian Affairs

12.4 COUNTY AGENCIES

Office of the Mayor
County Council
Department of Public Works
- Division of Parks and Recreation

Department of Water

Planning Department

12.5 PRIVATE ORGANIZATIONS AND INDIVIDUALS

Agribusiness Development Corp.
Hawai'i Eco-Tourism Association
Hui o Laka
Kaua'i Invasive Species Committee
Kaua'i Visitors' Bureau
The Lodge at Kōke'e, LLC
Kōke'e Leaseholder's Association
Kōke'e Resource Conservation Program
The Nature Conservancy of Hawai'i (TNCH)
Sierra Club
Hawaiian Telecom
YWCA
Kaua'i Island Utility Cooperative

SECTION 13
LIST OF PREPARERS

Preparer	*Project Role*
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Lauren Tanaka	Planner
Jim Springer	Property Management
Holly McEldowney	Archaeologist
Wayne Souza	Parks District Superintendent, Kaua'i Island
R.M. Towill Corporation	
Chester T. Koga, AICP	Project Manager
Jim Niermann, AICP	EIS Preparer
Brian Takeda	EIS Preparer
Kevin Polloi	EIS Preparer
Bruce Plasch	Economic Analysis
Cultural Surveys Hawai'i Dr. Hallett Hammett Douglas Borthwick Rodney Chiogiogi	Archaeological Survey & Cultural Impact Analysis
Evangeline Funk	Botanical Surveys
Kodama and Associates	Utility Analysis
Reggie David	Avifauna Analysis
Dawn Duensing	Architectural Inventory of Recreation Cabins

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