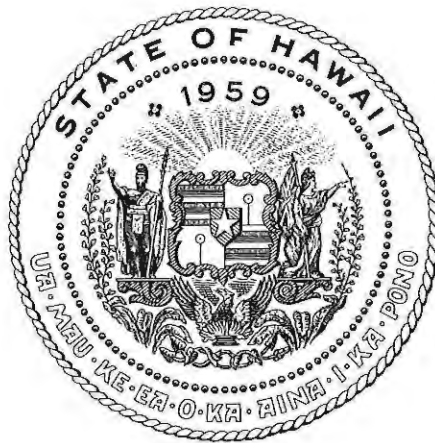


# STATE LAND USE DISTRICT BOUNDARY REVIEW

# KAUAI



*Office of the Governor*  
**OFFICE OF STATE PLANNING**

1992



EXECUTIVE CHAMBERS  
HONOLULU

JOHN WAIHEE  
GOVERNOR

FOREWORD

The State Land Use District Boundary Review takes a bold step toward defining what kind of Hawaii we want to leave as our legacy for future generations. The growth and protection of our precious islands must be planned, and planned carefully.

This review sets forth the direction for urban growth that is needed for housing and economic development in our fair State. Rather than reacting to proposals by landowners and developers, this review has allowed the State to plan for development well into the next century. It provides for an adequate supply of urban lands in locations which can be efficiently serviced by infrastructure and other public facilities and which will not have adverse impacts on our environmental, cultural and agricultural resources.

While economic development is essential, it simply must not threaten our fragile environment. This review identifies the unique and special areas that are part of our heritage. Our native forest, wetland and stream ecosystems and rare flora and fauna habitats must be protected. Significant historic sites, coastal areas and scenic and open space resources are other treasures which must be safeguarded for future generation.

The protection of our watersheds is also critical to assure that we have the groundwater resources to support the growth of our population.

While the final decisions for the reclassification of lands identified in this report are left to the Land Use Commission, the information provided in this review will be the standard by which land use decisions will be judged in the future.

JOHN WAIHEE



# OFFICE OF STATE PLANNING

Office of the Governor

MAILING ADDRESS: P.O. BOX 3540, HONOLULU, HAWAII 96811-3540  
STREET ADDRESS: 250 SOUTH HOTEL STREET, 4TH FLOOR  
TELEPHONE: (808)587-2846, 587-2800

KIM WAIHEE, Governor

FAX: Director's Office 587-2848  
Planning Division 587-2824

## PREFACE

The most recent Five-Year Boundary Review began in 1990 and concluded in 1992. It was an opportune time to conduct an assessment of our State Land Use District boundaries. Hawaii was emerging from a period of intense development pressures and many areas that residents thought were "safe" from development, in fact, were not.

Many were saying that it was time to step back and reassess our lands and their designations before the next wave of investment hit. Many questioned whether we wanted every square inch of these islands developed and asked whether anything would be left for future generations.

Agriculture was changing; a way of life disappearing. The old, large-scale sugar and pineapple plantations were downsizing or closing. The projected outlook for diversified agriculture was mixed. The visitor industry was the State's dominant industry and was largely dependent on Hawaii's natural scenic beauty.

In conducting the boundary review, we turned to the Constitution:

"For the benefit of present and future generations,  
the State ... shall conserve and protect Hawaii's  
natural beauty and all natural resources ..."

Article XI, Sec. 1  
Hawaii State Constitution

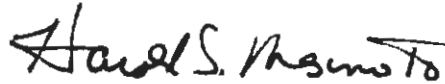
Therefore, a major focus of the review was to protect Hawaii's special areas before they were placed in jeopardy or irretrievably lost.

When we examined the actual lands in the districts, we found that many sensitive environmental resources were in the Agricultural District which left them vulnerable to development. Many of the lands in the Agricultural District were agricultural in name only. The boundary review has recommended that sensitive environmental areas be reclassified to the Conservation District or be protected by other means.

The review has also sought to direct growth and provide lands to meet long-range needs for housing and economic development. Some of this has already been addressed in the extensive statewide urbanization of land over the last five years. More land was urbanized during the last five years than during the prior ten-year period, primarily for affordable housing. However, the review has identified areas which are desirable and suitable for urbanization in order to direct growth to these areas.

Finally, we have worked to retain sufficient agricultural lands to meet the industry's changing needs and to provide open space.

The Office of State Planning is deeply appreciative of the many individuals, organizations and agencies that helped in this process and thanks them for their time, advice and concern for Hawaii's limited land resources.

A handwritten signature in black ink that reads "Harold S. Masumoto". The signature is written in a cursive style with a large initial "H".

Harold S. Masumoto  
Director

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## I. INTRODUCTION

### Purpose of the Five-Year Boundary Review

The purpose of the Five-Year Boundary Review is to conduct a statewide, comprehensive, policy-oriented examination of State land use district classifications. It provides the Land Use Commission (LUC) the opportunity to review urbanization proposals from a broad, comprehensive and long-range viewpoint rather than incrementally on a case-by-case basis. It also provides an opportunity to identify conservation or agricultural resources which are not in the appropriate land use district and should be reclassified.

Section 205-18, HRS, of the State Land Use Law, requires the Office of State Planning (OSP) to undertake a review of the classification and districting of all land in the State every five years. Upon completion of the Five-Year Boundary Review, a report of findings and recommendations will be submitted to the State Land Use Commission. The Office of State Planning may then initiate petitions for boundary amendments to implement the report.

The Legislature reinstated the Five-Year Boundary Review in 1985 in order to emphasize long-range planning in the land use decision-making process. The boundary review report provides the basis for recommending changes to existing land use district boundaries during the Five-Year Boundary Review and provides guidance for future land use decisions.

This report comprises the boundary review for the Island of Kauai. Separate reports have been prepared for Oahu, Hawaii, Maui, Molokai and Lanai.

### 1991-92 Review - Direction and Scope

The 1969 Five-Year Boundary Review was conducted with the philosophy that "the elements of land, air and sea are resources to be managed for the welfare of present and future generations." The 1991-92 boundary review has been conducted with the same philosophy in mind. Specifically, the Five-Year Boundary Review has been guided by Article XI, Section 1, of the Hawaii State Constitution which states: "For the benefit of present and future generations, the State ... shall conserve and protect Hawaii's natural beauty and all natural resources ..."

Factors that shaped the direction and scope of the 1991-92 Five-Year Boundary Review were:

- (1) Statutory provisions which require the review to focus on the Hawaii State Plan and County Plans;
- (2) Continuing discussion of constitutional provisions relating to important agricultural lands and the finding that there are significant acreages in the Agricultural District which contain conservation resources;

- (3) The need to revise boundaries based on new information and growing public awareness and support for protection of Hawaii's natural resources; national attention which has been focused on Hawaii's native species extinction crisis; and Act 82, SLH 1987, which calls for reclassifying high quality native forests and the habitat of rare native species of flora and fauna into the Conservation District;
- (4) Recommendations in the Hawaii Water Resources Protection Plan that call for increased protection of watersheds; and
- (5) The need to provide urban land to meet population and economic growth needs and promote infrastructure planning.

#### A. Statutory Provisions

The Land Use Law provides that OSP shall focus its review on the Hawaii State Plan and County General Plans and County Development and/or Community Plans. The Hawaii State Planning framework includes the State Plan itself as well as State Functional Plans. Seven State Functional Plans relating to physical resource needs and development were approved in 1991. The major theme for these physical resources Functional Plans was "balanced growth" and focused on the promotion of a balanced growth approach in the use of our limited resources. This theme provided direction for the boundary review and weighed heavily in the decision to conduct a physical resources-oriented assessment rather than an administrative or organizational review and to focus on the protection of natural resources.

The County General, Development/Community Plans and specific regional plans were closely examined for policy direction, particularly for the location of urban growth areas. In addition, a technical study was conducted to identify differences between existing State land use districts and County Plan designations. An assessment of these areas of inconsistency was conducted in order to recommend the appropriate State land use designation.

#### B. Continuing Discussions Over LESA

There have been a number of proposals put forward to implement Article XI, Section 3, of the Hawaii State Constitution which calls for the identification and protection of important agricultural land. One of these proposals recommended by the Land Evaluation and Site Assessment (LESA) Commission would have taken all non-important agricultural land out of the Agricultural District and placed these lands and Urban District lands into a new district under County jurisdiction. Of the approximately 1.9 million agriculture acres in the existing Agricultural District, 700,000 acres would be retained as important agricultural land while 1.2 million acres would go into this new district. The State would still have land use responsibilities in regulating conservation land and important agricultural land. For these conservation and important agricultural lands, the existing dual land management system would apply since both State and County approvals would be required for development.

However, there were a number of reservations regarding the LESA Commission proposal. A major reservation included the concern that there were conservation resources in the Agricultural District which should not go into an urban-type district but instead should be reclassified to the Conservation District. A pilot study undertaken by OSP in 1987 found that there were significant acreages in the Agricultural District with potential conservation value. Thus, it was felt that the Five-Year Boundary Review should specifically examine areas in the Agricultural District which merit reclassification to the Conservation District.

C. Water Resources Protection Plan

The 1978 Hawaii State Constitutional Convention proposed and the electorate approved a new section on water resources which became Article XI, Section 7. This section in part states that the State has an obligation to protect, control and regulate the use of Hawaii's water resources for the benefit of its people. The State Water Code, Act 45-87, was adopted pursuant to Article XI, Section 7, of the Hawaii State Constitution. The Hawaii Water Plan and its component Water Resources Protection Plan were prepared as required by the Water Code. The plan calls for increased protection of watersheds. Therefore, a Watershed Protection Study was conducted for the Five-Year Boundary Review to identify areas which should be protected as important watersheds. High priority areas were identified for study as budgetary limitations precluded a study of the entire State.

D. Need to Revise Boundaries Based on New Information and Growing Support for Protection of the Environment

The general trend is that lands have been slowly taken out of the Conservation District. There were 2,009,087 acres in Conservation in 1969 and 1,960,976 in 1990. At the same time, there has been a growing awareness of and support for the need to protect Hawaii's natural resources. Further, there has been new information which has been developed since the last boundary review, for example, on the location of rare and endangered species. Rare and endangered species were not specifically addressed during previous reviews. There has also been data and information collected as a result of statewide recreation and water resources planning, stream studies and other studies which serve to identify conservation resources. The Five-Year Boundary Review provides an opportunity to assess this new information and propose areas for reclassification to the Conservation District.

In addition, Hawaii's native species extinction crisis has received national attention. Approximately 75 percent of species extinctions recorded in the U.S. have occurred in Hawaii. Currently, 25 percent of all rare and endangered plants and animals in the U.S. are found in Hawaii. Proper classification of conservation resources is one of many steps which must be taken to affirmatively address this crisis.

Act 82, SLH 1987, states that the Legislature finds that Hawaii has several rare species of plants, animals, and fish that are found nowhere else in the world. The Legislature also finds that Hawaii has sizable areas of high quality native forests which are not in the Conservation District. The Act further states that to the maximum extent practicable, it is the intention of the Legislature to preserve Hawaii's unique native flora and fauna by reclassifying such areas as Conservation Districts.

#### E. Urban Land Needs and Infrastructure Planning

Infrastructure is a major limiting factor affecting growth and development in all Counties of the State. In addition, new wastewater rules do not allow individual wastewater systems for developments exceeding 50 dwelling units. As such, infrastructure planning among landowners/developers and between the public and private sector will become even more critical in the years ahead. The Land Use Commission (LUC) can play a major role in promoting infrastructure planning and development by delineating future areas of growth consistent with County and regional plans so that landowners and developers can make long-range commitments for the provision of infrastructure.

In addition, the Land Use Law and Land Use Commission Administrative Rules provide that the Urban District contain sufficient land to meet a ten-year projection. As a result, the boundary review looked at urban land requirements with respect to meeting population and economic needs for the next ten years. A 25 percent surplus factor was added on to account for lands which may be held out of the market for various reasons. The projections are also on the high side because existing densities and a 5 percent vacancy factor were used; household size was projected to decrease significantly and the redevelopment of existing urban areas at higher densities was not taken into account.

The boundary review has recommended the reclassification of lands to the Urban District to meet population and economic growth needs for the next ten years and to assure predictability in infrastructure planning.

#### Background of the Boundary Review

##### The 1969 Review

There are no readily available statistics on acreages reclassified during the 1969 boundary review. However, the review found that there was sufficient vacant urban land to meet projected growth for the next ten years on Oahu and Maui County. Additions to the Urban District were primarily made to refine district boundaries to include areas of existing urban use or accommodate public facilities. For Hawaii County, the study found that available vacant urban lands could accommodate three times the anticipated growth of resident population. Changes were made primarily to refine district boundaries. Many resort area proposals were submitted for Hawaii County. Available growth projections did not substantiate the need for redistricting most of the

areas at the time of the review. However, some changes were made in response to detailed requests. For Kauai County, although the present Urban Districts were sufficient to accommodate foreseeable growth, the location and distribution of these areas did not necessarily provide for specific locational needs determined in the County General Plan. Adjustments were made for residential areas, and the proposed resort areas at Princeville and Keoniloa Bay at Poipu were urbanized.

One of the major contributions of the 1969 review was to add certain lands along the shoreline to the Conservation District. The original land use boundaries were based heavily on forest reserve boundaries and steep slopes, although some shoreline/coastline areas were included. The 1969 review specifically examined the shoreline, river valleys and areas of steep topography. Many areas with scenic resources were also added to the Conservation District.

With respect to the Agricultural District, there were relatively minor additions to the Agricultural District on all islands.

#### The 1974 Review

During the 1974 boundary review, 4,731 acres were reclassified from the Agricultural to Urban District (significantly less than the 13,104 acres that landowners and developers proposed for urbanization).

Areas urbanized included Waipio, Ewa Town and Oneula on Oahu; Waikoloa, Kaupulehu and Kealakehe on Hawaii; Wailuku and Wailuku Heights on Maui; and Kapaa and Nukolii on Kauai.

Approximately 33,278 acres were reclassified from Conservation to Agriculture (primarily from the mauka Kona area in the Keauhou ahupuaa). There were 23,871 acres reclassified from Agriculture to Conservation (15,000 acres of which were in Kapapala, Hawaii). Over 3,000 acres went from Urban to Agriculture (1,680 acres were at Kaluakoi and planned for hotel use) and 679 acres were reclassified from Urban to Conservation. The Urban to Conservation reclassifications included lands at Kahaluu, Heeia Fishpond, and Hawaii Kai on Oahu for open space and at Hapuna and Keei, South Kona in Hawaii for open space.

On Molokai, three areas planned for hotel use, Puaahala, Paialoa, and Kaluakoi were reclassified from the Urban District to the Agricultural and Conservation Districts.





## II. STUDY METHODOLOGY

The Five-Year Boundary Review process included reviews of the Hawaii State Plan, State Functional Plans, County General Plan and County Development and/or Community Plans, baseline studies, resource mapping through the State's Geographic Information System, a Public Information and Participation Component, and extensive coordination with State, County and Federal agencies and other public and private organizations and individuals.

### Baseline Studies

The following are baseline studies conducted for the State Land Use District Boundary Review:

- County Plans and State Land Use District Review and Mapping Study, PBR, Hawaii, addresses the requirement to review County General Plans and County Development and/or Community Plans. The study examines the relationship between existing State land use district boundaries and County plan designations.

Development or Community Plan maps were overlaid onto State land use district boundary maps and guidelines were developed to show which classifications were consistent with each of the State's Urban, Rural, Agricultural or Conservation Districts. Areas of inconsistency between State and County land use designations were identified and highlighted so that these areas could be further examined to determine the appropriate State land use classification.

- The Urban Land Requirements Study, Wilson Okamoto & Associates, Inc., examined urban land in the State to determine how much urban zoned land is required to accommodate population and economic growth for the next five, ten and twenty years. Key components of this analysis include determining the existing supply of vacant urban lands in each County, assessing the general suitability of these lands for development, relating the supply to anticipated future demands for urban lands including residential, industrial, commercial, resort and public uses and identifying urban land requirements.
- Infrastructure Constraints and Opportunities Study, Eugene P. Dashiell, AICP, Planning Services, assesses infrastructure constraints and opportunities by County and planning area. Major infrastructure systems including airports, harbors, highways, water systems, sewerage and solid waste are examined.
- Agricultural Resources Study, Deloitte & Touche, analyzes issues and trends in the State's major agricultural industries and assesses their outlook.
- Watershed and Water Recharge Areas, University of Hawaii Water Resources Research Center, identifies high priority watershed and water recharge areas that should be reclassified to the Conservation District. The

Hawaii Water Code and Hawaii Water Plan call for increased protection of our watershed and water recharge areas. The Water Resources Protection Plan recommends that minimum areas of conservation lands for watershed as protected infiltration areas should be set aside. This study serves to address these concerns.

- Proceedings of the Native Ecosystems and Rare Species Workshops records the information gathered from a series of workshops conducted by OSP with the assistance of The Nature Conservancy of Hawaii. The purpose of these workshops was to identify areas that are known or suspected to contain significant biological resources including native forests and shrub lands, rare and endangered species, and unique or important habitats. The report does not contain recommendations and serves primarily as a resource study which identifies the location of these resources like other planning or resource studies which have identified important agricultural lands, historic sites, steep slopes, flood hazard zones, etc. The areas identified were assessed by OSP with the assistance of State and Federal agencies.
- David L. Callies provided overall land use and planning assistance.

#### Public Information and Participation

A Land Use Stakeholder Survey was conducted by Sunderland Smith Research Associates, Inc., to obtain input on land use issues from individuals and organizations involved in land use throughout the State. In-depth interviews were conducted with 150 community and government leaders and other "stakeholders" to delineate priority goals for land use planning, identify stakeholders' opinions on land use and growth policies and areas that should be protected in the Agricultural and Conservation Districts.

Highlights of the Land Use Stakeholder Survey include the following:

- The major land use concerns and priorities of participants in the survey varied according to the interests and organizational affiliations of the individuals involved. For example, developers and landowners were most concerned with reducing the burden of land use regulations and streamlining the review process, while environmentalists were most interested in protecting natural resources.

There was a consensus that truly prime agricultural land should continue to be protected.

Opinions were more divided on the extent to which other land currently classified as agriculture should be made available for housing and other development, maintained as open space or retained for diversified agriculture or other uses.

A number of individuals expressed a desire to make unused non-prime agricultural land available for urban purposes, especially for housing development.

Other survey participants, however, were more interested in ensuring that undeveloped lands receive protection from urban encroachment. They feared that with the phasing out of sugar, pressures to develop agricultural land would become very great. Environmentalists in particular felt that keeping land in its natural state and ensuring open space should be a basic policy objective.

- Respondents were asked to prioritize the most important goals for land use in the State of Hawaii today. The priority "Guide and direct development to make sure it serves Hawaii's needs" ranked first place overall. By affiliation, the development interests ranked in first place "guide and direct development ..." and in a tie for second "Assure adequate infrastructure" and "Provide land for jobs and economic growth." The two goals of guide and direct development and assure infrastructure were the two picks of the government sector.

Environmental organization representatives think that keeping Hawaii's air and water clean and pollution-free, and preserving shorelines, coastal areas and open space are the two priority goals.

Civic organizations put preservation of Hawaii's scenic beauty at the top, followed by guide and direct development to serve Hawaii's needs.

The preservation of agricultural land was pretty low on the lists of all segments except environmental groups. The only issue that was ranked lower to some groups was preservation of historic and cultural sites.

While most participants agreed that government policy should provide direction, there was not a consensus on what that direction should be. As discussed earlier, the group's priority goals was to "Guide and direct development to make sure it serves Hawaii's needs." Developers, however, interpreted that objective to mean that growth should continue at a fairly rapid pace to meet expanding needs, whereas environmentalists saw it more as a mandate to slow down and stabilize the rate of growth and development.

- A majority or near majority of every segment except environmental organizations, would like to see some growth and development in Hawaii over the next decade. "Some growth" was the usual choice from the roster of four possibilities that was offered to respondents: "a lot of growth"; "some growth"; "a little growth"; and "no growth at all."

Public informational meetings were conducted in March and April 1991 to solicit general comments and proposals for changes to land use district boundaries from the general public, special interest groups, community organizations, landowners and developers. As a result of this request for input, a number of recommendations for boundary changes were received-- approximately 11 on Kauai, 42 on Maui (including Molokai and Lanai), 32 on Hawaii and 41 on Oahu. These were evaluated by OSP within the context of the overall review and baseline studies. Those that have been recommended are included in this report.

Public informational meetings were also conducted statewide from March-June 1992 to solicit comments on the draft report. The Office of State Planning also met with a number of organizations and community groups to present the draft proposals and obtain public input.

#### Resource Mapping/State Geographic Information System

One of the objectives of the review is to build up long-term capabilities in land use planning. The emphasis on a physical resources-oriented review led to use of the State Geographic Information System for this project.

Data layers added to the system to assist in the boundary review included State land use districts, vegetation maps which identify areas of native vegetative growth, State forest reserves, State natural area reserves, marine life conservation districts, national wildlife refuges and parks, rare and endangered species from the Heritage Program of The Nature Conservancy, native bird habitats, lands in sugar cane and pineapple cultivation and lava flow hazard zones. Overlays of resource information were prepared and examined to identify areas for potential reclassification.

The State Geographic Information System was an invaluable land use planning tool which assisted greatly in the analysis and presentation of complex information.

### III. APPROACH

This boundary review places high priority on the protection of Hawaii's conservation resources. Watersheds, habitats of rare and endangered species, wetlands, special streams, historic sites, and coastal, open space and scenic resources are all heritage resources which require protection for the benefit of future generations.

However, there will be opposition to placing lands into the Conservation District. Landowners who have had plans for more intensive use of their properties will object because only certain types of uses are allowed in the Conservation District. Some land use options which would greatly increase the value of these lands may be foreclosed.

Other landowners who may only want to continue existing uses object to the additional regulations and paperwork which may be involved to obtain permits to expand or change uses in the Conservation District.

Objections may also be raised because lands which could have been used to provide some community benefit as a trade-off for urban zoning would already be protected through Conservation districting.

In addition, the Counties raise homerule concerns. Conservation lands fall under the jurisdiction of the Board of Land and Natural Resources rather than the County. The Counties would prefer to retain regulatory control over these lands.

Nonetheless, despite potential opposition, the statute requires that the review be conducted. Further, it is in the long-term interest of the State that these valuable assets be reclassified into the Conservation District.

The reclassification of lands requires review and approval by the Land Use Commission under quasi-judicial proceedings.

Because it can be expected that some petitions to reclassify lands to the Conservation District will be contested, the justification for initiating a petition to reclassify land into the Conservation District must be strong. Therefore, there are two types of recommendations in the report. Priority #1 areas have been identified as top priority recommendations for Conservation reclassification which OSP will initiate petitions for. These are recommendations which have strong justification and can withstand the scrutiny of contested case proceedings.

Priority #2 Conservation recommendations include areas which OSP recommends but will not be initiating petitions because of budgetary constraints. Priority #2 also includes areas which have been identified as containing conservation resources, but documentation of these resources is not strong enough to defend a petition under contested case proceedings. It further includes areas where other methods have been agreed to, to prevent changes in use or in certain instances, to even enhance identified conservation values.

The purpose of identifying Priority #2 Conservation recommendations is to alert State and County agencies, the Land Use Commission, and the public that the land contains certain conservation values which should be considered in any petition for reclassification. It should also alert the landowner as to the State's position in the event that these areas are proposed for development.

During the review, the question of whether to submit proposed legislation to amend the Land Use Law to allow the Land Use Commission to conduct the boundary review under quasi-legislative rather than quasi-judicial proceedings arose. Under the quasi-legislative process, the LUC would hold hearings on the report and proposed amended land use maps. After the hearing, the LUC would adopt or reject the proposed map amendments.

Under quasi-judicial proceedings, the State would submit a petition to the LUC; the LUC holds a hearing; the landowner may request to intervene; and the LUC may approve, approve with modifications or deny the petition.

The advantage of the quasi-legislative proceedings would be that changes would be more directly based on public input and more policy-oriented in nature. Quasi-judicial proceedings are heavily fact-based. Further, because of the amount of information needed to support a reclassification and the procedures involved, the number of reclassifications that can be considered are limited. Reclassifications under these procedures are also site-specific rather than broad-brush proposals.

The decision was to retain the contested case process as it provides for careful scrutiny of all petitions--urban, agricultural and conservation--and allows the landowner or other affected parties to intervene under contested case procedures. Therefore, no amendments to the statute to change the proceedings have been proposed.

However, because the Five-Year Boundary Review is a comprehensive, overall review, petitions under the Five-Year Boundary Review should be reviewed in the same broad fashion, and OSP may request that the LUC review petitions by region or subject area, e.g., watersheds.

#### Types of Recommendations

##### A. Reclassification to the Conservation or Agricultural District

Priority #1. These are areas that OSP will likely petition for in FY 92-93 and beyond. These include areas which require protection, i.e., conservation resources, for which there is sufficient documentation and justification to support a petition under contested case proceedings.

Priority #2. These are areas that are recommended as lower priority. They include, for example, conservation resources: a) which are already protected because of government or non-profit ownership with conservation objectives such as national parks; b) that are significant but not of as high quality or abundance as other areas

or not as critical to meeting a specific conservation objective such as protecting endangered birds; c) which are believed or known to contain conservation resources but further survey work is necessary to either verify resources or determine appropriate boundary lines; d) which are of high quality but resource constraints limit the number of petitions which can be prepared; e) but other methods are available to protect the identified conservation values.

B. Reclassification to the Urban and Rural Districts

The Office of State Planning may also initiate petitions for certain State, County and private lands which are recommended in the State Land Use District Boundary Review reports for reclassification to the Urban and Rural Districts. The decision as to which petitions OSP will initiate will be based on policy considerations, additional information, conditions on development and the availability of manpower and financial resources.

C. Areas of Critical Concern

Two Areas of Critical Concern have been identified in the report-- Hanalei to Waikoko and Mahaulepu. These are areas which contain conservation resources but in both cases on Kauai are being used for agricultural purposes. Taro farming in Hanalei is compatible with waterbird recovery habitat, and sugar at Mahaulepu is compatible with the open space and scenic values of the area. However, these areas are subject to development pressures and more intensive uses which are permitted in the Agricultural District.

These areas require attention and/or alternative methods of regulation or management to protect the resources which are present.

The Areas of Critical Concern are more broadly delineated on the report maps than are specific recommendations such as Priority #1 and #2 Conservation recommendations.

D. Department of Hawaiian Home Lands (DHHL)

DHHL lands containing Conservation resources and lands proposed for urbanization have been identified in the report. However, these lands are not subject to the State Land Use Law according to the Hawaiian Homes Act of 1920, and action will not be taken on these lands.

Land Use Commission Petition Stage

The Office of State Planning will file petitions to reclassify those areas identified as Priority #1 areas with the Land Use Commission. In this case, OSP and the respective County planning department are mandatory parties to the petition. Landowners, as well as any other parties with standing, may intervene in the proceedings by filing an application with the Land Use Commission.

The procedures of the Land Use Commission are guided by Chapter 205, HRS, and the LUC Administrative Rules. The petitioner is required to serve copies of the petition to affected landowners. Public notice of the hearing on the proposed boundary amendment is also required.

The Land Use Commission will conduct a public hearing on the proposed boundary amendment. Six affirmative votes are necessary to approve any boundary amendment.



#### IV. CONSERVATION, AGRICULTURAL, RURAL AND URBAN DISTRICT ISSUES

Management of Conservation Resources. Landowners and environmental groups have both raised the point that proper management is needed to protect Hawaii's rare and endangered species. They contend that zoning is not enough. It is true that zoning is only one element of an array of actions needed to protect conservation resources. Zoning is the allocation of land resources to meet certain desirable community goals, but other things also need to take place to achieve those goals. Just as reclassifying lands Urban does not guarantee that these lands will be developed and provide houses and jobs, reclassifying lands Conservation does not guarantee that rare and endangered species will be preserved. For example, reclassification into the Conservation District may not solve the problems of pigs, banana poka and fire.

However, although Conservation designation does not address these natural forces which are so destructive to Hawaii's wildlife, it can protect these lands from man-made intrusions, e.g., construction and development which have also historically eliminated many natural areas. Placing limitations on intensive use of these lands can help to assure that there is a resource left to protect.

If lands remain in the Agricultural District, the potential for more intensive use of the land exists. Within the Agricultural District, agricultural subdivisions and golf courses (on C, D and E lands) are permissible uses.

There are more restrictions on uses within the Conservation District and an environmental assessment is required before lands can be reclassified out of the Conservation District. Therefore, where high quality conservation resources were present, it was determined that the best course of action was to recommend that they be classified in the Conservation District.

Uses Within the Conservation District. From a landowner's perspective, there are too many restrictions on uses in the Conservation District. The permits that are required for uses in the Conservation District are disincentives and cause landowners to object to lands going into the Conservation District. It is acknowledged that restrictions on uses are needed in the Conservation District to protect fragile resources. However, it can be argued that not all uses should have to go through the same scrutiny. For example, why should conservation-oriented organizations such as the U.S. Fish and Wildlife Service have to obtain Conservation District Use Applications (CDUA) for fencing, laying pipes or similar uses in the Conservation District. If taro farming is a compatible use in wetlands because it keeps areas open for waterbirds or aquaculture a compatible use in fishponds, should a CDUA be required for these uses?

From an environmentalist's perspective, Conservation District rules may not be restrictive enough. For example, residences and golf courses may be permitted in certain subzones within the Conservation District.

To address the concern that lands will be reclassified to the Conservation District but not protected, e.g., that residences or golf courses will be permitted, OSP is generally recommending as Priority #1 areas which meet the criteria for the protective, resource or limited subzones. The Office of State Planning will support designation of these areas into the protective, resource or limited subzones.

Existing statutes grandfather non-conforming uses in the Conservation District. Thus, if lands are reclassified to the Conservation District, existing uses are allowed to continue. A CDUA will only be required for an expansion of an existing use or a new use. Grandfathering of existing uses when lands are reclassified to the Conservation District is a way to not adversely impact current landowners while preventing additional harm to the resource and limiting more intensive use of the property. For the County of Kauai, there may be areas within proposed stream corridors which are used for grazing or taro cultivation where the "grandfather" provision would apply.

Both landowners and environmental groups have pointed to a need for examination of Conservation District rules. It may be worthwhile to begin such an examination before the Five-Year Boundary Review is completed.

Scenic, Open Space and Wilderness Resources. The Land Use Law recognizes scenic, open space and wilderness areas as conservation resources. The original delineation of boundaries and the 1969 review included these areas in the Conservation District.

Open space and scenic resources were identified as important topics during the existing boundary review largely because of the debate over LESA and important agricultural lands. Agricultural lands are an open space resource. One of the initial objectives of the review was to identify open space and scenic resources in the Agricultural District which should be reclassified to the Conservation District. This proved to be very difficult to do and has been accomplished only to a very limited extent. The report does contain recommendations to reclassify some of the more outstanding scenic and open space areas in the State to the Conservation District, e.g., Olomana. However, there are many other scenic and open space resources which potentially should be in the Conservation District but have not been recommended for reclassification. This is because such resources are measured and valued qualitatively rather than quantitatively and further studies are needed to determine the significance of specific resources and to justify reclassification by the LUC. It is recommended that such studies be pursued because scenic resources are so important to Hawaii's visitor industry.

Wilderness areas should also be considered. The term "wilderness" here is not meant to denote Federally designated wilderness areas. The term refers to areas which may not contain rare or endangered plants or animals, may not have watershed value or contain steep slopes, etc., but have value primarily as natural areas. These may, for example, include heavily vegetated areas. These natural areas contribute to the overall landscape and are part of what makes Hawaii an attractive and special

place. Care needs to be taken that these areas are not incrementally lost and reclassified to the Urban or Agricultural District simply because they do not contain rare and endangered species or are not of watershed value.

However, as with open space resources, OSP did not identify and recommend areas for reclassification during the review solely on wilderness values because the evaluation would have been qualitative in nature and difficult to support before the Land Use Commission. If an Open Space District is established, lands which have low value as conservation or agricultural resources but which have open space value and are not needed for urban use, could be included in this district.

Retention of Conservation District Boundaries. The review found that with the exception of Oahu and Kauai, large acreages of additional urban lands were not needed when the assessment of requirements was based strictly on overall supply and demand figures. Moreover, urban growth for the next ten years on all islands can be accommodated by the redistricting of agricultural land not needed to sustain sugar, pineapple or diversified agricultural operations. Sufficient important agricultural land will remain to meet agricultural production goals. Redesignation of Conservation District land is not needed to meet urban land requirements for the next ten years or to meet agricultural production goals.

Therefore, except for one area in Hawaii County, the review did not recommend that conservation land be reclassified out of the Conservation District.

In general, it is recommended that lands be retained in the Conservation District unless the Land Use Law is changed to establish an Open Space District, and that any future proposals to reclassify Conservation District land continue to be carefully assessed.

Coastal Conservation Issues. At several of the public informational meetings, participants proposed that a continuous greenbelt strip along the coastline be placed into the Conservation District. The Office of State Planning has not included this as a boundary review recommendation because this type of blanket statewide change should be addressed through legislation or by the Counties. The Office of State Planning proposed legislation in 1991 to increase the shoreline setback to 40 feet in the Urban District and 150 feet in non-Urban Districts with exceptions for small lots. This bill did not pass. However, the Counties already have the authority under Chapter 205A to establish setbacks greater than the minimum established in that chapter and thus a more immediate solution to this issue may rest with the County governments.

The boundary review does identify specific areas along the coastline which should be reclassified to Conservation because of their resources or to conform to County plans.

#### Agricultural District Issues

The existing Agricultural District contains lands with soils which are only marginally good for agriculture as well as lands with good soils.

The reasons for this go back to the initial delineation of land use district boundaries. After the Land Use Law was adopted in 1961, the Land Use Commission adopted temporary boundaries. Generally, the LUC renamed the forest and water reserve zones as Conservation Districts and divided the remainder of the land into "urban" and "non-urban," temporarily classifying the non-urban as "agriculture."<sup>1</sup>

Upon further and more detailed analysis, permanent boundaries were recommended by the Commission's consultants, Harland Bartholomew & Associates.<sup>2</sup> The Urban District was expanded to include a liberal allocation of land for anticipated population growth. The boundaries of the interim Conservation District were also modified considerably. State land leased for agriculture was included in the Agricultural District as were lands in the original forest reserve suitable for agriculture. In other locations, the Conservation boundaries were extended to include areas subject to erosion, wilderness areas, unique examples of lava flows, areas of outstanding scenic quality, recreational and historic sites. Agricultural District boundaries were based on the soil classification, existing agricultural land uses, topography, rainfall and consultation with experts.

The Commission conducted meetings and public hearings and modified and subsequently adopted land use district boundaries.

The consultants encountered certain special problems during the course of their study, problems which are still applicable today. One of these problems was the appropriate disposition of so-called "waste lands" which are neither suitable for high-grade agricultural nor urban development, also called "residual" lands. They noted that 1) under the provisions of Act 187, the Land Use Law, there are no unidentifiable land uses or residual lands, 2) "residual" areas are sometimes viewed as land to be considered waste but such areas are also identified as wilderness and may contain plant or animal life, making them appropriate for Conservation designation, 3) the resources at the peripheral boundaries of the Agricultural and Conservation Districts may approach a line of diminishing positive identification, and 4) there is a need for the exercise of value judgments in the delineation of Conservation and Agricultural District boundaries in many parts of the State.<sup>3</sup>

The question of what to do with lands in the Agricultural District that are not suitable for high-grade agricultural use still exists. Moreover, while it is the State's intention to protect important agricultural land pursuant to the Hawaii State Constitution, the future will bring further questions and concerns relating to the entire Agricultural District because of the changing face of agriculture in Hawaii.

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<sup>1</sup> Harland Bartholomew and Associates, Land Use Districts for the State of Hawaii, Recommendations for the Implementation of the State Land Use Law, Act 187, SLH 1961, January 11, 1963, p. 9-10.

<sup>2</sup> Ibid.

<sup>3</sup> Ibid, pp. 17-19.

Overall, acreages in sugarcane and pineapple are declining and are projected to decline further although there are individual plantations that remain very healthy. Diversified agriculture is growing and over the years, significant acreages have been planted in macadamia nuts. However, diversified agriculture is not expected to be able to utilize all of the lands taken out of sugar and pineapple.

Agricultural use has been one means of keeping areas in open space and providing related open space benefits. Fields of sugarcane, for example, have enhanced the scenic beauty of the islands. However, there is uncertainty as to the nature and strength of the sugar industry in Hawaii. Proponents of open space will no longer be able to rely on sugar or pineapple to provide open space as companies continue to shrink the size of their plantations. Some landowners of former sugar and pineapple lands have gone into alternative crops such as oats and coffee and this should be encouraged.

However, there is a growing recognition that open space is a valuable resource in its own right and should be protected and managed. Open space enhances the value of surrounding communities, provides buffer areas, scenic vistas, and facilitates efforts to manage and direct urban growth.

As stated earlier, this review initially looked at the issue of agriculture and open space but in many ways found it difficult to address under the existing land use categories. The establishment of a new district, an open space district, and a tightened-up Agricultural District containing only important agricultural lands has been under discussion by the Legislature and provides a solution to the agriculture/open space dilemma.

#### Rural and Urban District Issues

The boundary review recommends that certain lands be urbanized to meet urban land requirements for the next ten years and includes a 25 percent surplus. Questions have been raised as to whether this land will actually be developed and specifically whether it will be developed to address the need for affordable housing. It has been suggested that taxation be used as an incentive. It has also been proposed that the provisions on agricultural dedication which allows lands in the Urban District to be dedicated to agriculture be reviewed to determine whether this provision has been facilitating the "holding" of lands rather than the development of urbanized lands.

The recently enacted "use it or lose it" provision can also be utilized to promote development of urbanized lands. Affordable housing requirements can be addressed during the petition process.

Expediting the permit process has also been raised as a concern. To facilitate implementation of the review and expedite development in areas which the review has determined are appropriate, OSP will be requesting the LUC to change some of its detailed requirements on the form and content of petitions during the boundary review.



## V. POPULATION AND ECONOMIC CONDITIONS

Between 1980 and 1988, the County of Kauai's resident population increased by 26.1 percent, a rate of growth substantially higher than the 13.8 percent increase statewide. However, Kauai County remains the least populous of Hawaii's four Counties, accounting for just 5 percent of the total population.

Although the County is comprised of four islands, Kauai makes up 99.6 percent of the population. Niihau's population is approximately 200, and Lehua and Kaula are uninhabited.

The ethnic composition of Kauai is diverse with no group making up a majority. The Filipino and Part-Hawaiian populations are the largest on the island, each accounting for 22 percent of the population. Other large ethnic groups include Japanese (21 percent) and Caucasian (19 percent).<sup>4</sup>

Kauai's resident population is expected to more than double over the next 20 years, according to the State's M-K projections, reaching a population of 84,481 by 2010. The County's de facto population will also experience substantial growth, increasing from 70,100 in 1990 to just over 120,300 in 2010. The Lihue and Koloa areas will undergo the greatest growth, increasing by 138 percent and 84 percent, respectively. Hanalei will experience an increase of 79 percent over the same period.

The Office of State Planning is currently evaluating the M-K projections, particularly the visitor industry projections. There is a concern that the visitor industry projections are too high, reflect an over-reliance on that industry and may become a self-fulfilling prophecy. However, at the present time, these projections are still recommended for planning purposes and have been used in this review.

Table 1. EXISTING AND PROJECTED RESIDENT POPULATION

Planning Districts	1988	2000	2010	Percent Change 1988-2010
Waimea	7,174	8,719	8,147	14
Koloa	12,585	16,409	23,165	84
Lihue	10,245	17,171	24,350	138
Kawaihau	13,923	18,965	19,273	38
Hanalei	5,320	6,936	9,546	79
County-wide	49,247	68,200	84,481	71
M-K		68,200	84,600	

Source: Department of Transportation, Preliminary Findings, Highway Needs Assessment, 1989, and Department of Business and Economic Development, Population and Economic Projections for the State of Hawaii to 2010 (Series M-K), November 1988.

<sup>4</sup> Department of Business, Economic Development & Tourism, State Data Book, 1990, p. 41.

According to the Department of Business, Economic Development & Tourism (DBED) projections, the average visitor census will increase from 16,700 in 1990 to 36,900 by 2010. Over the same time period, the number of hotel units will increase from 8,100 to 16,900. Island-wide, hotels provided 4,250 jobs in 1989, or about 15.9 percent of the total.<sup>5</sup>

At the present time, however, the visitor industry is in a slump. The Persian Gulf crisis in 1991 and an economic downturn on the mainland and in Japan have led to lower visitor arrivals in 1992. As of June 1992, visitor arrivals statewide were down 0.79 percent from 1991 and 7.09 percent down from 1990. As a result, there does not appear to be a market for new hotel rooms at the present time and many development projects statewide have been put on hold. Major existing resort areas on the island are Poipu, Wailua-Kapaa, Lihue and Princeville.

In 1989, the agricultural industry accounted for 4.5 percent of Kauai's employment. Sugar is the major agricultural activity on the island, employing 950 persons in 1989.

The Kekaha, Olokele and Gay & Robinson sugar operations have experienced high yields and are efficient producers. For various reasons, yields at Lihue and McBryde have been relatively low. Amfac and A&B are considering the consolidation of Lihue and McBryde, with Lihue being the surviving mill. Both of these companies are exploring the possibility of urban uses for portions of their lands.

Diversified agriculture holds promise on Kauai. Guavas, papayas, taro, macadamia nuts, coffee and experimental tea crops, beef and cattle, dairy, swine, flowers/nursery and other fruits and vegetables are among the existing agricultural operations. McBryde, for example, has planted 600 acres in macadamia nuts, experimented with tea and was expected to have 1,300 acres in coffee by the end of 1990.<sup>6</sup> In addition, Kilauea Agronomics has approximately 480 acres in guava and is projected to cultivate additional acreage. A major source of taro for the State is Kauai's North Shore region.

After tourism, the construction industry is the second largest industry on Kauai in terms of dollar valuations. The industry has been in a growth phase since 1986 and employed 1,300 persons in 1989.

The military is a small economic sector on Kauai, employing 147 personnel.<sup>7</sup> Most military activity is located at the Pacific Missile Range Facility at Barking Sands.

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<sup>5</sup> Ibid., pp. 317, 319.

<sup>6</sup> First Hawaiian Bank, Economic Indicators, March/April 1990.

<sup>7</sup> Department of Business, Economic Development & Tourism, State Data Book, 1990, p. 287.



Promising economic activities on Kauai are aquaculture, the film industry (many commercials and a number of major films have been shot on Kauai), and the manufacturing of food products including ice cream, cookies, poi, bread and honey. Other sources of employment are (1989 job count in parentheses): wholesale and retail trade (6,400); government (3,200); and finance, insurance and real estate (1,450).<sup>8</sup> Overall, the economy of Kauai appears robust with a low unemployment rate of 3.9 percent as of March 1990.<sup>9</sup>

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<sup>8</sup> Ibid., p. 319.

<sup>9</sup> Department of Labor and Industrial Relations, Labor Area News, April 1990.



## VI. COUNTY PLANS

### Kauai County General Plan

The County of Kauai General Plan was adopted in 1984. General Plan goals include, but are not limited to, the following:

- To maintain the concept of Kauai as "The Garden Isle," thus, insisting any growth be in consonance with the unique landscape and environmental character of the island.
- To insure that all physical growth is consistent with the overall ecology of the island.
- To manage growth according to established population growth targets.
- To provide opportunities for suitable living quarters for all residents in all income levels.
- To provide for a maximum variety of outdoor recreational activity.
- To recognize those aspects of the island and its people which are historically and culturally significant and to maintain and enhance such aspects as a continuing expression of the island's physical and social structure.
- To promote the improvement and expansion of the island's economy by recognizing and carefully utilizing land and water resources.
- To guide and control development to take full advantage of the island's form, beauty and climate and preserve the opportunity for an improved quality of life.
- To guide physical growth so that island and visitor communities will develop in social and economic concert with each other.
- To manage implementation through development of social and physical infrastructure based on growth targets, priorities and efficient utilization of facilities and services.
- To encourage and support efforts to approach self-sufficiency in food production and energy.

A fundamental finding of the plan update was that "the General Plan should establish a mechanism for determining explicit and comprehensive physical growth and resource parameters which describe upper and lower limits and establish an optimum target for a specific time period." These parameters would then be the basis for managing all other development-related County programs. The parameters should:

- express those growth target parameters in terms of annual sets of short- and long-term population, housing, employment, land use, industrial/commercial facilities, and other measurable criteria (see below).
- allocate growth to include, but not be limited to, residential and resort units for Kauai's various communities with at least a 10-year planning horizon (see below).
- require the annual monitoring, reviewing and, if needed, modifying of those targets and allocations.

The following annual growth and 10-year growth targets are contained in the 1982 Kauai General Plan Update-Summary of Findings and Recommendations, though they have no statutory basis:

Table 2. ANNUAL GROWTH AND 10-YEAR GROWTH TARGETS

Annual Growth Rate (range)	2.0 - 2.5%
Annual Growth Rate (optimum)	2:25%
Total Population by 1990	48,821
10-Year Population Increase	9,739
Total Jobs	21,969
Additional Jobs Required	4,319
- in diversified agriculture	100-670
- in tourism	350-1,155
- in government	500
- in other areas	2,560-2,800
Additional Agricultural Production	300-2,000 acres
Additional Hotel Rooms	400-1,470
Additional Visitor Count/Year	235,000-440,000
Additional Housing Units	3,750
Additional Urban Development	1,100 acres
- resort	11-36 acres
- residential	750 acres
- commercial/industrial	155 acres
- urban open space	185 acres

Source: 1982 Kauai General Plan Update, June 1982.

The plan also contains 10-year growth allocations by region. It provides for 2,895 additional residential units based on current infrastructure and 8,645 units based on improved infrastructure. It allocates visitor industry growth to Princeville and Wailua under current infrastructure and also to Lihue, Koloa and Poipu with improved infrastructure. It provides for 1,100 resort units under existing infrastructure and 1,840 units under improved infrastructure.<sup>10</sup>

<sup>10</sup> Kauai General Plan Update, June 1982, p. 26.

A review of land use district boundary amendments approved between 1983 and 1990 indicated that the 10-year growth targets for additional urban development, 1,100 acres, have been exceeded. In addition, while the General Plan growth targets allocate a greater percentage of growth to residential than to resort development (750 acres to 11-36 acres), a major portion of the urban reclassifications have been for resort-residential use.<sup>11</sup>

### Community Plans

Six community plans have been prepared and adopted by the County, covering the North Shore (1985), Kapaa-Wailua (1975), Lihue (1977), Koloa-Poipu-Kalaheo (1983), Hanapepe-Eleele (1977) and Waimea-Kekaha (1977). These plans were also reviewed to identify County land use policies and directions.

### Analysis of County Development Plan Map Designations and Existing State Land Use Districts

Chapter 205-18, HRS, which requires the State Land Use District Boundary Review, provides that the Office of State Planning in conducting the review, shall focus its efforts on reviewing the Hawaii State Plan, County General Plans and County Development and/or Community Plans.

The County Plans and State Land Use District Review and Mapping Study, 1990, by PBR Hawaii, was conducted to address the requirement to review County plans. The study examines the relationship between existing State land use district boundaries and County General Plans and County Development and/or Community Plans.

The County of Kauai's General Plan maps reflect the County's land use policies. For purposes of this study, County residential, resort, commercial, and industrial were labeled Urbanized County Communities (UCC). Other County designations were Agriculture (AG), Open (O) and Special Treatment (ST). Some areas were Undefined (UND).

Development Plan maps were overlaid onto State land use district boundary maps to examine the relationship between State and County designations. Guidelines were developed to show which County land use classifications were consistent with each of the State's Urban, Rural, Agricultural or Conservation Districts. A composite map was prepared identifying areas of inconsistency between State and County land use designations.

As shown in the following table, the largest discrepancy occurs in the State Agricultural District where 46,182 acres are designated as Open by the County.

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<sup>11</sup> Department of Business and Economic Development, OSP Review of Land Use Petitions and Annual Reports, 1983 to 1990.

Table 3. STATE LAND USE AND COUNTY DESIGNATIONS  
COUNTY OF KAUAI

COUNTY LAND USE DESIGNATIONS					
State Land Use	UCC	AG	O	UND	TOTAL
Agriculture			46,182	291	46,473
Conservation		116			116
Rural		116	186		302
Urban		735	412		1,147
Total Acres	0	967	46,780	291	48,038

Source: PBR Hawaii, County Plans and State Land Use District Review and Mapping Study, March 1991.

Each of the parcels mapped as inconsistent was reviewed to determine the appropriate State land use classification. Parcels which met the State land use district boundary review policies and criteria and have been recommended for reclassification are discussed in sections of the report dealing with the Urban, Rural, Agricultural and Conservation Districts.

The primary findings are 1) that the County has included ridges, valleys and stream corridors and certain coastal areas in its Open district classification, and 2) that the County's urban-designated areas correspond to the existing Urban District.

The County's Open district was established to preserve, maintain or improve the essential characteristics of land and water areas that are of significant value to the public, important to the structure of urban areas, necessary to buffer undesirable environmental factors, maintain the essential functions of ecological systems and define and regulate development within areas which may be potentially hazardous. The purposes of the Open district are most similar to the Conservation District. The County's Open designation for streams and gulches was one of the factors which led to a recommendation to assure that streams with outstanding aquatic or riparian value are protected within the Conservation District. In addition, several coastal areas designated by the County as Open which are in the State Agricultural District are recommended for reclassification to Conservation.

According to the mapping study, the General Plan's urban-designated areas correspond to the existing Urban District and do not propose expansion areas. However, policy statements in the General Plan and Community Plans provided one of the components used in determining areas for urban expansion.

## VII. EXISTING STATE LAND USE DISTRICTS

The Conservation District, covering a total of 198,732 acres, occupies the largest acreage of any State land use district on Kauai (see table below). The Conservation District includes the natural and scenic resource areas of the Na Pali Coast, Alakai Swamp and Waimea Canyon. It contains most of the forested and steep lands of the central mountain area and most of the steep topography and forest land of the Haupu mountain range. Major river valleys such as the Hanalei, Kalihiwai, Anahola, Wailua, Hanapepe and Waimea are also included in the Conservation District.

The Conservation District also occurs along much of Kauai's coastline. Along the coast, Conservation lands are typically located in a narrow band between the ocean and Agricultural District lands. This is not the case on the northwest coast of the island, however, as the Conservation District there stretches uninterrupted from the shoreline to Kauai's interior.

The area around the Wailua River in eastern Kauai is a major zone of Conservation lands. This area also includes the Nonou Forest Reserve and the Kalepa Forest Reserve. In the southeast corner of the island is the Haupu Forest Reserve, another Conservation zone of substantial size.

The Agricultural District is the second largest land use district on Kauai, covering 140,959 acres, or 39.8 percent of the island's total area. The Agricultural District largely occurs along the southern and eastern intermediate uplands just makai of the Conservation District. These lands range from approximately the 3,000 ft. contour down to near sea level. The largest zones of agricultural lands lie mauka of Kekaha, Hanapepe, Lihue, Kealia and Kilauea. Smaller areas of Agricultural District lands are found in northern Kauai near Hanalei Bay.

The Rural District is Kauai's smallest State land use district, covering 1,233 acres. Major pockets of lands in the Rural District are at Wainiha in North Kauai and the Omao Homesteads.

The Urban District occupies 12,976 acres and includes Kauai's principal communities and resort areas. Urban District lands occur primarily at or near the coastline as pockets which interrupt the otherwise nearly continuous band of the Conservation District. The largest zones of urban land are found in the Lihue and Wailua-Kapaa areas. The Urban District is also found at Hanalei, Princeville, Poipu, Koloa, Hanapepe-Eleele, Waimea and Kekaha.

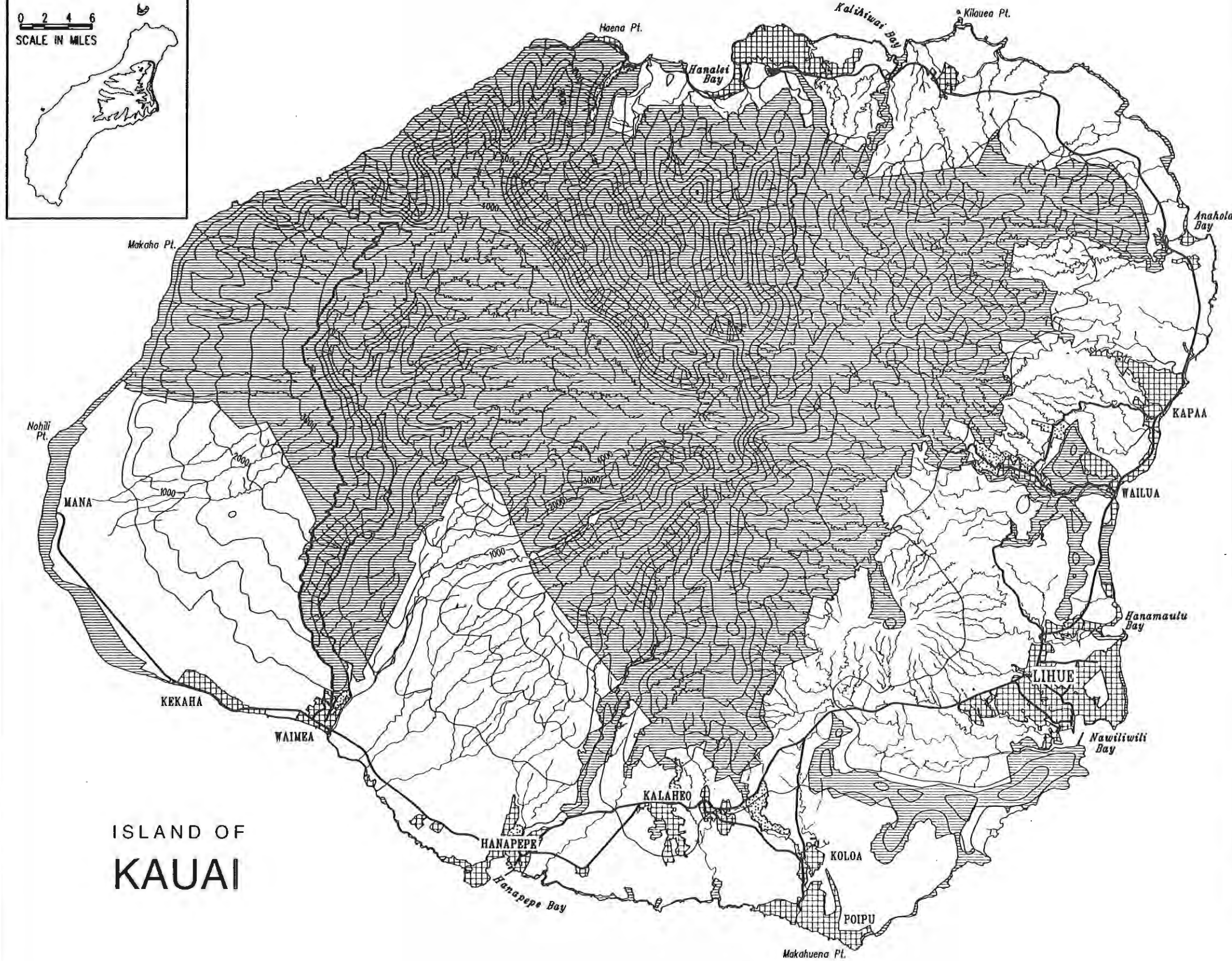
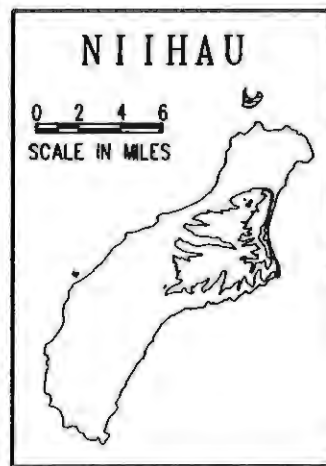
Table 4. ESTIMATED ACREAGE OF LAND USE DISTRICTS  
January 1990

<u>Total</u>	<u>Urban</u>	<u>Rural</u>	<u>Agricultural</u>	<u>Conservation</u>
353,900	12,976	1,233	140,959	198,732
(100%)	(3.7%)	(0.3%)	(39.8%)	(56.2%)

Source: Department of Business, Economic Development & Tourism, State Data Book, 1990, p. 177.












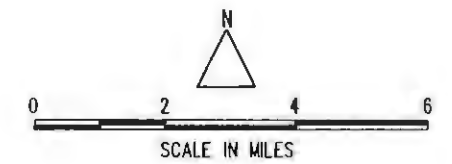


ISLAND OF  
**KAUAI**

Figure 1

# STATE LAND USE DISTRICTS

-  Agricultural District
-  Conservation District
-  Rural District
-  Urban District
-  Streams
-  500 Ft. Contours
-  Major Roads



Prepared by the Office of State Planning on the State of Hawaii's GIS, June, 1992. Land Use Districts current as of February, 1991. Contours interpolated from 1983 USGS digital point data. Boundaries depicted on this map are not official.



VIII. URBAN AND RURAL DISTRICTS\*

Existing Land Uses

Residential. Single-family residential use is dominant on Kauai. A 1985 report found 2,500 acres in single-family residential use and 400 acres in multi-family use.

Kapaa-Wailua, Lihue and Koloa-Poipu-Kalaheo areas each contain the largest areas of single-family residential use, followed by the North Shore, Hanapepe-Eleele, and Waimea-Kekaha areas. As expected, existing multi-family residential land use is concentrated in the North Shore and Koloa-Poipu-Kalaheo areas, primarily within the Princeville and Poipu resort areas, respectively.

Resort. The primary resort areas on Kauai are located along the east and south coasts at Princeville, Kapaa-Wailua, Lihue and Poipu. In all, hotel and resort uses on Kauai occupied 764 acres in 1989.

As of February 1989, there were 7,398 hotel and condo units on Kauai, an increase of 29.8 percent since 1985. According to the Department of Business and Economic Development, this growth trend will continue as 12,100 visitor units are projected by 2000 and 16,900 units by 2010 (see Table 5). Likewise, the average visitor census will exhibit marked increases over the next 20 years, from 16,700 in 1990 to 36,900 in 2010.<sup>12</sup>

Table 5. VISITOR INDUSTRY PROJECTIONS FOR THE COUNTY OF KAUAI  
1985 - 2010  
(In Thousands)

	<u>1985</u>	<u>1990</u>	<u>1995</u>	<u>2000</u>	<u>2005</u>	<u>2010</u>
Average Visitor Census	11.5	16.7	21.4	26.8	30.3	36.9
Occupied Hotel Units*	3.7	6.1	7.1	9.1	10.3	12.7
Total Hotel Units	5.7	8.1	9.5	12.1	13.7	16.9

\*Includes condominiums.

Source: Department of Business and Economic Development, Population and Economic Projections for the State of Hawaii to 2010, Series M-K, November 1988.

<sup>12</sup> Department of Business and Economic Development, Population and Economic Projections for the State of Hawaii to 2010, Series M-K, November 1988.

\* Hurricane Iniki struck Kauai on September 11, 1992. This report was in the process of being finalized at that time. Therefore, the housing, resort and economic data presented in this report reflect pre-Iniki conditions.

Commercial and Industrial. Commercial activities on Kauai are centered at Lihue. Sugar processing is a primary industrial activity on Kauai. Service-related industries are located near the population centers.

Military. Kauai is home to the Pacific Missile Test Center (PACMISTESTCEN) at Barking Sands. PACMISTESTCEN provides launch, tracking and data collection support to the Department of Defense and other government agencies. This facility is comprised of four parcels of land totalling 447.2 acres.

The 10-acre Kokee AFS is also located on Kauai and provides around-the-clock radar air surveillance data to the Hawaii Air Defense Control Center.

An 18,000-acre military training area is located near Barking Sands. This site results from an agreement with the Kekaha Sugar Company with consent from the State.<sup>13</sup>

State and Federal Lands. The State owns 150,984 acres and the Federal government 3,158 acres on Kauai.

#### Urban Land Requirements

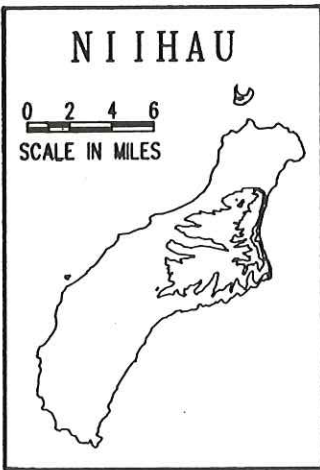
The Urban Land Requirements Study conducted by Wilson Okamoto & Associates, Inc., for the Five-Year Boundary Review examined urban lands in order to determine whether there is sufficient urban-zoned land to accommodate population and economic growth. Key components in this analysis were the determination of the existing supply of vacant urban lands in each County, assessing the general suitability of these lands for development and relating the supply to anticipated future demands for urban lands, including residential, industrial, commercial and resort uses.

Between 1976 and 1990, a total of 3,912 acres on Kauai were reclassified to the Urban District. A large portion of the boundary amendments, 2,281 acres, occurred in the Lihue area. The other areas that have experienced substantial conversion are Poipu (748 acres) and the North Shore (614 acres).<sup>14</sup>

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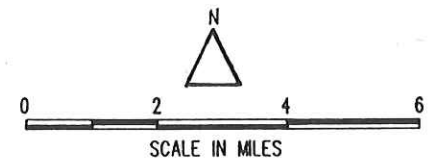
<sup>13</sup> Department of Defense, Military Property Requirements in Hawaii (MILPRO HI), April 1979, pp. E-71-73.

<sup>14</sup> Wilson Okamoto & Associates, Inc., Urban Land Requirements Study, September 1991, pp. 2-9.



**Figure 2**  
**FEDERAL,  
STATE  
AND  
HAWAIIAN HOME  
LANDS**

-  Federal Lands
-  State Lands
-  Hawaiian Home Lands
-  500 Ft. Contours
-  Development Plan Area Boundaries



Prepared by the Office of State Planning on the State of Hawaii's GIS, June, 1992. Federal, State, and Hawaiian Home land boundaries from USGS 1:100,000 GIRAS files, 1976. Development Plan boundaries derived from County General, Development, and or Community Plans, various scales, 1990. Contours interpolated from 1983 USGS digital point data. Boundaries depicted on this map are not official.

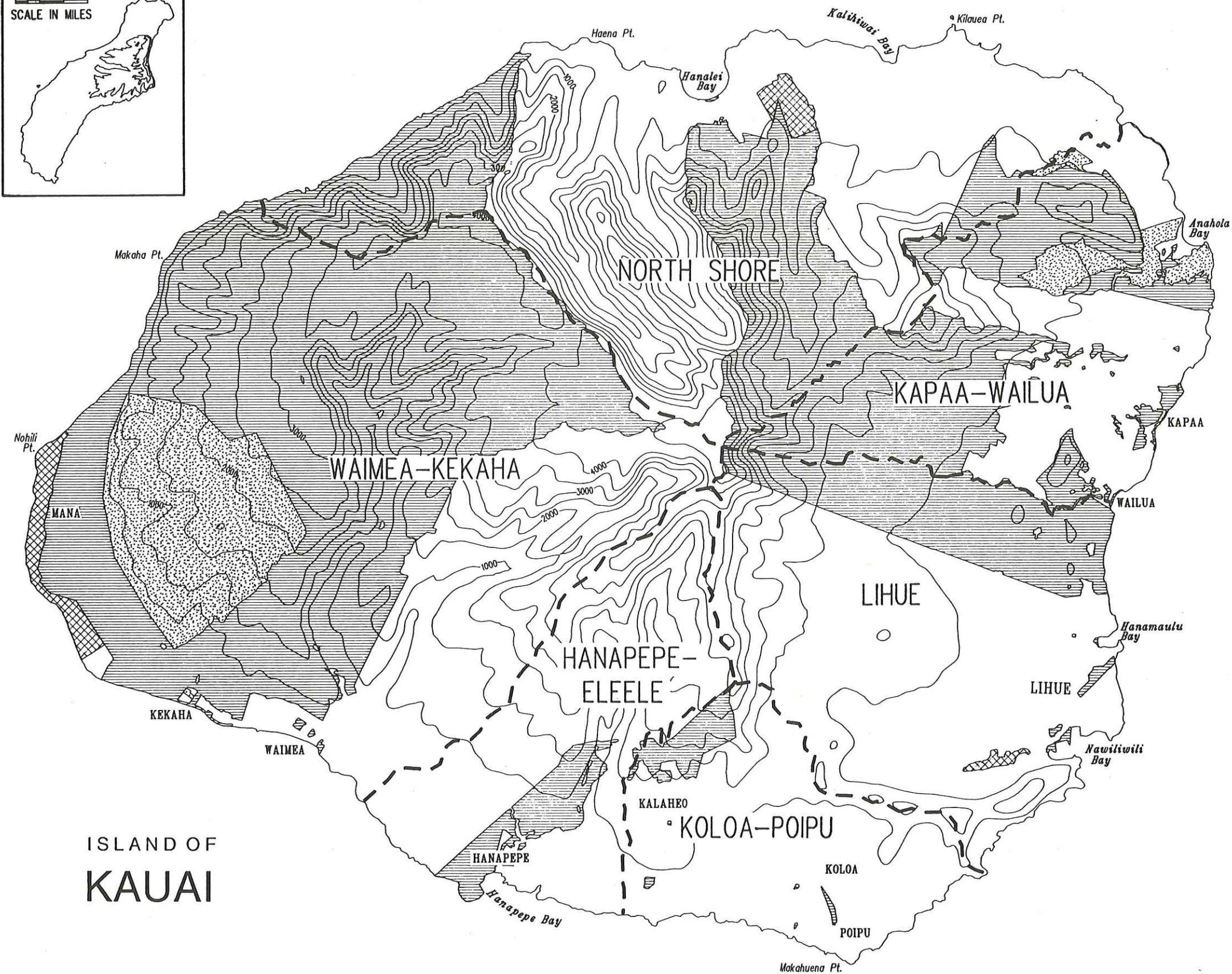




Table 6. URBANIZED LANDS  
(By District)

	<u>1976-80</u>	<u>1981-85</u>	<u>1986-90</u>	<u>TOTAL</u>
North Shore	53	561	0	614
Kapaa	25	60	0	85
Lihue	184	1,112	985	2,281
Koloa	458	290	0	748
Waimea	<u>111</u>	<u>0</u>	<u>73</u>	<u>184</u>
TOTAL	<u>831</u>	<u>2,023</u>	<u>1,058</u>	<u>3,912</u>

The study identified vacant developable urban land on Kauai. Developable is defined as land which is absent of any permanent development, is relatively level with a slope of less than 20 percent, and is otherwise free of readily identifiable environmental constraints, such as a wetland or waterway. Also excluded from the definition of developable lands are existing golf courses, parks, roadways, parcels of less than five acres and lands zoned Conservation by the County.

There are approximately 2,300 acres of developable urban parcels on Kauai. These lands are fairly evenly distributed among the island's districts with Koloa and Lihue having the greatest acreages.

Table 7. VACANT DEVELOPABLE URBAN LANDS  
County of Kauai

<u>District</u>	<u>Acres</u>
North Shore	339
Kapaa	389
Lihue	605
Koloa	639
Waimea	<u>331</u>
	<u>2,302</u>

Source: Wilson Okamoto & Associates, Inc.,  
Urban Land Requirements Study, 1991.

In Lihue, developable areas are located north of Wailua River, north of Hanamaulu Subdivision and east of Kuhio Highway near Wilcox Hospital. Developable parcels are located mauka of Kauai High School, mauka of Huleia Stream, at the Westin Kauai site and in Lihue Town. Large areas of developable lands can also be found in the Puhi area makai of Kaunualii Highway. In Koloa-Poipu, developable lands are located near Makahuena Point, near Poipu Beach Park and in Koloa Town, Lawai and Kalaheo. In the Waimea area, developable areas are in Kekaha Town near Kikiaola Harbor, in the Port Allen Airport area and above Hanapepe Heights. In the North Shore, some developable areas remain in the Princeville resort and west of Kilauea Town. Developable areas in Kapaa include the Anahola Bay area, Papaloa and the lands near Moikeha Canal.

The demand for residential, commercial, industrial and resort land was calculated based upon the Series M-K projection and using additional methodologies developed by the consultants. It should be noted that residential projections assumed that existing densities would continue into the future. This approach results in a high estimate of the demand for residential land. The extent and timing of density increases are difficult to forecast, but it may well be expected that single-family lot sizes will continue to become smaller and that residential densities will continue to increase in the future as more intensive use is made of urban lands. The analysis also assumed declining household size and a five percent vacancy rate and did not account for the redevelopment of existing urban areas.

In addition, census data on household size was not available when the study was conducted. The census data shows a higher household size than reflected in the study. If a higher household size is used, the demand for urban land is reduced.

The population allocations were taken from the allocations used in the Department of Transportation's Highway Needs Assessment and were approved by the Counties.

The study assessed the supply of developable urban lands and the anticipated requirements for additional urban lands based on the demand projections.

With respect to assessing the balance of supply and anticipated need, it should be noted that a reasonable surplus rather than a shortage in the supply of urban lands is desirable. A reasonable allowance for flexibility is usually roughly 25 percent of the total amount of land estimated to go into use during the planning period. Such a flexibility factor allows for unanticipated choices of individuals and firms who may acquire land in excess of estimated need and it allows for land which may be held out of use because of personal preference of property owners, unfavorable market conditions or legal complications which make the land unavailable for immediate development.

In addition, 16 acres of vacant land which were zoned Conservation by the County were excluded from the supply category in recognition of the purpose of that district.

The following tables display the relationship between the supply of developable urban land and the demand for urban land.

Urban land requirements as a whole on Kauai can be met through 1995. The study projects a surplus of 175 acres in 1995. After that, however, the demand for developable urban lands will sharply increase, resulting in an overall deficit situation. By 2010, all districts on Kauai except Waimea are expected to have a shortfall of urban lands. (See Appendix A for detailed tables on urban land requirements.)



Table 8. URBAN LAND REQUIREMENTS  
1995-2010  
COUNTY OF KAUAI

	<u>1995</u>	<u>2000</u>	<u>2010</u>
North Shore	143	11	(249)
Kapaa	16	(202)	(672)
Lihue	49	(318)	(1,198)
Koloa	204	(45)	(499)
Waimea	189	134	31
Subtotal	601	(420)	(2,587)
25% Flexibility Factor	(426)	(681)	(1,223)
TOTAL	175	(1,101)	(3,810)

Surplus (Deficit) in Acres

Source: Wilson Okamoto & Associates, Inc., Urban Lands Requirement Study, 1991.

### Infrastructure

Infrastructure is a major issue for the County of Kauai. Additional roads, water and sewerage systems, solid waste sites, affordable housing, parks and recreational facilities, classrooms and other social service facilities are needed to keep pace with population and economic growth. In the early 1980's, the Kauai County Council estimated that the County's public building needs were behind by \$185 million. In contrast, the County's public facilities construction budget in 1989 was approximately \$7 million.<sup>15</sup>

It is apparent that infrastructure has not kept pace with past growth. Existing infrastructure will be further strained by projected growth in resident and visitor populations, particularly in the North Shore (Princeville area), Wailua-Kapaa, Lihue and Koloa-Poipu. According to Kauai County officials, sewers, roadways and solid waste facilities will accommodate projected growth only if upgraded, expanded or new alternatives become available. Funding these improvements will also be a problem.<sup>16</sup> Further, since the County's Water General Plan does not account for boundary amendments, existing water facilities would not be adequate to handle development in any rezoned areas. Developers would be required to provide additional source, storage and water transmission

<sup>15</sup> Honolulu Star-Bulletin, "Brakes on Further Growth," May 17, 1989.

<sup>16</sup> Letter to OSP from County of Kauai Department of Public Works, dated December 10, 1990, in Five-Year Boundary Review: Infrastructure Constraints and Opportunities to 2010, July 25, 1991, p. 99.

**Table 9**  
**AVAILABLE URBAN LANDS TO MEET FUTURE DEMANDS**  
**COUNTY OF KAUAI**  
**2000**  
**(in acres)**

	RESIDENTIAL			COMMERCIAL			INDUSTRIAL			RESORT			COUNTY-		OTHER	TOTAL	PUBLIC AREA	TOTAL	SURPLUS/ (DEFICIT)
	ZONED DEV. URBAN	2000 DEMAND	SURPLUS/ (DEFICIT)	ZONED DEV. URBAN	2000 DEMAND	SURPLUS/ (DEFICIT)	ZONED DEV. URBAN	2000 DEMAND	SURPLUS/ (DEFICIT)	ZONED DEV. URBAN	2000 DEMAND	SURPLUS/ (DEFICIT)	ZONED DEV. URBAN LANDS	DEV. URBAN					
														1/					
NORTH SHORE	325	169	156	8	10	(2)	0	19	(19)	6	128	(122)	339	0	339	2	328	11	
KAPAA	335	440	(105)	0	20	(20)	14	34	(20)	13	83	(70)	362	27	389	14	591	(202)	
LIHUE	409	700	(291)	81	29	52	74	124	(50)	38	52	(14)	602	3	605	18	923	(318)	
KOLOA	572	487	85	28	20	8	0	6	(6)	0	159	(159)	600	39	639	12	684	(45)	
WAIMEA	317	169	148	0	3	(3)	7	19	(12)	0	4	(4)	324	7	331	2	197	134	
<b>SUBTOTAL</b>	<b>1,958</b>	<b>1,965</b>	<b>(7)</b>	<b>117</b>	<b>82</b>	<b>35</b>	<b>95</b>	<b>202</b>	<b>(107)</b>	<b>57</b>	<b>426</b>	<b>(369)</b>	<b>2,227</b>	<b>76</b>	<b>2,302</b>	<b>48</b>	<b>2,723</b>	<b>(421)</b>	
<b>25% FLEXIBILITY FACTOR</b>		<b>491</b>			<b>21</b>			<b>51</b>			<b>107</b>					<b>12</b>	<b>681</b>	<b>(681)</b>	
<b>TOTAL</b>	<b>1,958</b>	<b>2,456</b>	<b>(7)</b>	<b>117</b>	<b>103</b>	<b>35</b>	<b>95</b>	<b>253</b>	<b>(107)</b>	<b>57</b>	<b>533</b>	<b>(369)</b>	<b>2,227</b>	<b>76</b>	<b>2,302</b>	<b>60</b>	<b>3,404</b>	<b>(1,102)</b>	

1/Includes County-zoned agricultural and rural districts, but excludes conservation districts.

Source: Urban Land Requirements Study, Wilson Okamoto and Associates, 1991.

facilities necessary for these areas.<sup>17</sup> The following discussion on infrastructure capacities and constraints is taken from the report, Five-Year Boundary Review: Infrastructure Constraints and Opportunities to 2010, Eugene Dashiell, AICP, Planning Services, except where otherwise noted.

Airports. Lihue Airport is Kauai's principal airport, serving 3.0 million passengers in 1989. The majority of these passengers, 2.8 million, were travelling inter-island, while the remaining 0.1 million were travelling overseas. By 1995, the passenger count at Lihue is expected to climb to 6.2 million and by 2010, the figure is projected to be 9.5 million.

To accommodate this projected increase in passenger volume, the State of Hawaii Airports Division is planning to further upgrade facilities at Lihue. One of the most significant improvements will be the lengthening and widening of Runway 17-35 by 1995. This will allow both runways to accommodate heavier overseas aircraft. Other planned improvements include increasing commuter/air taxi apron positions to 34, doubling the commuter terminal area, increasing the air cargo building area from 9,200 square feet to 25,000 square feet by 2005, and improving airport access and parking. These improvements, totalling \$112.7 million, will enable Lihue Airport to meet the projected volume increase.<sup>18</sup> None of these improvements are expected to require land use district boundary changes.

Port Allen Airport is a secondary airport and is suitable for small aircraft only. In 1989, about 20,000 aircraft operations took place, primarily by tour helicopter and glider tow-plane users.

No major improvements are planned for the airport, although minor projects costing \$2.8 million will be carried out over the next 14 years.<sup>19</sup>

Harbors. Nawiliwili Harbor is the primary harbor on Kauai handling container and bulk cargo. It has a 40-foot deep entrance channel and a 35-foot harbor basin measuring 1,540 feet by 1,950 feet. In 1987, total cargo throughput was approximately 0.9 million tons.

To help meet the estimated annual cargo throughput of 1.5 million tons in 2010, a number of projects have been proposed including pier improvements, installation of cargo handling equipment and land acquisition.

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<sup>17</sup> Letter to OSP from County of Kauai Department of Water, dated November 29, 1990, in Five-Year Boundary Review: Infrastructure Constraints and Opportunities to 2010, July 25, 1991, p. 100.

<sup>18</sup> Five-Year Boundary Review: Infrastructure Constraints and Opportunities to 2010, July 25, 1991, pp. 100-101.

<sup>19</sup> Ibid., p. 101.

Kauai's secondary harbor is Port Allen which is primarily used by the U.S. Navy. In 1987, total cargo throughput was less than 0.1 million tons. Other users of Port Allen Harbor are small passenger vessels, some commercial fishing boats and tour vessels.<sup>20</sup>

No land use district boundary changes are anticipated to be required over the next five years for the Nawiliwili or Port Allen Harbors.

Solid Waste. Kauai's solid waste disposal requirements are handled by two County-operated landfills at Kekaha and Lihue. The Lihue landfill is near capacity and was scheduled for closure in late 1990. For the immediate future, the Kekaha site is adequate.

In 1990, Kauai generated 79,100 tons of solid waste. By 2010, solid waste quantities are expected to more than double to over 180,000 tons. To meet this increased volume, the County plans to expand the Kekaha landfill in 1995 so that it will be able to serve the entire island. Other projects include new and upgraded transfer stations and landfills, construction of recycling and hazardous waste disposal facilities, landscape waste and sewage sludge composting, and materials recovery. By reducing the amount of waste reaching the landfill, these proposed projects can provide capacity to 2010.<sup>21</sup>

Roads. The existing street network in the Lihue area includes Kapule Highway south of Ahukini Road, north of Akuhini Road and Kaumualii Highway east of Puhī. Levels of service on all three routes are approaching capacity.

In the Lihue to Koloa corridor, adverse traffic conditions are anticipated with increases in visitor and resident traffic and increases in traffic between Lihue and Waimea. The main portions of this road sector consist of Maluhia Road south of Kaumualii Highway, Kaumualii Highway west of Puhī and Kaumualii Highway east of Puhī. At present, demand is higher than the design capacity of Kaumualii Highway. Maluhia Road is heavily used but has a minimally acceptable level of service. Proposed improvements include widening Kaumualii Highway and Maluhia Road to four lanes and constructing a four-lane bypass road.

Extensive residential, visitor and commercial development in the Poipu/Lawai/Koloa area will result in traffic congestion on the primary streets. Poipu Road is nearing its design capacity. Proposed projects include a two-lane road to connect Poipu and Maluhia Road, a south connector between Lawai Road and Koloa Road and a two-lane mauka bypass to connect Lawai Road and Koloa Road.

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<sup>20</sup> Ibid., p. 103.

<sup>21</sup> Ibid., pp. 104-105.

The Koloa to Hanapepe corridor experiences significant through-corridor traffic. Resident, visitor and commercial traffic are expected to increase. This area has traffic approaching capacity on portions of Kaumualii Highway and Koloa Road. Proposed improvements include a two-lane continuation of the bypass on the makai side of Kaumualii Highway.

The Lihue to Kapaa corridor is presently the most heavily travelled route on Kauai. Residential development in the Kawaihau district and northern portion of Lihue will be the main source of traffic demand. This road corridor includes Kuhio Highway north of Kapule Highway and has a level of service of F, the lowest rating possible.

The Kapaa to Princeville corridor consists of three portions of Kuhio Highway, north of Kapaa Stream, north of Anahola and west of Ka Hoku Road. Residential and commercial development in Princeville is the main cause of traffic demand in this corridor. Presently traffic demand is less than capacity with a level of service of A.

An analysis by Kaku Associates in July 1988 of 15 intersections on Kauai quantified the strain on sections of the island's road network. The intersections listed below were found to be operating at LOS E or F during the A.M. peak. Because these intersections are not signalized, the LOS is based upon the most constrained movement (left turns), not movement for the entire intersection.

- Kuhio Highway and Coconut Plantation Marketplace Driveway (LOS E)
- Kuhio Highway and Haleilio Road (LOS E)
- Kuhio Highway and Kapaa Shopping Center Driveway (LOS F)
- Kapule Highway and Rice Street (LOS F)
- Kaumualii Highway and Nawiliwili Road (LOS F)
- Kaumualii Highway and Maluhia Road (LOS E)
- Kaumualii Highway and Koloa Road (LOS E)

The following intersections operate at LOS E or F during the P.M. peak:

- Kuhio Highway and Kawaihau Road (LOS E)
- Kuhio Highway and Coconut Plantation Marketplace Driveway (LOS F)
- Kuhio Highway and Haleilio Road (LOS F)
- Kuhio Highway and Kapaa Shopping Center Driveway (LOS F)
- Kapule Highway and Rice Street (LOS F)
- Kaumualii Highway and Nawiliwili Road (LOS F)
- Kaumualii Highway and Maluhia Road (LOS E)
- Kaumualii Highway and Koloa Road (LOS F)

Source: Kaku Associates, Kauai County Highway Planning Study, Final Report, October 1990, p. 33.

Sewer Facilities. The sewerage system on Kauai is decentralized with four municipal systems and several private systems providing service. The County has expressed concern that many wastewater treatment plants are at or near capacity and will curtail growth of existing urban-zoned lands as well as any new urban lands.

The Lihue Wastewater Treatment Plant is at capacity and there are plans to expand the facility by 2.5 mgd. This may take place in 1993 or 1994. Further expansion to 4.5 mgd is under consideration.

At Eleele, the existing treatment capacity of 0.4 mgd is twice the existing demand and implies adequate capacity into the future. County officials, however, remain concerned that the 0.2 mgd of excess capacity is insufficient to accommodate future growth. Expansion of capacity to 0.8 mgd has been proposed to meet projected demand.

The Wailua Plant has a capacity of 1.5 mgd which is sufficient to meet the current demand of 0.66 mgd as well as future residential demand. However, capacity may not be sufficient to meet total demand which includes resort/commercial uses. There are plans to rehabilitate the plant (with no increase in capacity) at a cost of \$2.4 million. The collection system at Wailua is in need of expansion, and plans call for a \$12 million extension of the collection system in the Kuhio Highway subareas.

The plant at Waimea has excess capacity. Present demand at the 0.3 mgd capacity plant is 0.19 mgd. Still, as at Eleele, the excess capacity is small and may be insufficient to accommodate additional urbanization. There may be a need to encourage more hook-ups to sewer lines in this district and move away from cesspool use.<sup>22</sup>

Major resorts provide their own systems of disposal. Because these systems have historically been plagued with problems, however, the development of regional plants is preferred.

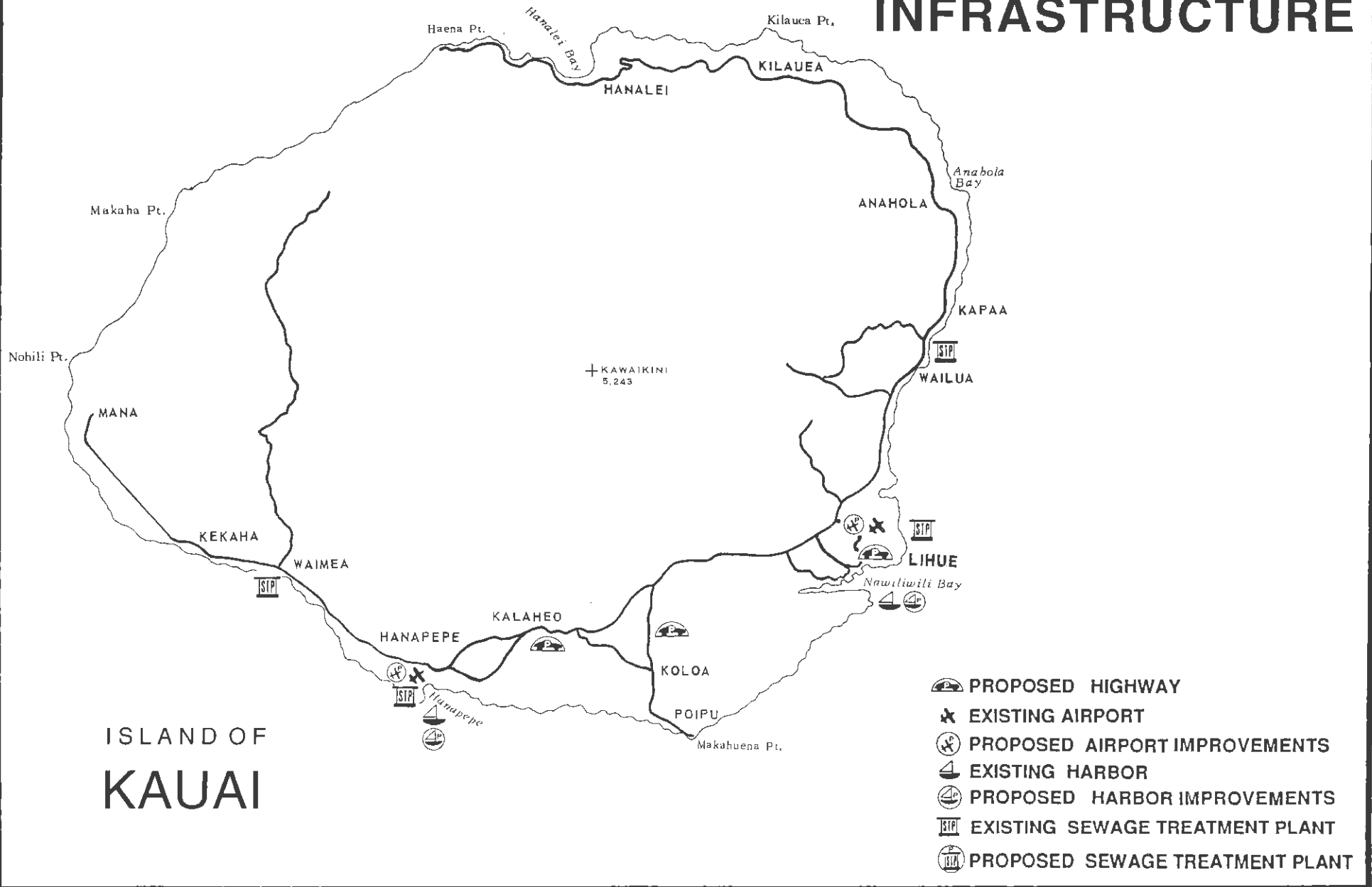
There are more than 13 privately owned treatment plants in the Koloa-Lawai-Poipu district. Small package plants using injection wells serve the resorts and residential disposal of sewage is by cesspools. The maintenance of coastal water quality, particularly at Poipu, is a concern. The construction of a regional treatment plant and ocean outfall have been proposed as ways to protect the coastal waters.

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<sup>22</sup> Eugene P. Dashiell Planning Services, Five-Year Boundary Review: Infrastructure Constraints and Opportunities to 2010, 1991, p. 120.

Figure 3

# INFRASTRUCTURE



Water. Additional wells, storage tanks and transmission lines will be required to service new developments. According to the Water Use and Development Plan for Kauai, the areas requiring the greatest amounts of water by the year 2011 are Lihue, Kawaihau, and Koloa-Poipu. Lihue will need an additional 3.84 mgd to meet the projected population growth in the area. Kawaihau and Koloa-Poipu will have needs of 2.72 mgd and 2.75 mgd, respectively.<sup>23</sup>

Sustainable yield figures show that water is available in all areas for these projected increases in municipal water demand. In 1988, 60 mgd of the estimated 388 mgd of sustainable yield of groundwater was withdrawn. During the same year, 360 mgd of the 810 mgd sustainable yield of surface water was used. By far, the largest user of water on Kauai are the sugar plantations which in 1991 used 439 mgd, or 85.9 percent of the total. Private and industrial uses accounted for 58.5 mgd (11.4 percent) and the Board of Water Supply 13.8 mgd (2.7 percent).<sup>24</sup> Diversified agricultural projects including taro, macadamia nuts, vegetables, coffee, melons and fruits, also used substantial amounts of water.

The diversion of surface water for irrigation from one hydrologic unit to another is expected to continue though the conversion of sugarcane lands to urban uses will serve to reduce these imbalances.

Except for the Princeville water system, private systems are a fairly minor source of water on Kauai. At Princeville, domestic and commercial water needs are met by two wells which connect to the Department of Water Supply system before being delivered to the private system. Other private systems include the Polihale State Park Water System, Kokee Water System, Mana Water System, Kekaha Camp Water System, Wahiawa Water System, Koloa Camp Water System and Kealia Water System.<sup>25</sup>

Recreation. Kauai is blessed with an abundance of recreational resources. In 1985, the County contained 137,192 acres of recreational area with 918 acres being improved. Aquatic resources included 10 boat launch lanes and 95 boat moorages. Beach area totals 101 acres with 11 miles of beach frontage. Inland activities included 339 camping sites, 102,517 acres for public hunting and 206 miles of hiking and equestrian trails.<sup>26</sup>

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<sup>23</sup> R.M. Towill Corporation, Kauai Water Use and Development Plan, Review Draft, January 1992, pp. 4-2 to 4-5.

<sup>24</sup> Ibid., pp. 3-1 to 3-2.

<sup>25</sup> R.M. Towill Corporation, Kauai Water Use and Development Plan, February 1990, pp. 3-5, 3-6.

<sup>26</sup> Department of Land and Natural Resources, State Recreation Functional Plan, Technical Reference Document, December 1985, p. 61.



Overall, the State Recreation Functional Plan identifies the need for more hiking and camping areas, beach and boating activities, pools, field games and tennis, golf, pedestrian and bicycling facilities on Kauai.

Schools. The Kauai school district reported 10,109 students as of September 1991, making it the smallest district in the State. Growth in the Kauai school district is expected to be moderate. According to Department of Education projections, King Kaumualii Elementary School in Hanamaulu will experience an enrollment increase of 62 percent through 1995, making it the fastest growing school on Kauai. This percentage increase translates into 277 additional students at King Kaumualii Elementary. The other rapidly growing schools are Kapaa High and Intermediate (27 percent), Kauai High and Intermediate (23 percent), and Eleele (18 percent).<sup>27</sup> To relieve the high enrollment at Kapaa High and Intermediate and Kapaa Elementary, new intermediate and elementary schools are being planned for Kapaa.<sup>28</sup>

In addition, the long commute for North Shore students to Kapaa has prompted the community to propose a new middle school for the North Shore.<sup>29</sup>

It is estimated that by 2010, an additional 338 classrooms costing \$108 million will be needed on Kauai to accommodate projected population growth.

Health Services. Major health facilities on Kauai are the Samuel Mahelona Memorial Hospital in Kapaa, the Kauai Veterans Memorial Hospital in Waimea and Wilcox Hospital in Lihue.

Utilities/Power. The constraints of the adequacy and distribution of electrical power generation systems and back-up power for proposed developments will need to be assessed for both normal and disaster situations. The need for back-up power is particularly important in disaster situations for public health and safety reasons, i.e., water pumpage.

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<sup>27</sup> Department of Education, State of Hawaii, Enrollment Projections of the Public Schools in Hawaii, 1989-1994, April 1990, p. 39.

<sup>28</sup> Correspondence to OSP from Charles T. Toguchi, Superintendent, Department of Education, May 12, 1992.

<sup>29</sup> Communication from the Department of Education, December 26, 1991.

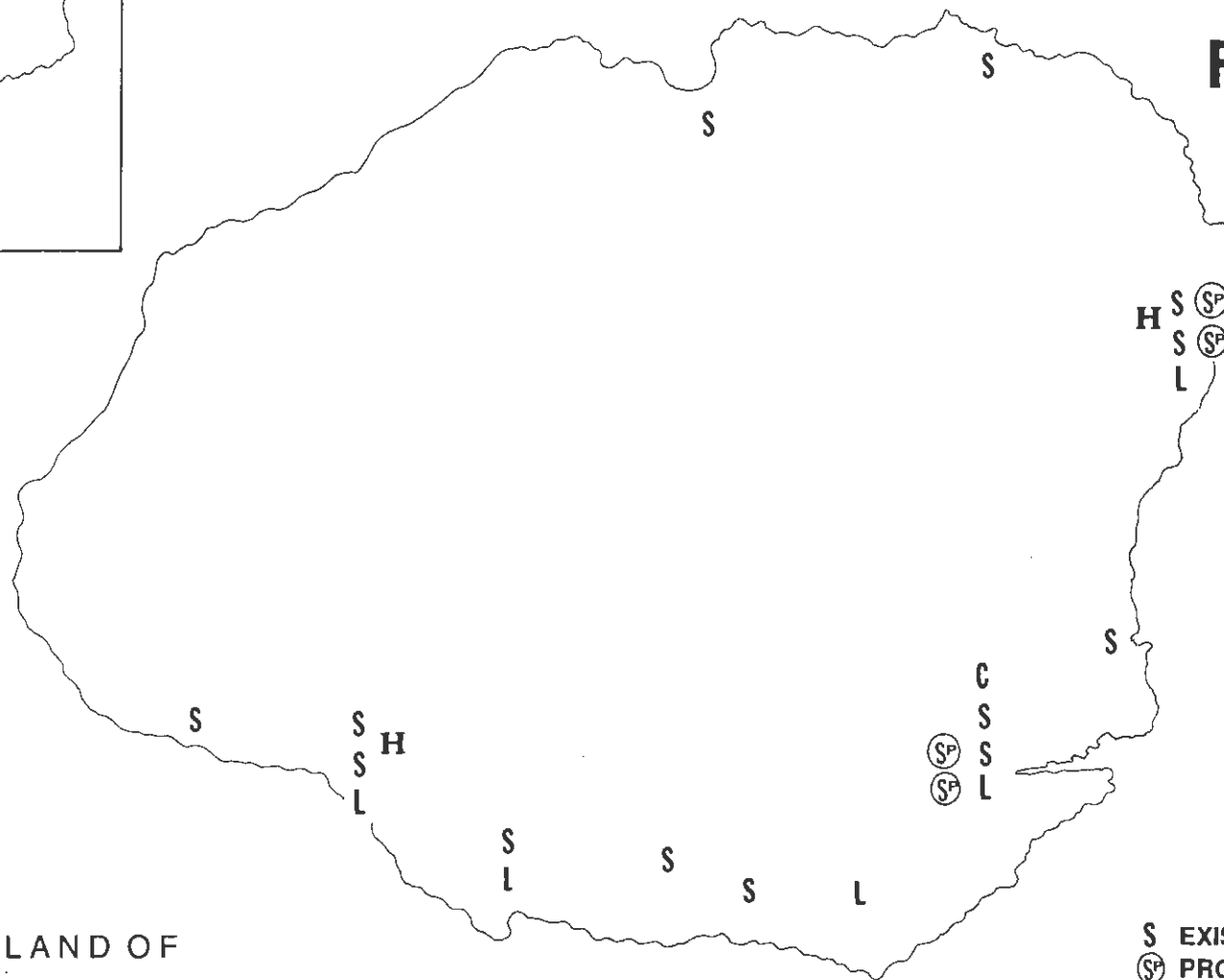
ISLAND OF  
NIIHAU




Figure 4

# PUBLIC FACILITIES

ISLAND OF  
KAUAI



- S EXISTING PUBLIC SCHOOL
- Ⓢ PROPOSED PUBLIC SCHOOL
- C EXISTING COLLEGE
- L EXISTING LIBRARY
- H EXISTING STATE HOSPITAL
-  EXISTING STATE OFFICE BUILDING

## Civil Defense

According to civil defense agencies, more warning sirens, shelters and transportation network analyses are needed to accommodate new urban developments.

Aside from the natural hazards of steep slopes, areas prone to tsunamis, erosion and flooding/flash flooding, earthquakes and subsidence, another item requiring consideration is the triple threat of storm waves, high winds and heavy rainfall associated with tropical cyclones/hurricanes. The island of Kauai with its steep terrain, short coastal plains, and deep valleys is at risk from winds being amplified by the sloping topography and deep valleys, flash flooding and debris/mud slides resulting from slope instability and soil movement problems.

## Urban Land Use Issues

Similar to other areas of Hawaii, major land use issues on Kauai involve development and its effects on community character and the environment. With the island's de facto population expected to increase by 71.6 percent over the next 20 years, affordable housing and infrastructure are among the most discussed issues.

Like elsewhere in the State, housing is one of Kauai's most pressing issues. As of 1989, Kauai had 17,139 residential housing units and 3,034 visitor condos. With the median price of a single-family home being \$260,000 in 1990, affordability is a major concern. There will be an estimated shortfall of 5,183 affordable units on Kauai by 2000, of which 3,894 will be rental units.<sup>30</sup>

The County of Kauai has pointed out that areas making the transition from agricultural to urban type uses may reduce the need for additional housing units. This has recently become one of the main planning issues on Kauai and affects primarily the homestead areas of Kalaheo, Wailua, and Kapaa.

The issue involves lands in the State Agricultural District which have been subdivided to the maximum density once farming activities have ceased, thereby allowing the landowner to either sell the subdivided parcels or distribute them to family members. These owners, however, sometimes find that these subdivided lots, which typically are two to five acres, are too small to farm and are suitable instead for a residential subdivision. Because further subdivision is not allowed in the State Agricultural District or the existing County zoning, the landowners have applied for reclassification to the State Rural District and rezoning to County Residential which would allow up to two houses per acre. Kauai County reports an influx of such applications with more expected in the future.

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<sup>30</sup> State Housing Functional Plan, 1989.

Another urban land use issue in Kauai County involves Ohana zoning. In May 1989, the County amended the Ohana law to include the County Agricultural and Open zones in addition to the Residential zone. Since that time, the County has approved 600 Ohana units. By comparison, in the period since Ohana zoning was first adopted in 1982 and May 1989, 60 Ohana units were approved. The presence of many Ohana units on Kauai was not considered in the Urban Land Requirements Study conducted by Wilson Okamoto & Associates, Inc., and the County of Kauai has suggested that these units may reduce the need for Urban-designated land.

The law to allow Ohana units in the Agricultural and Open zones will sunset in December 1993, at which time it can be extended or repealed.<sup>31</sup>

In other Counties, Ohana units have been associated with infrastructure problems and the State would be concerned with regard to infrastructure and appropriate densities in the Agricultural District.

While the development of residential units is necessary, it also contributes to Kauai's serious infrastructure problems. Development on Kauai has outpaced the County's ability to provide sufficient supplies of solid waste, road and sewer facilities.

According to the Kauai Department of Public Works, solid waste, road and sewer facilities will accommodate projected growth only if they are upgraded or expanded. Funding these improvements will be a problem, however.<sup>32</sup> Further, with solid waste volumes projected to more than double over the next 20 years, any additional development will make it difficult to preserve public health and safety within the budgetary capacity of the County.<sup>33</sup>

The challenge of providing infrastructure to these newly urbanized areas has become more common in recent years as acreages are converted from sugarcane to urban uses. These conversions have been intended to satisfy Kauai's growing residential and commercial demands, as well as to offset losses suffered by the plantations.

The perception of community character also is being debated on Kauai as communities grow resistant to additional resort development. On the North Shore, residents are concerned about the impact that new developments will have on their rural lifestyle. The growth in the number of golf course developments and agricultural subdivisions are other major issues.

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<sup>31</sup> County of Kauai Planning Department, Correspondence to OSP, July 21, 1992.

<sup>32</sup> Letter, County of Kauai Department of Public Works to OSP, December 10, 1990, in Infrastructure Constraints and Opportunities to 2010, Eugene P. Dashiell Planning Services, February 25, 1991, p. 99.

<sup>33</sup> Ibid.

Other conflicts involve Kauai's natural resources. With increased demands for commercial/recreational use of natural resources, e.g., commercial boating, helicopter flights, etc., tension between commercial operators and residents has increased.<sup>34</sup>

#### Analysis of Urban Lands

The designation of lands for urban use must take many factors into consideration including proximity to existing urban areas, proximity to centers of employment (except where the development would generate new centers of employment), adequacy of existing and planned infrastructure, areas of urban growth as indicated in State and County plans, topography, presence of natural hazards and impacts on agricultural and conservation resources.

Adequate infrastructure is a major concern on Kauai. Sharp increases in resident and visitor populations over the next several years necessitate the close management of the timing and location of new developments. By locating new developments in proximity to existing urban areas, more efficient use can be made of existing infrastructure.

Island-wide, there will be a need for 1,102 additional acres of Urban designated lands in 2000, including a 25 percent flexibility factor (or 681 acres) to allow for market flexibility.<sup>35</sup>

The Lihue planning region will have the greatest deficit of Urban lands at 318 acres in 2000. Given its role as Kauai's urban center and also because of plans to expand the area's roads and sewerage capacities, it is recommended that the lands be urbanized in Lihue to not only meet the 318-acre deficit there but also to provide the majority of the 681 acres needed to provide market flexibility.

A 792-acre area in Hanamaulu is being recommended for urbanization to meet future urban land requirements in the Lihue planning area. This project will contain residential, commercial and industrial uses. The area being recommended for reclassification is in proximity to urban areas and planned infrastructure improvements, including an increase in capacity at the Lihue Sewage Treatment Plant.

Also recommended for reclassification from Agricultural to Urban is a 246-acre portion of the Kauai Lagoons Resort. This area is adjacent to an existing Urban area and, except for 48 acres, already developed as a golf course. In Golf Course Development in Hawaii, the State recommends

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<sup>34</sup> The Garden Island, "Zodiac Adventures Was Bargaining Tool," July 8, 1991.

<sup>35</sup> The flexibility factor is calculated as 25 percent of the total demand for Urban land in 2000.

that golf courses "that serve as an accessory facility to major uses such as hotels, commercial complexes, and housing should be permissible only in the Urban District."<sup>36</sup>

The Kapaa-Wailua region will have a need for 202 additional acres of Urban land in 2000. Because of severe infrastructure constraints, however, no additions to the Urban District are recommended.

In the Koloa-Poipu region, an Urban lands deficit of 45 acres is projected for 2000. To meet this deficit and provide the remainder of lands needed for market flexibility (the Hanamaulu-Molokoa project has first priority for meeting these needs), urbanization for A&B's Kukuiula Phase II project is recommended. This 800-acre project will contain single- and multi-family housing units as well as commercial and recreational facilities.

Kukuiula Phase II already has County General Plan approval with conditions and is in proximity to an existing urban area. The developer has proposed to provide infrastructure improvements, e.g., sewerage facilities.

The North Shore region is projected to have a modest surplus (11 acres) of Urban lands in 2000. It is recommended that this area be kept rural in nature except for resort-related uses at Princeville and residential and commercial uses at Hanalei Town and Kilauea Town. Kamalomalo, a 244-acre site owned by the Department of Hawaiian Home Lands (DHHL), is recommended for reclassification to Urban as a housekeeping measure. This housing project contains houses which have been built or are under construction. However, DHHL is exempt from State Land Use Law provisions and a petition will not be initiated for this area.

The Waimea-Kekaha region is expected to have an excess of Urban lands in 2000 totalling 134 acres. This region is recommended to be primarily residential and agricultural in character.

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<sup>36</sup> Office of State Planning, Golf Course Development in Hawaii, Impacts and Policy Recommendations, January 1992, p. 97.

## IX. AGRICULTURAL DISTRICT

### Existing Land Uses

Kauai County contains 140,959 acres of agricultural lands, third highest in the State after Hawaii County and Maui County. By far, the largest users of these lands are Kauai's five sugar plantations which in 1989 had 40,900 acres in cultivation. The other large crops on Kauai are coffee (2,600 acres) and fruits (700 acres, excluding pineapple).<sup>37</sup>

Kauai has a variety of livestock operations as well. As of 1989, the island contained 170 cattle operations, 100 hog operations and 12 milk operations. Egg, broiler and honey operations were smaller in number. Of these, only cattle and hog operations topped the \$1 million mark in sales.<sup>38</sup>

### Agricultural Land Requirements

Lands rated "A" and "B" by the Land Study Bureau form a band around Kauai, excluding the northwest corner of the island from about Makole to Haena Point. Generally, these "A" and "B" lands go from near sea level to approximately the 1,000 ft. contour. "A" and "B" rated lands represent those areas with the highest agricultural productivity rating according to the Land Study Bureau. Lands rated "C" by the Bureau are generally located immediately mauka of the "A" and "B" lands.<sup>39</sup>

The Land Evaluation and Site Assessment (LESA) Commission developed a separate rating system in 1986 to identify important agricultural land. This rating system was based upon a composite of five soil rating systems (LE) and site assessment (SA) factors which expressed the relative agricultural quality of a site or area based upon its non-physical characteristics or attributes.

According to the LESA Commission, the mean rating for the island of Kauai is 32.9 on a scale of 0 to 100. By comparison, Maui has the State's highest mean rating at 40.8 and Hawaii the lowest at 29.8. The mean for the State (excluding Kahoolawe and Niihau) is 32.8. The majority of Kauai's lands, 58 percent, fall into the 10-19 rating category. There are no lands in either the highest or lowest decile, and the remaining 149 acres are fairly evenly distributed between ratings of 20 and 89.<sup>40</sup>

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<sup>37</sup> Department of Business, Economic Development & Tourism, State Data Book, 1990, p. 498, and Deloitte and Touche, Agricultural Resources Study, January 1991, pp. 2-22.

<sup>38</sup> Department of Business, Economic Development & Tourism, State Data Book, 1990, p. 504.

<sup>39</sup> Harland Bartholomew, Land Use Districts for the State of Hawaii, 1961, Plate 1.

<sup>40</sup> Department of Business, Economic Development & Tourism, State Data Book, 1990, p. 508.

The LESA Commission determined agricultural acreage requirements for Kauai based upon commodity production goals. These production goals themselves were based upon current levels of production, projected population growth and economic feasibility. As shown in the table, Kauai's acreage requirements are expected to hold steady through 1995 following a decline in the 1983-1990 period.

Table 10. AGRICULTURAL PRODUCTION ACREAGE REQUIREMENTS  
FOR KAUAI, 1983 (Actual), 1990, 1995

	<u>1983</u>	<u>1990</u>	<u>1995</u>
Acreage Required with Contingency	77,200	65,700 68,460	65,800 68,617

Source: State of Hawaii Land Evaluation and Site Assessment Commission, A Report on the State of Hawaii Land Evaluation and Site Assessment System, February 1986, p. 12.

#### Agricultural Land Use Issues

The Agricultural Resources Study prepared by Deloitte and Touche analyzed issues and trends in the State's major agricultural industries. Agricultural industries were selected for analysis based on the value of sales reported by the Hawaii Agricultural Statistics Service in its Statistics of Hawaiian Agriculture, 1988. The criterion for selection was a value of sales of \$10 million or greater in 1988. Crops which met this criterion were sugar, pineapple, macadamia nuts, beef and cattle, anthuriums, orchids, potted foliage, and papaya. Aquaculture and guava were also added to the list.

Surveys were sent to individuals who owned or operated agricultural operations in the various industries as well as to experts in each industry. The following is a summary of the survey results.

#### County-wide

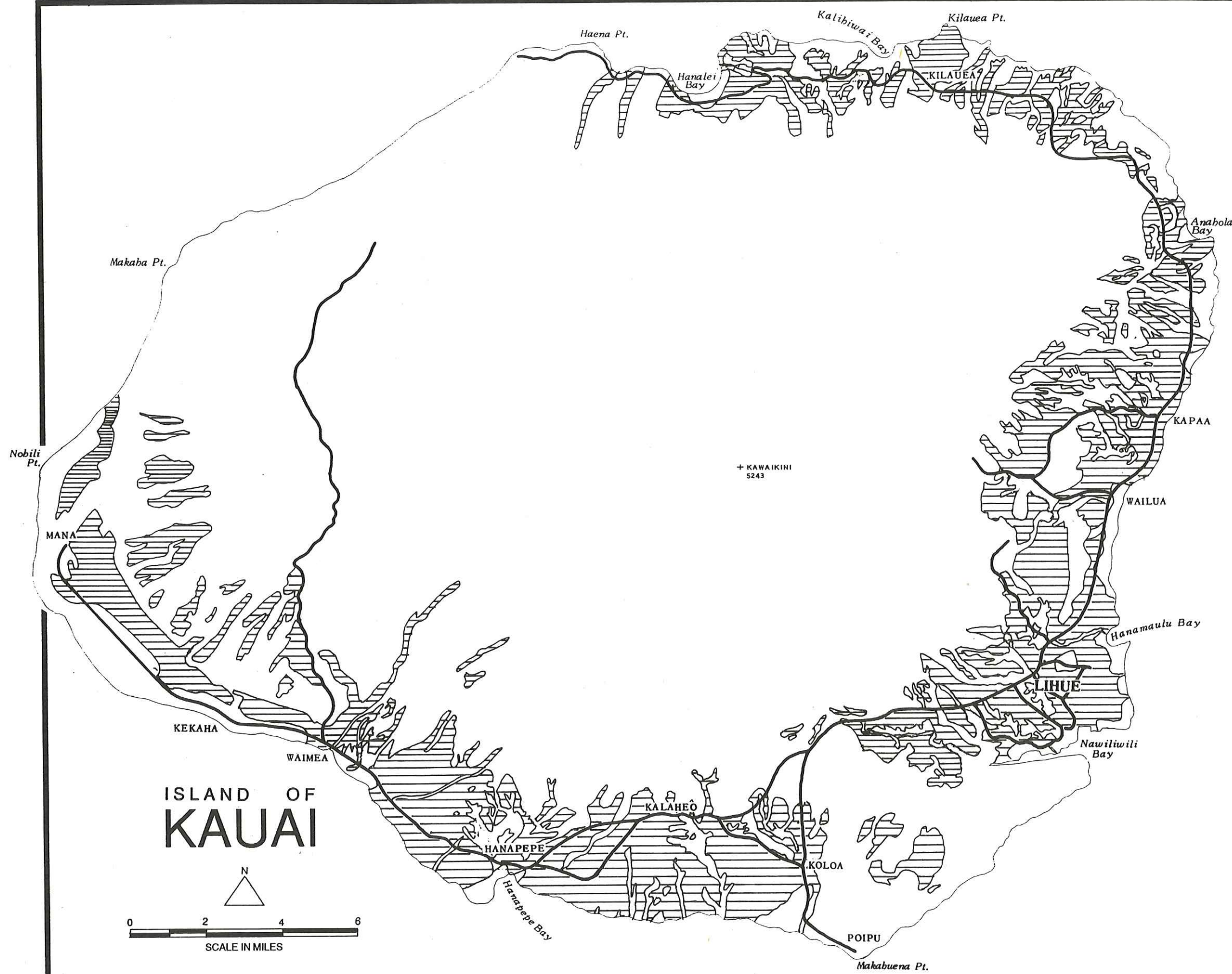
There is a concern that in the future sugar will no longer be a stable economic base due to unfavorable prices and the competition for land. An indication of this trend is Amfac's decision to withdraw 3,300 acres from the Lihue Plantation by 1993.<sup>41</sup> Because of this uncertainty, there is a need for the additional development of diversified agriculture.

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<sup>41</sup> Deloitte and Touche, Agricultural Resources Study, January 1991, pp. 2-22.



Figure 5  
**“A” & “B”**  
**AGRICULTURAL**  
**LANDS**



PREPARED BY OFFICE OF STATE PLANNING  
 1991

Source: Land Study Bureau



Presently, diversified agricultural pursuits include coffee, guava, taro, macadamia nuts, tea and papaya. Papaya production experienced a large drop since 1984 when production was at a high of 11.0 million pounds. In 1989, that figure was just 1.0 million pounds. This drop is primarily due to the lack of a treatment and packing plant. The County's 20 papaya growers want to use State and private funds to build a \$2.0 million dry air treatment plant to make the papayas suitable for export.

One of the major issues facing Kauai agriculture in general is the availability of labor. Over the past several years, the resorts have lured workers away from agriculture, forcing sugar plantations and other operations to hire workers from out of State. At the Lihue Plantation, there is discussion of filling half of the vacancies with workers from the People's Republic of China. KAI and Hanalei taro farmers already employ workers from the Federated States of Micronesia.<sup>42</sup> Also contributing to the shortage is the increased need for workers with technical and professional agricultural training.

Not only is the availability of labor a problem but the cost of labor as well is increasingly a concern for growers on Kauai. Some of the increase results directly from the shortage of labor. Employers who import labor must arrange for the housing and transportation of these workers. For profitable operations, there are additional labor costs as workers want to share in the success by receiving pay increases.

Besides labor, the availability of land for diversification is a major agricultural issue on Kauai and throughout the State. While there are sufficient amounts of agriculturally zoned lands, much of it is controlled by the sugar plantations, who for the most part are leasing from private landowners or the State. The opportunity to grow crops besides sugar is therefore limited.

#### Sugar Industry\*

Five sugar plantations operate in Kauai County. In 1989, their average yield was 11.77 tons per acre, slightly higher than the industry average of 11.57 tons per acre.

Sugar company data for Kauai are listed as follows:

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<sup>42</sup> Ibid.

\*This assessment reflects pre-Iniki conditions.

Table 11. KAUAI SUGAR COMPANIES

<u>Company</u>	<u>Owner</u>	<u>Cultivated Acreage in 1987</u>
Kekaha Sugar	Amfac/JMB Hawaii	8,375
Lihue	Amfac/JMB Hawaii	14,807
McBryde	A & B	12,312
Olokele	C. Brewer	4,809
Gay & Robinson	Gay & Robinson	2,695
TOTAL		<u>42,998</u>

Source: Decision Analysts Hawaii, Inc., Hawaii's Sugar Industry and Sugarcane Lands: Outlook, Issues and Options, April 1989.

McBryde Sugar Company has not been profitable for much of the last decade and remains a high cost, low-yielding plantation. The reasons for this are a lack of irrigation in many areas and poor agronomic conditions. Between 1985 and 1990, McBryde's cultivated acreage declined from 12,512 acres to 9,957 acres.

Because sugar has not been profitable, the majority of future capital expenditures will go toward diversified agriculture. McBryde already has approximately 3,000 acres in coffee and 575 acres in macadamia nuts. It is expected that 2,255 acres of the 2,957 total fee acres under sugar cultivation by McBryde will be converted to coffee over the next four to five years.

The remainder of McBryde's cultivated fee acreage, 702 acres, are targeted for urban development. The largest development is the Kukuiula project in Poipu. This single- and multi-family residential project will use 630 acres of land presently in sugar cultivation. The withdrawal of these lands is expected to occur over a ten-year period beginning in 1995. In addition, the Port Allen/Eleele expansion project will require 72 acres of current sugar lands for mixed urban uses. The projected withdrawal date for these lands is 1993. These conversions represent 12 percent of the total acreage under McBryde's control on Kauai.

Continued productivity improvements, improved cane varieties, availability of skilled and unskilled labor, community and governmental support, reasonable environmental requirements, support of labor unions, availability of capital are factors (aside from acreage) that are essential for McBryde to remain economically viable.<sup>43</sup>

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<sup>43</sup> Deloitte and Touche, Agricultural Resources Study, January 1991, pp. 3-1, 3-2, 3-10.

The Olokele Sugar Company in West Kauai is one of Hawaii's highest yielding and lowest cost plantations primarily due to the area's good agronomic conditions. Yields have declined somewhat since 1985, but was still at 13.10 tons per acre as of 1989.

Olokele controls 5,162 acres on Kauai, 4,736 of which are under cultivation. This acreage is the maximum amount that could be economically cultivated. The Robinson family who owns 13 percent of Olokele, is the lessor of 4,083 of these acres. The remaining 1,079 acres are leased to the company by the State of Hawaii.

Because of the profitability of these lands, C. Brewer, 87 percent owner of Olokele, plans to remain in sugar at this plantation. To continue to be economically viable, the availability of irrigation water and affordable housing and the continuation of sugar price supports have been cited as essential factors.<sup>44</sup>

A \$1.2 million wet scrubber necessary for compliance with the Clean Air regulation is one of the major capital improvements planned at Olokele. Also being considered are increased power generation and a new centrifugal station.

The Gay & Robinson plantation is Hawaii's smallest and most productive sugar operation. In 1990, G&R had 2,600 fee acres in cultivation. During the five-year period 1985-1989, the plantation's yield averaged 16.2 tons per acre.

The high yield is one of the reasons for G&R's profitability. Other reasons are inexpensive water and low labor costs. Because the plantation is not unionized, G&R is able to keep labor costs to below the typical 50 percent of total costs. For now, no major capital improvements or crop expansions are planned.<sup>45</sup>

Lihue Sugar is one of Amfac's largest plantations with 14,604 acres under cultivation. Lihue has been experiencing financial difficulties over the past several years as its yield declined to a State low of 7.78 tons per acre in 1989. Over the past four years, Lihue Sugar experienced a \$30 million operating loss.

Because of these losses, Lihue has decided to withdraw 23 percent of its land from sugar over the next two years. It is hoped that this reduction will improve productivity and curb losses by roughly 30 percent.

The State Department of Agriculture is looking into developing the County's first agricultural park at one of several sites, including the Kealia-Anahola area.

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<sup>44</sup> Ibid., pp. 3-12.

<sup>45</sup> Ibid., pp. 3-14, 3-26.

Several other Lihue Sugar sites are being considered for conversion to urban uses. These lands are at Puhi (about 350 acres), Hanamaulu (about 1,000 acres), and Kapaa (about 500 acres).

Kekaha Sugar is another Amfac subsidiary. Kekaha is a small (8,420 acres) high-yielding plantation. In 1989, its yield was 12.78 tons per acre. Kekaha leases most of its lands from the State of Hawaii including the Department of Hawaiian Home Lands. These leases expire in 1993 and the future of the mill is contingent on extension or re-negotiation of these leases.<sup>46</sup>

At least 400 acres are known to be targeted for withdrawal from sugar cane cultivation. These lands are leased to Kekaha Sugar by Kikiaola Land Company, Ltd. Kekaha Sugar has been informed of this plan by Kikiaola Land Company and does not believe it will have a serious effect on their operations.<sup>47</sup>

### Analysis of Agricultural Lands

The sugar industry provides 15.3 percent of the jobs on Kauai (3,490 direct and indirect jobs). It generates approximately \$79 million in export earnings and supplies 35.7 percent of the electricity for the island. With approximately 42,998 acres in sugar cane in 1987, any changes in this industry will have major impacts on land use, economic and social conditions on Kauai.

The sugar industry is facing major challenges in this County as well as other Counties of the State. Lihue and McBryde Plantations have suffered from low yields. The future of Kekaha Sugar after its leases expire in 1993 is uncertain.

Nonetheless, sufficient agricultural lands need to be retained in the Agricultural District to assure the continued viability of the sugar industry and the growth of diversified agriculture. While some urban expansion into agricultural lands, particularly sugarcane lands, is anticipated, care must be taken such that this encroachment does not jeopardize existing operations. The sugar industry provides significant contributions to the State including revenues, jobs, an alternate source of energy, and greenery and open space.

Agricultural goals include maintaining important lands in the Agricultural District unless overriding public interest dictates otherwise. It is further recommended that diversified agricultural activities be encouraged on agricultural land not required for sugar cane, such as the guava orchards in Kilauea and macadamia and coffee orchards in Koloa-Poipu.

No additions to the Agricultural District are recommended as there are sufficient lands in the district to meet agricultural production goals.

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<sup>46</sup> Decision Analysts Hawaii, Inc., Hawaii's Sugar Industry and Sugarcane Lands, Outlook, Issues and Options, April 1989, pp. 10-1 and 10-2.

<sup>47</sup> Letter to OSP from Michael A. Faye, Kikiaola Land Company, Ltd., May 8, 1992.

## X. CONSERVATION DISTRICT

### Watersheds

The quantity and location of rainfall dictate the quantity and quality of groundwater and surface water on Kauai. There is tremendous variation in the amount of rainfall at various locations on the island with the windward side of the island being the wettest. On Mount Waialeale, mean annual rainfall is more than 400 inches, while at other locations on Kauai, the figure is 20 inches. The USGS estimates groundwater recharge is 30 percent of rainfall.

The Hawaii Water Code and the State Water Resources Protection Plan call for increased protection of watersheds. The State Water Resources Protection Plan finds that "adequate management" and control of watersheds is a prerequisite for our two major concerns--retaining sufficient acreage of watersheds to ensure adequate infiltration and protecting the quality of our raw water.

Watersheds on Kauai are already well-protected by the Conservation District. Only at the Halelea Forest Reserve at Waioli and Moloaa Forest Reserve in Papaa is it recommended that additional lands be reclassified from the Agricultural to Conservation District for watershed protection.

### Forest Reserves

Kauai has 82,390.7 acres within the State Forest Reserve System managed by the Department of Land and Natural Resources. These areas provide important benefits such as enhancing and protecting watersheds, providing habitats for rare and endangered species, protecting native forests, increasing recreational opportunities, and allowing forestry uses. The Kauai forest reserves range in size from Na Pali Kona's 41,528.1 acres to Kalepa's 678.6 acres. Most forest reserve lands are located in the Conservation District. However, two areas which were added to the Forest Reserve System in 1990 are in the Agricultural District. These areas include small portions of the Halelea Forest Reserve and Moloaa Forest Reserve and are recommended for inclusion in the Conservation District. The Halelea Forest Reserve portions are being recommended as part of the Waioli Stream and Papalihala Marsh recommendation.

### Public and Private Protected Natural Areas

Many of the State's outstanding natural, scenic and cultural treasures, recreation sites and wildlife habitats are on lands which are part of specially preserved systems. These include State Natural Area Reserves, Marine Life Conservation Districts, National Parks, U.S. Fish and Wildlife Refuges and Nature Conservancy Preserves.

Natural Area Reserves and Marine Life Conservation Districts. The Board of Land and Natural Resources designates Natural Area Reserve System (NARS) sites. These sites were established to protect Hawaii's rare and endangered species from non-native plants and animals as well as from human activities. It appears that all NARS sites on Kauai are within the Conservation District.

The Kuia NAR is located in the Waimea-Kekaha planning area. The rare red-flowered Hawaiian Cotton is one of the endemic plants found here. This Reserve is threatened by animals, weeds, fire and marijuana cultivation.

In addition, five sites have been identified as candidate NARS in this planning area. They are:

- Makaha-Kuauhao-Haeleele Gulches: Rare dryland and mesic forest communities are found here. Large areas of the site are severely degraded.
- Puukapele: This area is part of Kokee State Park and is believed to have a rare type of dry koa forest community.
- Waimea Canyon: The iliau shrub lands known only from West Kauai, are found here. This area is presently within a State park and a forest reserve.
- Namolokama: Pristine montane wet forests and bogs exist in this area which is one of the last pig-free natural areas in the State. Steep topography provides natural protection.
- Kuia (extension): Rare dryland forests not included in the existing Kuia NAR would be part of this makai extension.

Except for the Kuia extension, all candidate NARS sites are within the Conservation District. It is unclear whether or not the Kuia extension would fall in the Conservation District as well.

In the North Shore planning area, there is one established NARS and two candidate NARS sites. The existing Hono O Na Pali NARS includes rare coastal plants and nine native communities. The candidate NARS sites are:

- Halelea: This area contains a unique Kauai-endemic loulu forest community and an intact ohia wet forest.
- Upper Poomau-Koaiea Canyon: Mesic lama forests containing many rare tree species are found in the mid and upper portions of the canyons. The lower sections are substantially degraded.

Portions of Halelea and all of Upper Poomau-Koaiea Canyon are in the Conservation District.

At the present time, there are no Marine Life Conservation Districts on Kauai.

National Parks and U.S. Fish and Wildlife Refuges. There are no National Parks on Kauai. There are three National Wildlife Refuges (NWR)--Hanalei, Huleia and Kilauea Point. They are located within the State Agricultural District. Hanalei NWR and Huleia NWR are recommended for reclassification to Conservation because of their association with Special Streams in addition to their wetland values.



Figure 6

# FEDERAL, STATE AND PRIVATE RESERVES, REFUGES AND PRESERVES

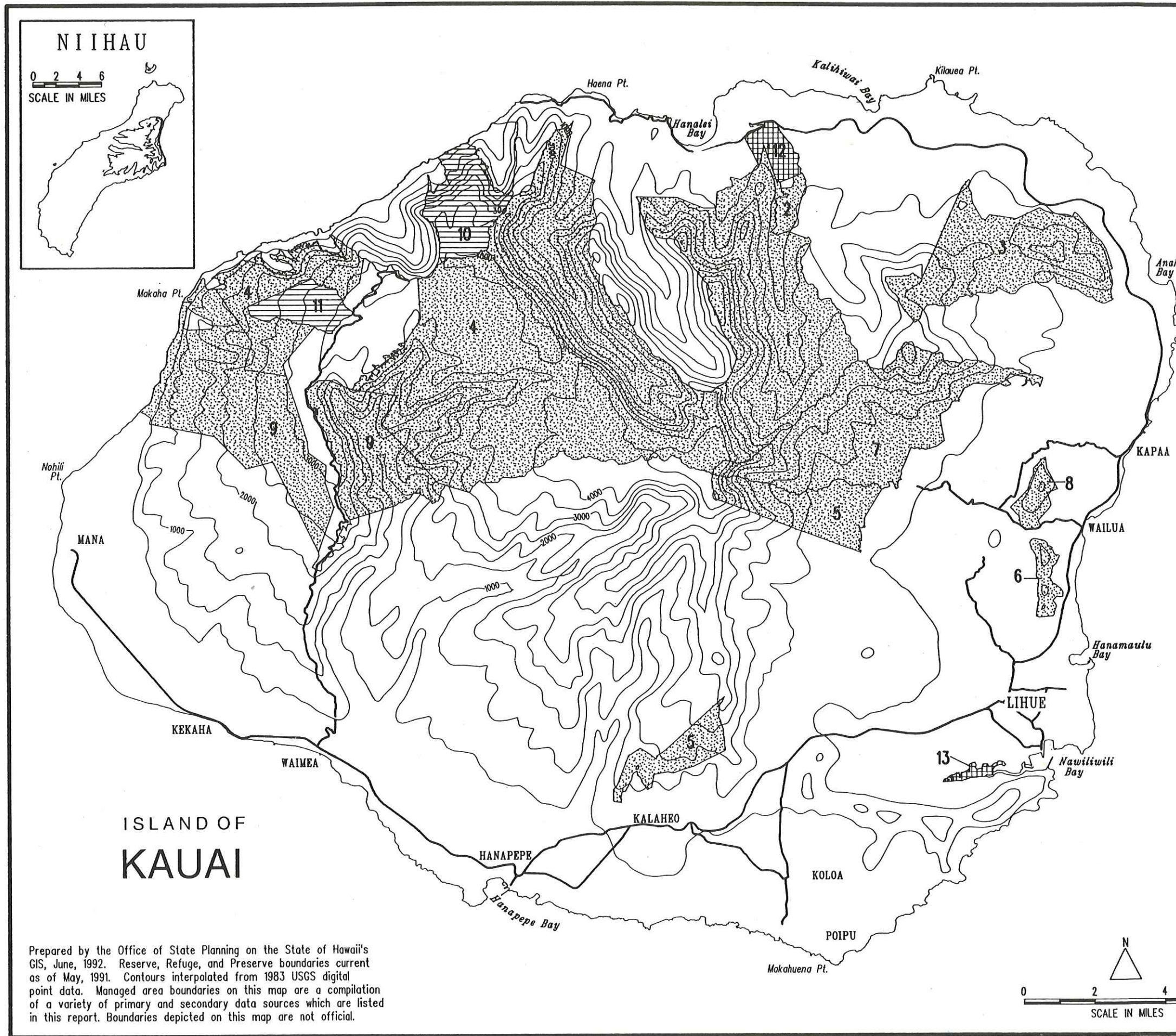
-  Forest Reserves
-  Natural Area Reserves
-  The Nature Conservancy Holdings
-  Wildlife Refuges
- 500 Ft. Contours
- Major Roads

FOREST RESERVES	MAP-ID
Halelea Forest Reserve	1
Hanaiei Forest Reserve	2
Molooa Forest Reserve	3
Na Pali Kona Forest Reserve	4
Lihue Koloa Forest Reserve	5
Kalepa Forest Reserve	6
Kealia-Lihue Koloa Forest Reserve	7
Nonou Forest Reserve	8
Puu Ka Pele Forest Reserve	9

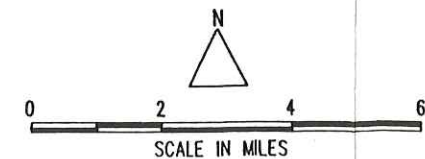
NATURAL AREA RESERVES	MAP-ID
Hono O Na Pali Natural Area Reserve	10
Kuia Natural Area Reserve	11

WILDLIFE REFUGES	MAP-ID
Hanaiei River Wildlife Refuge	12
Huleia Wildlife Refuge	13
Kilauea National Wildlife Refuge	Not Mapped

THE NATURE CONSERVANCY	MAP-ID
Kaluaonu Preserve	Not Mapped



Prepared by the Office of State Planning on the State of Hawaii's GIS, June, 1992. Reserve, Refuge, and Preserve boundaries current as of May, 1991. Contours interpolated from 1983 USGS digital point data. Managed area boundaries on this map are a compilation of a variety of primary and secondary data sources which are listed in this report. Boundaries depicted on this map are not official.





The Nature Conservancy Preserves. The Nature Conservancy of Hawaii leases the land in the Kaluahonu Preserve in southeast Kauai. The preserve is the largest privately-owned nesting site for the Newell's shearwater. This preserve is closed to the public. The preserve is within the Conservation District.

### Native Ecosystems and Rare Species

Hawaii has flora and fauna which are found nowhere else in the world. The State's volcanic origin, distance from other land masses, diversity of its physical environments and many other factors have resulted in the evolution of flora and fauna to meet their special environments.

The State of Hawaii has approximately 80 endangered species. Among these are great species such as the whales, and diminutive species such as the forest birds referred to as honeycreepers. Many more species are classified as threatened or appear on State lists as endangered or threatened.

Approximately 75 percent of species extinctions recorded in the United States has occurred in Hawaii. As of May 1991, 25 percent of all plants and birds on the endangered species list in the United States is found in Hawaii. Within the next two years, an additional 100 Hawaiian plants are expected to be added to the endangered species list by the U.S. Fish and Wildlife Service.

The attached maps show the locations of rare species. Information regarding the location of rare and endangered species has been provided by The Nature Conservancy's Hawaii Heritage Program (HHP). The data points on the workshop maps distinguish between older, often historical information (pre-1960), and more recent observations (1960-1990).

The HHP data base is dependent on the research and observations of many scientists and individuals. In most cases, this information is not the result of comprehensive site-specific field surveys and is not confirmed by HHP staff. Many areas in Hawaii have never been thoroughly surveyed, and new plants and animals are still being discovered. Hence, the data base information provided here should never be regarded as final statements about the resources present, or substituted for on-site surveys required for environmental assessments. Data provided by HHP do not represent a position taken by The Nature Conservancy of Hawaii.

Bird habitat ranges have been digitized from maps in the USFWS Hawaii Forest Bird Recovery Plans. The "bird habitat ranges" shown on the maps in this report represent a combination of individual ranges.

For these maps, a "managed area" was defined as an area that is being managed to protect its biological resources under legal mandates and authority or through management plans and activities. The maps include as managed areas: National Wildlife Refuges (NWS), National Parks (NP), and National Historic Sites (NHS); State Forest Reserves (FR), Natural Area Reserves (NAR), Marine Life Conservation Districts (MLCD), Wildlife

Sanctuaries, Plant Sanctuaries, and selected State Parks; and privately-owned or managed preserves or watersheds. State Game Management Areas (GMA) were not included because these areas require further investigation and boundary delineation. The majority of State Parks were not included because these areas are not managed specifically for their biological resources.

The managed area boundaries, specifically those of the State FR, NAR, and MLCDD, are still preliminary in nature. These boundaries were drafted from digital information from the U.S. Geological Survey and a variety of base maps with varying scales. Assistance was provided by staff from the Division of Forestry and Wildlife (DOFAW), Department of Land and Natural Resources, on each island.

The Nature Conservancy assisted OSP in a series of workshops attended by biologists and others with field or local knowledge of significant biological resources, in order to identify the locations of these resources. The findings of these workshops are presented in the Proceedings of the Native Ecosystems and Rare Species Workshops, 1991.

In the Proceedings, 19 sites believed to contain significant biological resources were identified outside of the current Conservation District on the island of Kauai. Many of the areas were identified from historic records, and further study is needed to determine the current status and significance of the resources present.

A majority of the sites identified on Kauai are in the lowlands and include wetlands, coastal buffers for nesting seabirds, offshore reefs, and the lower reaches of streams.

Along the north shore of Kauai, nine streams (Lumahai, Waioli, Hanalei, Waipa, Kalihiwai, Kilauea, Moloaa, Papaa, and Kapaa Streams) provide habitat for a full complement of native stream species. The wetlands associated with Lumahai, Waioli, Hanalei, Kalihiwai, and Kilauea Streams provide habitat for all four endangered Hawaiian waterbirds: coot, gallinule, koloa, and stilt. They also protect the associated embayments, streams, and estuaries from siltation and other pollutants, and they provide protection to the surrounding communities from flooding in a highly flood-prone area.

Coastal bluffs along the north shore provide habitat for Newell shearwaters, wedge-tailed shearwaters, Laysan albatross, white-tailed tropic birds, and other native seabirds. Monk seals are found all along the coast and haul out regularly around the Kilauea Point area. Kaupea Beach, adjacent to Kilauea Point, provides habitat for sea turtles and spinner dolphins in the nearshore waters.

The majority of Kauai's native forests are already within the Conservation District. Two notable exceptions are a small section of the Moloaa Forest Reserve on the eastern slopes of the island, and native forest above Waimea, from Manuahi to Makuone.

The coastline from Wailua south to the Huleia Stream contains streams and many scattered wetlands that provide habitat for all four endangered Hawaiian waterbirds. Monk seals and sea turtles also feed along the coast.

The Mahaulepu coastline in the southeast was identified as one of the best areas of native coastal vegetation on Kauai. The Mahaulepu coastline and beaches provide habitat for endangered nene and monk seals, threatened green sea turtles and native seabirds, and caves in the area support extremely rare invertebrates. There are also caves at the Kiahuna Golf Course and Koloa. Other sites near Koloa include Waita Reservoir which was identified as one of the largest freshwater habitats for endangered waterbirds in the State. The National Tropical Botanical Garden also provides habitat for native stream species and waterbirds, and contains rare plants throughout the garden.

The southern coastline from Kukuiula Bay to Salt Pond Park provides habitat for monk seals and sea turtles. Wedge-tailed shearwaters are frequently seen on the bluffs, while endangered Hawaiian hoary bats are seen all along the coastline. The only other area outside of the Conservation District on Kauai that was identified as habitat for native Hawaiian bats was Puu Opaie on the western slopes of Waimea.

In the southwestern portion of the island, the Waimea and Makaweli Rivers contain native stream species. Mana Reservoir and the irrigation systems from Waimea to Polihale provide important habitat for all four endangered Hawaiian waterbirds and migratory waterbirds and shorebirds and, at Kaweiele on the coast, the State is establishing a wildlife sanctuary for endangered waterbirds.

The sites identified in the report were assessed and examined by OSP (see Table 12). In general, they fell into two categories--those that had been studied and/or surveyed or were known to contain significant biological resources and those that were suspected to contain significant biological resources but needed further work to verify these resources. Those which fell into the former category and met other criteria established for the Conservation District as discussed in this chapter, e.g., special streams, selected wetlands, etc., were recommended for inclusion into the Conservation District.

### Native Forests

Act 82, SLH 1987, requires that high quality native forests be placed within the Conservation District. The Act states that the Legislature finds that Hawaii has several rare species of plants, animals and fish that are found nowhere else in the world. The Legislature also finds that Hawaii has sizable areas of high quality native forests which are not in the Conservation District. To the maximum extent possible, it is the intention of the Legislature to preserve Hawaii's unique native flora and fauna by reclassifying native forests to the Conservation District.

The majority of Kauai's native forests are in the Conservation District. However, two forest areas have been recommended for inclusion into the Conservation District--the Halelea Forest Reserve and Moloaa Forest Reserve. The Halelea Forest Reserve portions are being recommended as part of the Waioli Stream and Papalihala Marsh recommendation. A native forest has also been identified in the Olokele Valley (Manuahi-Mokuone). However, further work is required to identify the boundaries of this resource.

Table 12

Assessment of Areas Identified, Known or Suspected  
to Contain Biological Resources  
Island of Kauai

<u>Site</u>	<u>Assessment</u>	<u>Recommendation</u>
Lumahai	High quality habitat for aquatic species and endangered waterbirds. 1, 2	Reclassify to Conservation.
Hanalei	Numerous wetlands and stream habitat for all four endangered waterbirds. 1, 2	Reclassify portions to Conservation.
Lower Kalihiwai	Wetland habitat for all four endangered waterbirds, major nesting area for Newell shearwaters, high quality stream. 1	Wetlands already in Conservation. Portion of river not in Conservation should be reclassified to Conservation.
Kilauea	Coastal bluffs provide nesting habitat for threatened and endangered seabirds, monk seal.	Reclassify Kilauea Point NWR to Conservation.
Northeast Coastline	Although the coast is reported to provide nesting area for several seabird species, further information is needed on the location and significance of these sites and the amount of buffer area needed to protect these sites. Legislation to mandate increased shoreline setbacks would provide protection. Four high quality streams--Moloaa, Papaa, Anahola and Kapaa--are present. 1	Reclassify portions containing stream resources not already in Conservation to Conservation.
Moloaa Forest Reserve	Native forest, endangered Hawaiian coots at gauging stations and reservoirs.	Reclassify portion that is forest reserve addition to Conservation. Leave the man-made reservoirs in the Agricultural District.

1 HSA - Hawaii Stream Assessment

2 Hawaiian Waterbirds Recovery Plan, USFWS, 1985

Table 12 (cont.)

Assessment of Areas Identified, Known or Suspected  
to Contain Biological Resources  
Island of Kauai

<u>Site</u>	<u>Assessment</u>	<u>Recommendation</u>
Wailua/ Huleia Coastline and Streams	Coastline contains two large embayments, four streams, wetlands (Huleia NWR, Niumalu, Nawiliwili, Hanamaulu, Wailua Correctional Facility and Nukolii). Streams with outstanding aquatic or riparian values according to HSA or wetlands identified in recovery plans are recommended for reclassification. Other wetlands may also be important and should be assessed if developments are proposed. 1	Reclassify portions to Conservation.
Mahaulepu Coastline	Coastal strand vegetation, native seabird habitat, rare invertebrates, lithified sand dunes, limestone caves, geologic, scenic and archaeological resources.	Coastal strand vegetation, lithified sand dunes and Newell shearwater habitat appears to be already within the Conservation District. Further information needed on archaeological and scenic resources. See Area of Critical Concern.
Waita Reservoir	Largest freshwater habitat for endangered waterbirds in the State. 2	Reclassify to Conservation.
Kiahuna Golf Course	Lava tube caves with native insects and native plants on recent 'a'a flows. Further study needed to determine best way to treat underground resources.	No change.
Omao/ Waikomo Stream	Estuary and stream contain native species and some native riparian vegetation but does not meet special stream criteria.	No change.

1 HSA - Hawaii Stream Assessment

2 Hawaiian Waterbirds Recovery Plan, USFWS, 1985

Table 12 (cont.)

Assessment of Areas Identified, Known or Suspected  
to Contain Biological Resources  
Island of Kauai

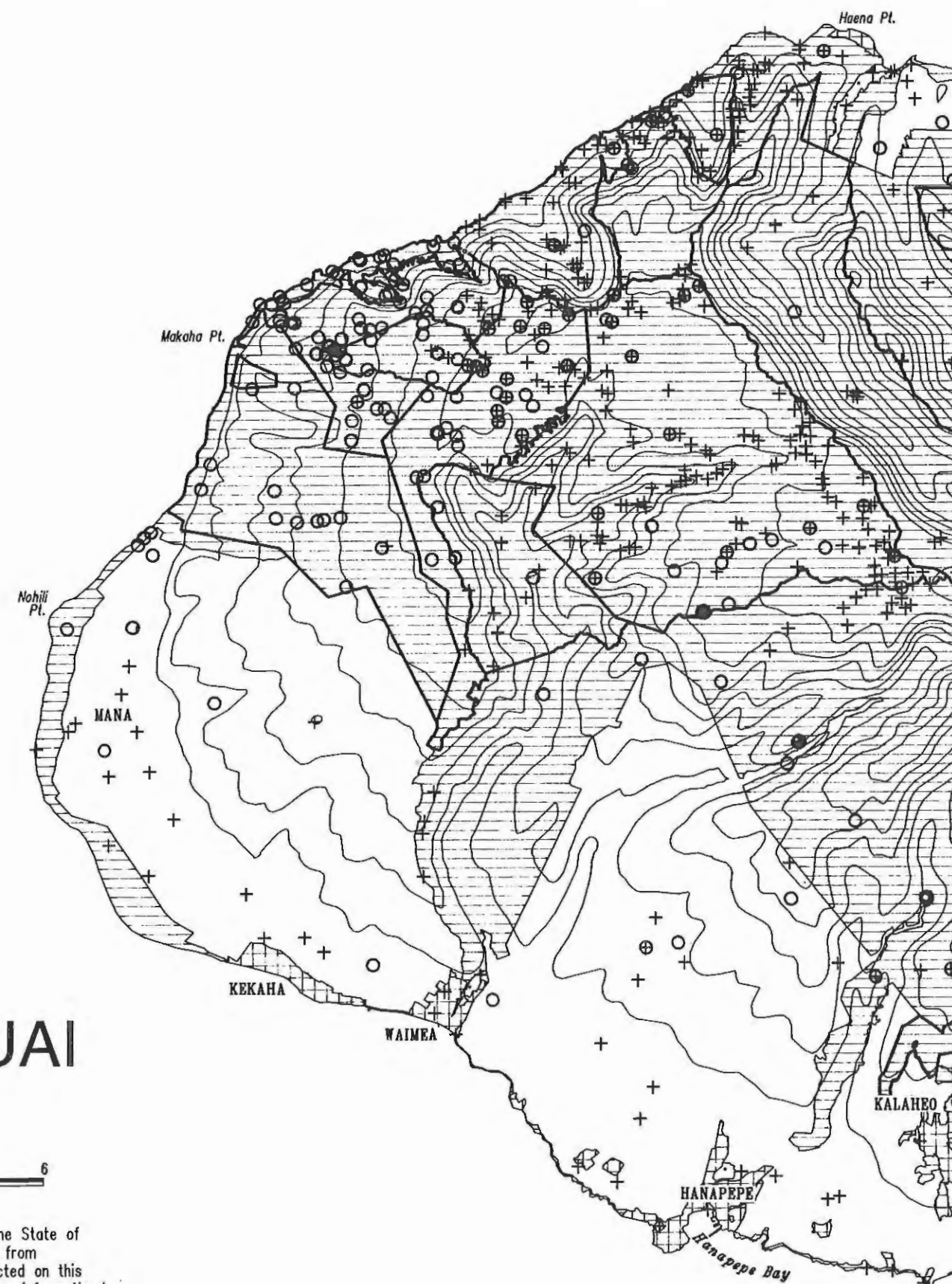
<u>Site</u>	<u>Assessment</u>	<u>Recommendation</u>
National Tropical Botanic Garden (NTBG)	Some rare native plants, waterbirds and native gobies. Garden currently being managed to protect native resources.	No change.
Lawai/Hanapepe Coastline	Major turtle nesting area (Lawai Bay, already in Conservation District), monk seal hauling out areas (Mahaulepu to Port Allen). Further information needed on the amount of buffer area needed to protect these species. Legislation to mandate increased shoreline setbacks may be the approach to pursue.	Reclassify portions to Conservation.
Olokele Valley (Mauahi to Mokuone)	20 rare plant taxa known historically in Olokele Valley, native forest extends down to approximately 2,500 feet (perhaps lower). Further study required.	No change.
Waimea/Makaweli River	Provides habitat for native aquatic species and plants. Not rated as outstanding for aquatic resources. 1	No change.
Mana Reservoirs Associated Wetlands	There are a number of reservoirs which provide waterbird habitat. The locations are not precisely known. Any change in land use should be assessed in terms of impact on wetlands. DOFAW will be managing part of the area for wetland habitat.	No change.
Kawaiiele Sanctuary	Provides habitat for all four endangered Hawaiian waterbirds. DOFAW is establishing a wildlife sanctuary for waterbirds at this site.	No change.
Puu Opae	Sparse native koa and a'ali'i, Hawaiian hoary bats, area grazed and eroded. Further survey work needed to determine extent of resources.	No change.

1 HSA - Hawaii Stream Assessment



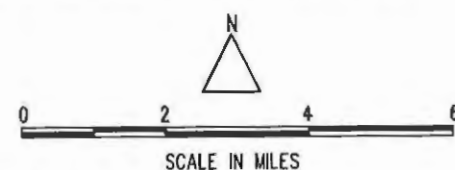
Figure 7

# NATIVE ECOSYSTEMS AND RARE SPECIES



- Agricultural District
- ▨ Conservation District
- ⋯ Rural District
- ▤ Urban District
- 500 Ft. Contours
- Managed Areas
- Rare and Endangered Species (pre-1960) Hawaii Heritage Program
- + Rare and Endangered Species (post-1960) Hawaii Heritage Program

## WEST KAUIAI

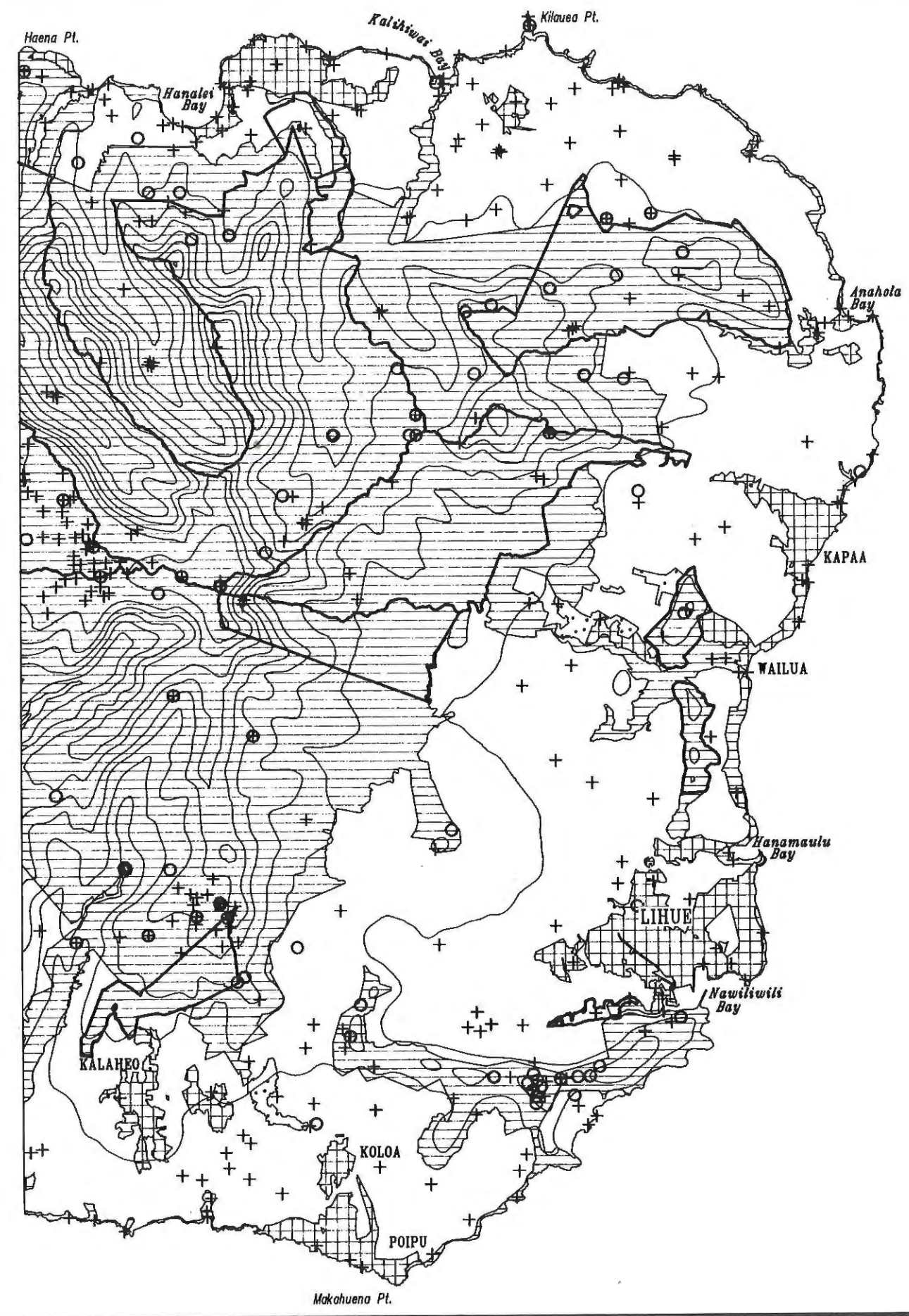


Prepared by the Office of State Planning on the State of Hawaii's GIS, June, 1992. Contours interpolated from 1983 USGS digital point data. Boundaries depicted on this map are not official. Species data provided for informational purposes only. See accompanying report.



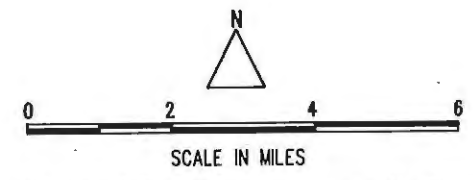
Figure 8

# NATIVE ECOSYSTEMS AND RARE SPECIES



- Agricultural District
- ▨ Conservation District
- ⊞ Rural District
- ▣ Urban District
- 500 Ft. Contours
- Managed Areas
- Rare and Endangered Species (pre-1960) Hawaii Heritage Program
- + Rare and Endangered Species (post-1960) Hawaii Heritage Program

## EAST KAUIAI



Prepared by the Office of State Planning on the State of Hawaii's GIS, June, 1992. Contours interpolated from 1983 USGS digital point data. Boundaries depicted on this map are not official. Species data provided for informational purposes only. See accompanying report.



## Critical and Essential Forest Bird Habitats

Ten species of native birds found in the forests of Hawaii have become extinct since Cook's first voyage to Hawaii. Eight others are on the U.S. Department of Interior's Endangered or Threatened Species List as of 1980.

The bird habitat range delineated on the West Kauai map identifies the area that would provide the necessary space for the continued existence and growth of the bird species. The area's vegetation is made up of wet, dense ohia forests and bogs scattered throughout. The essential habitat for endangered forest birds including the large Kauai thrush, small Kauai thrush, Kauai Oo, Kauai Akialoa, Kauai Nuku-puu, and Ou are found in the Alakai Swamp. The essential habitat of these forest birds is within the Conservation District and should be maintained in that district.

## Wetlands

Wetlands provide habitat for endangered waterbirds and migratory seabirds. They also help to control flooding and soil erosion while providing scenic, open space areas. The wetlands listed below are identified as important or sensitive in one or more of the following documents: State Conservation Lands Functional Plan; State Recreation Functional Plan; Hawaiian Waterbirds Recovery Plan; Hawaiian Wetlands National Wildlife Refuge Complex Master Plan; Wetlands and Wetland Vegetation of Hawaii; and Regional Wetlands Concept Plan:

- Hanalei National Wildlife Refuge (Agricultural District)
- Hanalei Fishpond (Conservation District)
- Hanalei Town Taro Fields (Agricultural District)
- Huleia National Wildlife Refuge (Agricultural District)
- Kilauea Point National Wildlife Refuge (Agricultural District)
- Ka Loko (Agricultural District)
- Lumahai Marsh and Pond (Agricultural District)
- Lumahai Valley (Agricultural District)
- Mana (unspecified area) (Agricultural District)
- Paradise Pacifica
- Princeville Golf Course (Urban District)
- Puu Poa (Urban District)
- Waioli Marsh (Papalihala Marsh) (Agricultural District)
- Waita Reservoir and Wetlands (Agricultural District)
- Waipa Valley (Agricultural District)
- Wailua-Opaekaa Valley area (Conservation District)
- Various basins
- Various reservoirs

In addition, the Proceedings of the Native Ecosystems and Rare Species Workshops identified several wetland areas on Kauai. They are listed below along with a summary of their characteristics.

- Lower Kalihiwai River: Provides habitat for native aquatic species and waterbirds. (Note: These wetlands are also identified in Wetlands & Wetland Vegetation in Hawaii, Elliot & Hall, 1977.)

- Northeast Coastline: Four high quality streams in the area, Moloaa, Papaa, Anahola, and Kapaa, contain native aquatic species. Kapaa Stream additionally contains native riparian vegetation. (Source: The Nature Conservancy of Hawaii, Proceedings of the Native Ecosystems and Rare Species Workshops, April 1991, pp. 11-19.)

In addition, discussions with the U.S. Fish and Wildlife Service have concluded that the entire complex of wetlands in the Hanalei area support the Hanalei Wildlife Refuge and the other nearby waterbird recovery areas. For this reason, wetlands beyond the boundaries of recovery habitat have been recommended for Hanalei.

Some of these identified wetlands are already in the Conservation District and should remain in that district. However, many wetlands are in the Agricultural District and, particularly on Kauai, agricultural land classification and use can be compatible with waterbirds and wetland areas, especially areas in taro or reservoirs. Therefore, wetlands which are in compatible agricultural use, are not subject to development pressures, do not contain Special Streams, and are not located in a flood zone or County Open district, are considered of lower priority for reclassification during the review. Therefore, the Mana Reservoir and man-made reservoirs such as Kaloko were not recommended for reclassification. However, should land uses change in the future, these wetlands should be reclassified to Conservation. Waita Reservoir was the only reservoir which was proposed for reclassification to Conservation primarily because of its size and significance and because part of Waita is a natural wetland.

Four wetlands were recommended for inclusion into the Conservation District because of their association with Special Streams and/or the County "Open" designation--Lumaha'i, Waioli (Papalihala), Hanalei and Huleia. In addition, many of these areas are also located in a flood zone and County "Open" District. Puu Poa is being recommended for reclassification from the Urban District to the Conservation District because of potential development pressure and because it is a significant wetland.

There are other wetlands on Kauai but it was not possible to identify and evaluate all of these wetlands. However, these are important conservation resources and changes in use or land classification should be carefully evaluated.

#### Beaches and Coastal Areas

The Department of Land and Natural Resources rated principal swimming areas in Hawaii according to their significance. Kauai swimming beaches rated as having high statewide significance or high island-wide significance are: Kalalau Beach, Kee Lagoon, Maniniholo Bay, Tunnels Beach, Waikoko Bay, Hanalei Bay, Moloaa Bay, Papaa Bay, Kealia Bay, Wailua Bay, Lydgate Ocean Pool, Kalapaki Bay, Kipu Kai, Kamala Point Beach, Keoniloa Beach, Poipu Beach, Waiohai Beach, Sheraton Kauai Beach, Lawai Bay, Wahiawa Bay and Salt Pond Beach.<sup>48</sup>

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<sup>48</sup> Department of Land and Natural Resources, Statewide Recreation Resources Inventory, Principal Swimming Areas, 1987, pp. 107-112.

Table 13

## ASSESSMENT OF WETLANDS

Site	Existing SLU District	Use	Development Pressure	Contains Special Streams, In Floodzone or County Open District	Recommendation
Huleia NWR	Agricultural	Refuge	Yes	Special Stream, Open District	To Conservation
Waita Reservoir	Agricultural	Reservoir Recreation	Yes	Open District	To Conservation
Papalihala (Waioli) Marsh	Agricultural Urban	Taro, Grazing, Fal-low	Unknown	Portion in Open District	To Conservation
Puu Poa	Urban	None	Yes	No	To Conservation
Hanalei NWR	Agricultural	Refuge	No	Special Stream Open District	To Conservation
Hanalei Fishpond	Conservation	---	No	Floodway, Special Stream	No Change
Hanalei Town Taro Fields	Agricultural	Taro	Possible development pressure	Floodway and Floodzone, Special Stream	Meets Conservation criteria. See Area of Critical Concern
Hanalei Complex	Agricultural	Taro, grazing, buffalo ranch	Yes	Special Stream, Open District, Floodway, Flood zone	To Conservation
Lumahai Valley	Agricultural	Grazing, Farming	No	Special Stream, Open District	To Conservation
Mana	Agricultural	Not in use	No	No	No Change

(Table 13 cont.)

Paradise Pacifica	Less than 15 acres	Recreation	No	Special Stream	No Change
Princeville Golf Course	Urban	Recreation	Yes	No	No Change
Waipa Valley	Agricultural	Taro, Open Space	No	Special Stream, Open District	Meets Conservation criteria. See Area of Critical Concern
Wailua-Opaekaa Valley area	Conservation	---	No	Special Stream	No Change



Not mapped: PARADISE PACIFICA

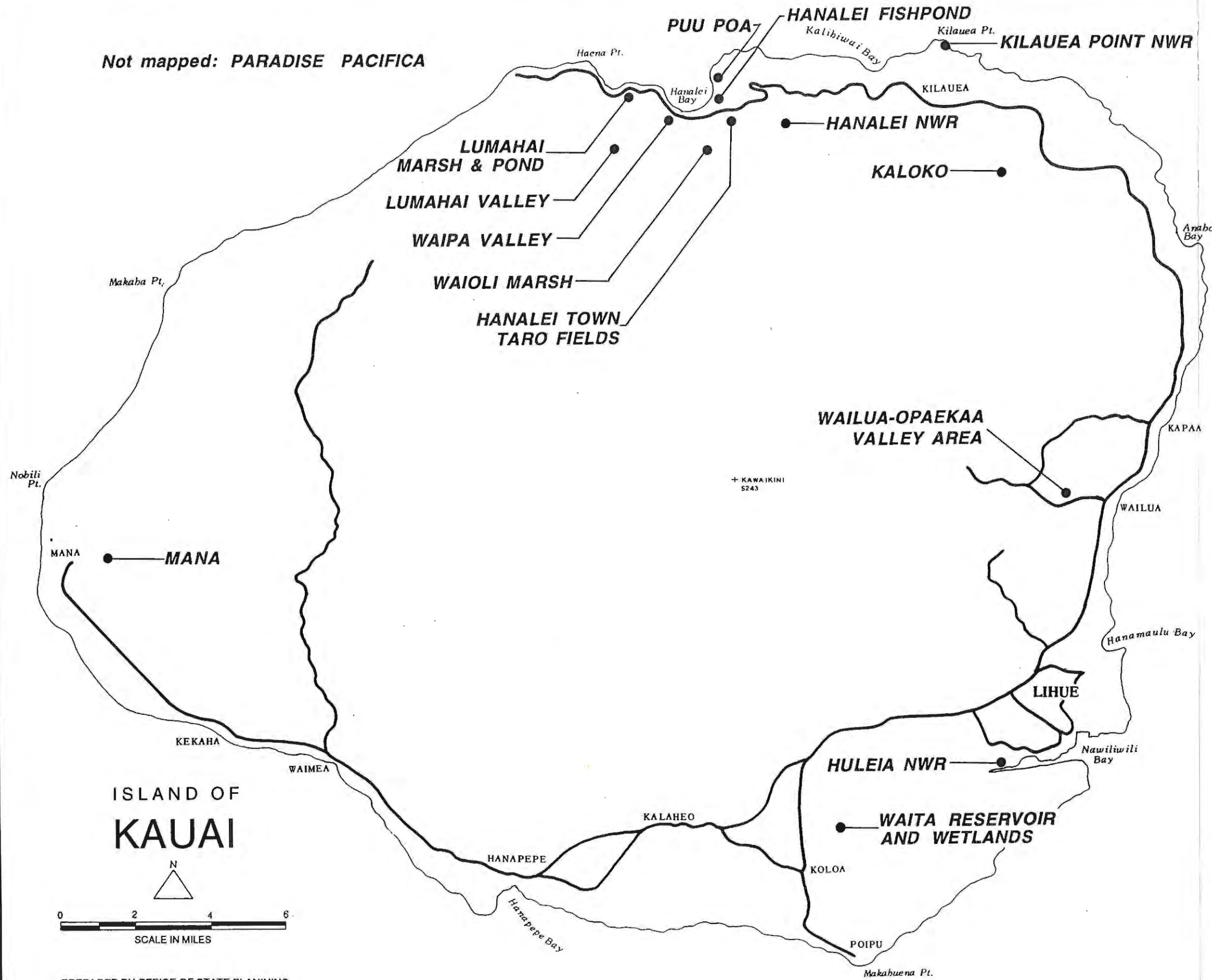


Figure 9

# WETLANDS AND WATERBIRD RECOVERY HABITAT

These wetlands are identified in State Conservation Lands Functional Plan (1990), Hawaiian Waterbirds Recovery Plan (1985), Hawaiian Wetlands National Wildlife Refuge Complex Master Plan (1985), Regional Wetlands Concept Plan: Emergency Wetlands Resource Act (1990), and/or State Recreational Functional Plan and Technical Reference Document.



The following coastal areas have high recreational value and have been recommended for reclassification to the Conservation District: Polihale Dunes; Kekaha Beach; Salt Pond Park; Palama Beach; Mahaulepu Coastline; portions of the coastline from Moloaa Bay to Kealia Stream; and portions of Wailua River State Park.

Beaches and coastal areas already in the Conservation District should remain in that district and are not recommended for reclassification to the Urban or Agricultural District during the boundary review.

### Streams

Freshwater streams have a multitude of values. They provide irreplaceable habitat for aquatic and riparian flora and fauna. They support and define estuarine ecosystems. They are the key to maintaining quality and productivity in our nearshore marine waters. Streams link the mountains with the sea. They carry the lifeblood of all of our living ecosystems. Their health is critical not only for the survival of the unique biota which they support, but also for the future welfare of human society in our isolated island environment.

The availability of freshwater is the quintessential commodity in human commerce and development. It is the primary determinant in defining the carrying capacity of our islands for plants, animals, and humans. If the carrying capacity is being exceeded, we would expect to see it reflected in a degradation of our stream habitats and a corresponding decline in our native freshwater biota. In fact, these trends are dramatically evident.

Urbanization and agricultural practices have severely altered the natural terrain in lower and middle elevations on all the major islands. Native ecosystems in these areas have been degraded.

Such unchecked development is reflected in obvious modifications to stream habitats such as impoundment, diversion, and channelization and less obvious but equally serious effects such as sedimentation and other changes in the nature of runoff into the streams. Chemical toxins, inorganic and organic nutrients, and solid wastes expelled by human society are weakening the basic structure of stream ecosystems. The native stream biota are now much less abundant than in the past, and the altered habitats have proven especially favorable for an eruption of alien species, which are further threatening the stability of the system. At the ocean end, the result is dying coral and declining fish populations.

All marine waters are protected by conservation zoning. This protection is meaningless, however, if the freshwater streams with which they are inextricably linked are not given equal consideration.

With the help of local stream experts and examples from various mainland states and municipalities, the following Conservation District stream protection options were developed.

The optimum solution identified is the protection of entire watersheds from activities that lead to increased sediment loads, pollution, and other harmful changes in flowing stream waters. Ongoing research supported by DLNR's Division of Aquatic Resources is indicating that our island stream ecosystems function differently than aquatic ecosystems in continental situations. Ours are simpler in structure and are absolutely dependent upon runoff from relatively natural areas. They lack features that elsewhere help to stabilize ecosystems when upsets occur. A disturbance at any point in a stream may echo throughout the stream, from the highest reaches to the lowest. Disturbances which might not be significant in a continental situation could cause a Hawaiian stream ecosystem to collapse. The ridge-to-ridge "watershed" approach would help stabilize these ecosystems and would offer native species the greatest chance of survival. It has been recommended for streams wherever possible in this report.

However, ridge-to-ridge Conservation District protection is not always possible due to existing land use activities. In these cases, we have recommended a 100-foot Conservation District corridor on both sides of streams as measured from the bank. A number of studies have found that natural corridors are effective in reducing the amount of pollution delivered to a waterway. A continuous strip of vegetation also provides habitat for wildlife along the stream, and when composed of tall shrubs, can protect a waterway from overheating due to sunlight<sup>49</sup>. The U.S. Department of Agriculture's Soil Conservation Service Conservation Reserve Program encourages the establishment of specially designed vegetative filter strips along water courses through cash and regulatory incentives to landowners. These areas are designed to absorb pollutants that could otherwise end up in the stream. Natural corridors can also absorb and help keep development away from flood waters. In addition, Conservation designation would provide for the regulation of uses next to the stream (e.g., grading, construction of residences and other structures) to help assure stream protection.

The Hawaii Stream Assessment defines perennial streams as "those which normally have surface flow year-round in all or part of their course, as opposed to intermittent streams which are normally dry during part of the year."<sup>50</sup> Although lowland portions of some streams may be dry during parts of the year, aquatic biologists are finding Lenticles in the upper reaches which means that recruitment appears to be occurring even though the stream may be seasonally dry.

This report recommends that Conservation District corridors be established along Special Streams. Special Streams were identified using the Hawaii Stream Assessment and input from stream experts and were defined as having outstanding aquatic or associated with waterbird recovery habitat. These

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49 Klein, Richard D., "Protecting the Aquatic Environment from the Effects of Golf Courses," May 1990.

50 Hawaii Cooperative Park Service Unit, Hawaii Stream Assessment, p. 9, December 1990).

are streams with known and documented outstanding resources. However, this does not mean that these are the only streams in need of protection. As field studies continue, undoubtedly additional streams with similar resources will be identified.

"With only five species comprising the native stream fish fauna, the loss of a single one would result in a dramatic reduction of diversity in Hawaiian freshwaters"<sup>51</sup>. These species are not yet on the brink of extinction, but the decisions made now will determine the future of all of our native aquatic organisms and ecosystems. Hawaii is in the fortunate position of being able to prevent the inexorable slide to extinction in aquatic ecosystems, if favorable decisions to protect essential habitat are made now, before the otherwise inevitable crisis stage arrives.

### Significant Scenic and Open Space Resources

Scenic and open space resources are vital for maintaining Hawaii's natural beauty and for enriching our quality of life. They are also important to the continued health of the visitor industry. Significant scenic and open space resources not already in the Conservation District have been recommended for inclusion in that district.

On Kauai, significant scenic resources are plentiful. The Nomilu Fishpond, one of only five natural lakes in the State, is one example. There is also the Pacific Tropical Botanical Gardens in Lawai Valley which cultivates rare tropical plants. The rim lands along the Wailua River provide scenic historical view corridors between the related heiau sites that include Malae Heiau. Other scenic resources include:

- Opaekaa Falls
- Nonou Mountains (Sleeping Giant)
- Fern Grotto
- Coconut Groves at Coco Palms Hotel and Coconut Plantation
- Wailua Falls
- Wailua River
- Views to Mt. Waialeale, Anahola and Kalepa Ridge
- Na Pali Coast
- Kalihiwai Valley
- Wet Caves near Haena Point
- Waimea Canyon
- Olokele Canyon
- Mahaulepu Coastline
- Spouting Horn
- Polihale Beach and Dunes
- Hanalei Bay
- Haupu Ridge
- Lumahai Beach
- Hanalei Valley Taro Fields
- Head of North Fork Wailua River

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<sup>51</sup> William S. Devick, et al, "Conservation of Hawaiian Freshwater Fishes," April 1992.

**Table 14**

**Special Streams:  
Stream Corridor Guidelines**

**Conservation District Stream Corridor Guidelines  
for lands in the Agricultural\* District**

1. Minimum 100 foot corridor except for channelized streams.
2. Conservation district protection was delineated from ridge-to-ridge for steep valleys (slopes over 20%) and those free of development.
3. If the valley was currently in an agricultural use that could be accommodated in a conservation district, then the conservation district was delineated from ridge-to-ridge. If not, then a 100 foot corridor on each side of the stream or a corridor that follows the flood delineation boundary or if associated with a wetland, a boundary encompassing the wetland and a buffer was recommended.
4. If a stream had no definable ridgeline or other identifiable boundary or there were numerous nearby residences, then a 100 foot corridor on each side of the stream or a corridor that follows the flood delineation boundary was recommended.
5. One hundred foot corridors were delineated for streams that only met the criteria for outstanding riparian values, determined in part by the presence of waterbird recovery habitat.
6. If a stream met the criteria necessary to warrant ridge-to-ridge conservation district protection, and the land was currently under the management of DLNR's State Parks Division, the final recommendation for land use districting and corridor determination was made by that agency.

\* Priority 1 Conservation District corridors are only proposed for streams in the Agricultural District. Corridors are proposed for areas in the Rural and Urban Districts as Priority 2 recommendations but will not be petitioned for reclassification in an effort to keep residential uses out of the Conservation District.

Table 15

## Special Streams: Kauai

Legend	
Special Stream Criteria	1. Outstanding Aquatic according to the Hawaii Stream Assessment 2. Outstanding Riparian according to the Hawaii Stream Assessment 3. High Quality Estuary according to OSP/Coastal Zone Management 4. Outstanding Aquatic according to the Hawaii Stream Assessment criteria using new information provided by DLNR or USFWS 5. Outstanding Riparian according to the Hawaii Stream Assessment criteria using new information provided by DLNR or USFWS * Not applicable here. Stream already in Conservation District.
Values	Characteristics that resulted in special stream designation
Land Use Districts	In order from mountain to ocean

Stream Name	Special Stream Criteria	Values	Land Use Districts	Land Uses	Recommendation
Awaawapuhi	*		Conservation		
Honopu	*		Conservation		
Nakeikionaiwi	*		Conservation		
Kalalau	*		Conservation		
Pohakuao	*		Conservation		
Waiolaa	*		Conservation		
Hanakoa	*		Conservation		
Waiahuakua	*		Conservation		
Hoolulu	*		Conservation		
Hanakapiai	*		Conservation		
Maunapuluo	*		Conservation		
Wainiha	1	Abundance and spawning of native aquatic species, presence of all four native species that are indicators of a good aquatic environment.	Conservation Rural	Rural residential	Conservation district corridors are not being proposed for land currently in the Rural District.
Lumahai	1,2	Abundance and spawning of native aquatic species, presence of all four native species that are indicators of a good aquatic environment. Plus, good diversity and habitat. Native forest, T&E birds, a large area of palustrine wetland and recovery habitat.	Conservation Agriculture Conservation	Pasture	Recommend the addition of all of the agricultural district to conservation.
Waipa	2	T&E birds, a large area of palustrine wetland and recovery habitat.	Conservation Agriculture	Taro, flowers	Recommend the area be considered an Area of Critical Concern.








Table 15 (cont.)

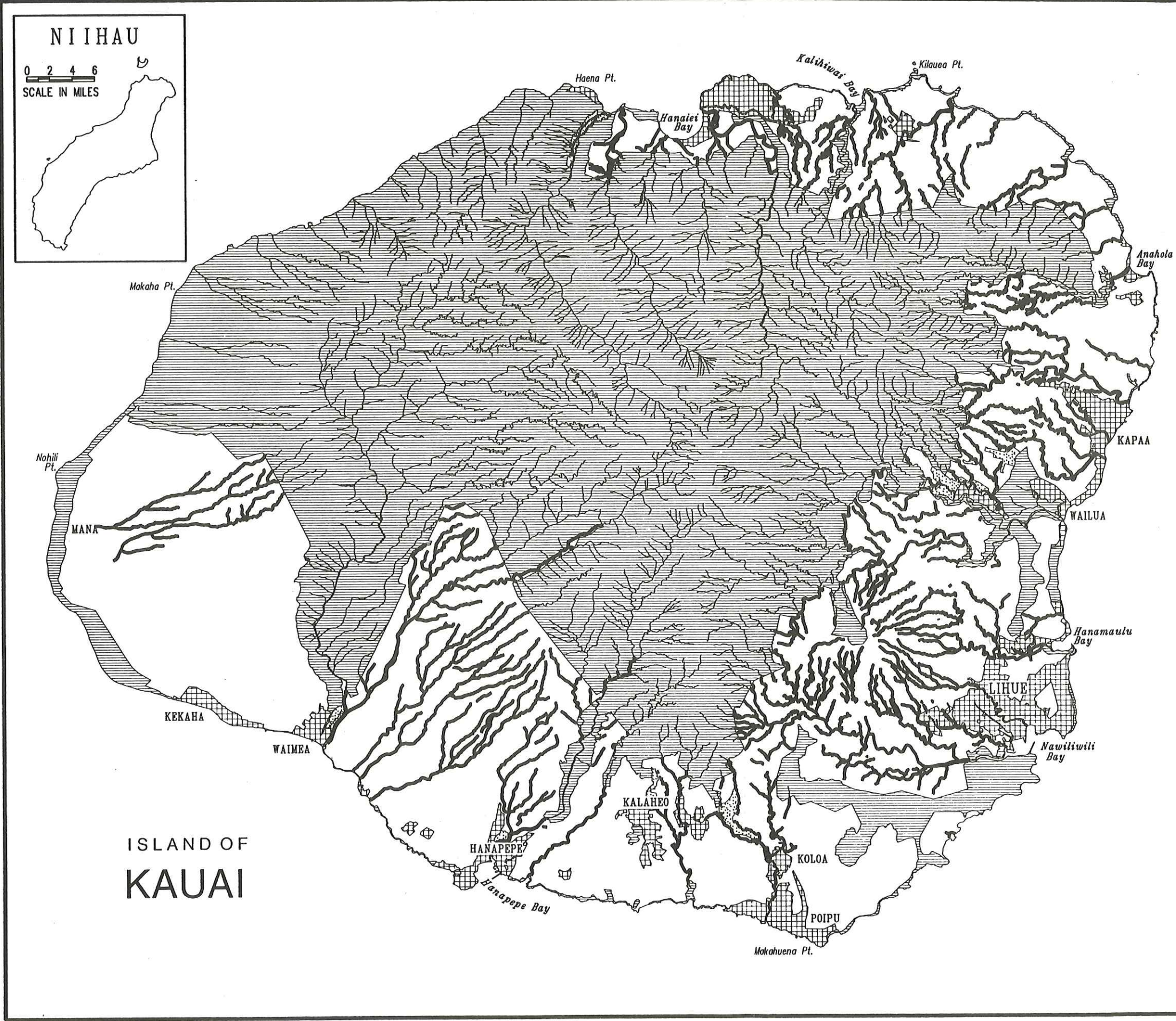
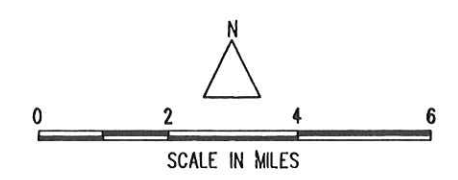
Waioli	5	T&E birds, a large area of palustrine wetland and recovery habitat.	Conservation Agriculture	Taro	Recommend the area be considered an Area of Critical Concern.
Hanalei	1,2,3	Abundance and spawning of native aquatic species, presence of all four native species that are indicators of a good aquatic environment, native forest, T&E birds, a large area of palustrine wetland, recovery habitat and a high quality estuary.	Conservation Agriculture Urban	Taro, pasture-buffalo, cattle. Also USFWS Wildlife Refuge.	We recommend that the agricultural lands within the River's floodway and those determined to be wetlands be placed in the Conservation District.
Kalihiwai	1	Abundance of native aquatic species.	Conservation Agriculture	Forest	We recommend that the Conservation District be extended along the ridge on the Hanalei side of the stream to the bridge, then narrow to a 100 foot corridor to avoid rural housing.
Anahola	1	Abundance of native aquatic species, presence of all four native species that are indicators of a good aquatic environment.	Conservation Urban Agriculture	Houses	Due to the housing clustered around the stream we recommend only a 100 foot corridor.
Kapaa	1	Abundance of native aquatic species and presence of Lentipes ('o'opu alano'o).	Conservation Agriculture Urban	Houses	Recommend that a 100 foot corridor be used due to the built-up nature of the land abutting the stream.
Wailua	2	Large area of palustrine wetland, recovery habitat and T & E birds.	Conservation Agriculture Urban	Sugar	Recommend a 100 foot corridor.
Huleia	1,2	Abundance of native aquatic species. Native forest, T&E birds, a large area of palustrine wetland and recovery habitat.	Agriculture Conservation	Sugar, USFWS Wildlife Refuge	Recommend a 100 foot corridor in the upper reaches and then follow the 200 foot contour with slight modifications to meet the Conservation district at the W. Refuge.
Hanapepe	2	Native forest, T&E birds, a large area of palustrine wetland and rare plants.	Conservation Agriculture Urban	Forest, agriculture	The values that made this stream outstanding for riparian resources are in the mountains. Therefore no conservation district corridor is proposed.
Waimea	2	Native forest, T&E birds, a large area of palustrine wetland and numerous rare plants.	Conservation Agriculture	Forest, sugar	The values that made this stream outstanding for riparian resources are in the mountains. Therefore no conservation district corridor is proposed.
Milolii	*		Conservation		
Nualolo	*		Conservation		



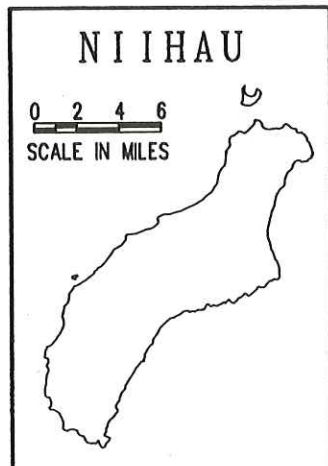
Figure 10

# PERENNIAL STREAMS

-  Agricultural District
-  Conservation District
-  Rural District
-  Urban District
-  Perennial Streams in Agricultural District
-  Perennial Streams in Urban and Rural Districts
-  Perennial Streams in Conservation District



ISLAND OF  
KAUAI

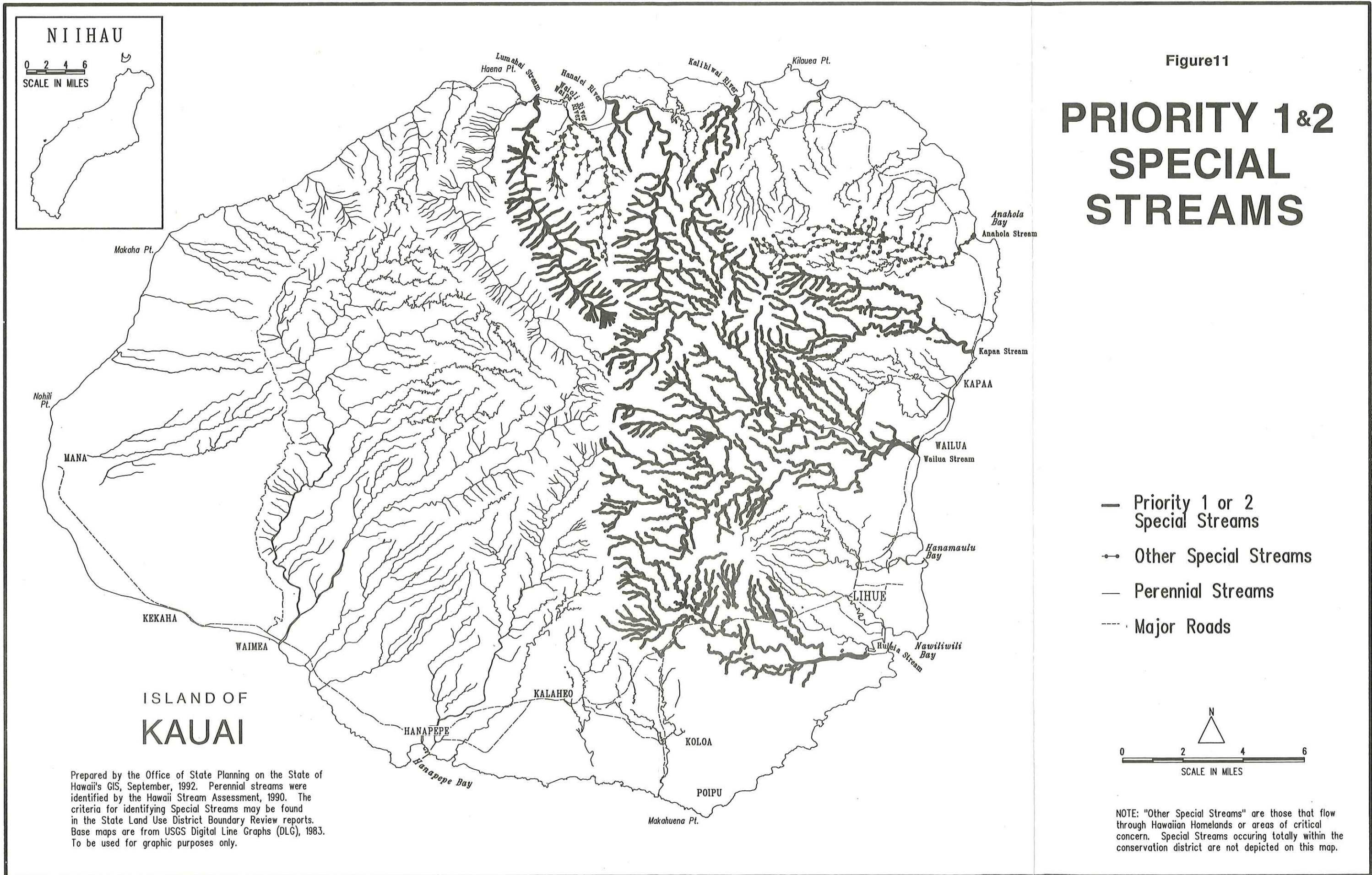


Prepared by the Office of State Planning on the State of Hawaii's GIS, June, 1992. Land Use Districts current as of February, 1991. Contours interpolated from 1983 USGS digital point data. Boundaries depicted on this map are not official.



Figure 11

# PRIORITY 1&2 SPECIAL STREAMS



Prepared by the Office of State Planning on the State of Hawaii's GIS, September, 1992. Perennial streams were identified by the Hawaii Stream Assessment, 1990. The criteria for identifying Special Streams may be found in the State Land Use District Boundary Review reports. Base maps are from USGS Digital Line Graphs (DLG), 1983. To be used for graphic purposes only.

NOTE: "Other Special Streams" are those that flow through Hawaiian Homelands or areas of critical concern. Special Streams occurring totally within the conservation district are not depicted on this map.



Open areas in the Conservation District act as buffers between urban areas. Conservation District land between Kapaa-Wailua and Lihue protect vital coastal resources. Similarly, Conservation District lands between Koloa and Hanapepe protect the cultural and environmental resources along the coast between these two communities.

### State Parks

State parks on the island of Kauai include Haena State Park, Polihale State Park, Na Pali Coast State Park, Kokee State Park, Russian Fort Elizabeth State Historical Park, Waimea Canyon State Park, and Wailua River State Park. The Department of Land and Natural Resources which administers State parks was consulted regarding the appropriate land use classification for each park. The Department recommended reclassifying portions of Russian Fort Elizabeth State Historical Park and portions of Wailua River State Park from the Agricultural District to the Conservation District.

### Historic Sites

Historic sites in this study were primarily identified through public input. There is not a complete inventory of historic sites for the State. Only about four percent of the land in the State has undergone archaeological survey. Historic sites were primarily identified through public input. The Office of State Planning consulted with the State Historic Preservation Division of the Department of Land and Natural Resources as to the significance of these sites.

The State's Historic Preservation Division reviews development proposals under a wide range of permits and actions which effectively enables the program to address historic preservation concerns.<sup>52</sup> Nonetheless, Conservation District status may better protect certain specific historic sites, particularly those which are significant, meet multiple criteria for historic preservation and contain other conservation resources as well.

There are hundreds of known historic sites on the State Historic Preservation Division's Inventory of Historic Places of Kauai. Some of the more famous of these sites are at the complex at Wailua River. Thousands of other historic sites are expected to be present, although they have yet to be identified.

Heiaus are also significant elements of Hawaiian history. Heiaus on Kauai include Ka Ulu A Paoa Heiau, Lokahi Hula Heiau, Hikia O Kala Heiau, Ala Kukui Heiau, Malae Heiau, Poliahu Heiau, and Ka Lae A Manu Heiau.

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<sup>52</sup> Communication from the Department of Land and Natural Resources, January 8, 1991.

Many other historic sites on Kauai can be identified as well. For example:

- Mouth of the Wailua River: Landing place of the first alii from Tahiti
- Holo-Holo-Ku Birthstones: Birthplace of Hawaiian royalty
- Kuamoo Road: Follows the sacred highway of kings
- Mouth of Waimea River: First landing place of Captain Cook

Kauai contains 57 historic sites listed on both the Hawaii and National Registers of Historic Places, 12 sites listed on just the Hawaii Register, and five sites listed on only the National Register.<sup>53</sup> Two sites in the Lihue area are in the National Register of Historic Places: the Menehune Fishpond and Grove Farm Homestead. Sites on the State Register of Historic Places include Old Koloa Sugar Mill, Holua Slide, and Kuhio Park, birthplace of Prince Jonah Kalaniana'ole.

#### Game Management Areas

There are hundreds of acres of game management areas in the Conservation District that are a significant recreational resource. Some of these areas have other values as well, such as providing watershed protection and natural and open space areas. Game management areas are also found in the Agricultural District and the general rule followed was to retain game management areas in their existing classification unless some other characteristic or physical resource was present which warranted reclassification to the Conservation District (high watershed value, for instance).

Game management areas on Kauai are located in the west and central areas of the island. The majority of these lands fall in the Conservation District, although some do occur in the Agricultural District in southwest Kauai.

#### Steep Slopes

Kauai is the oldest and wettest island in the State. As such, its single mountain mass is characterized by many valleys and steep slopes. The areas on Kauai with the sharpest topography are the Na Pali coastline, Waimea Canyon, the Olokele Canyon area and the Halelea Forest Reserve area. Generally, steep slopes are located in Central and West Kauai, excluding portions of the Alakai Swamp. In all, 282 square miles, or approximately 51 percent, of Kauai's total land area has over 20 percent slope.<sup>54</sup>

Virtually all of the areas of steep slope on Kauai occur in the Conservation District. There are, however, some valleys with steep slopes in West Kauai that are presently in the Agricultural District. However, these were not considered of high priority consideration for reclassification to the Conservation District.

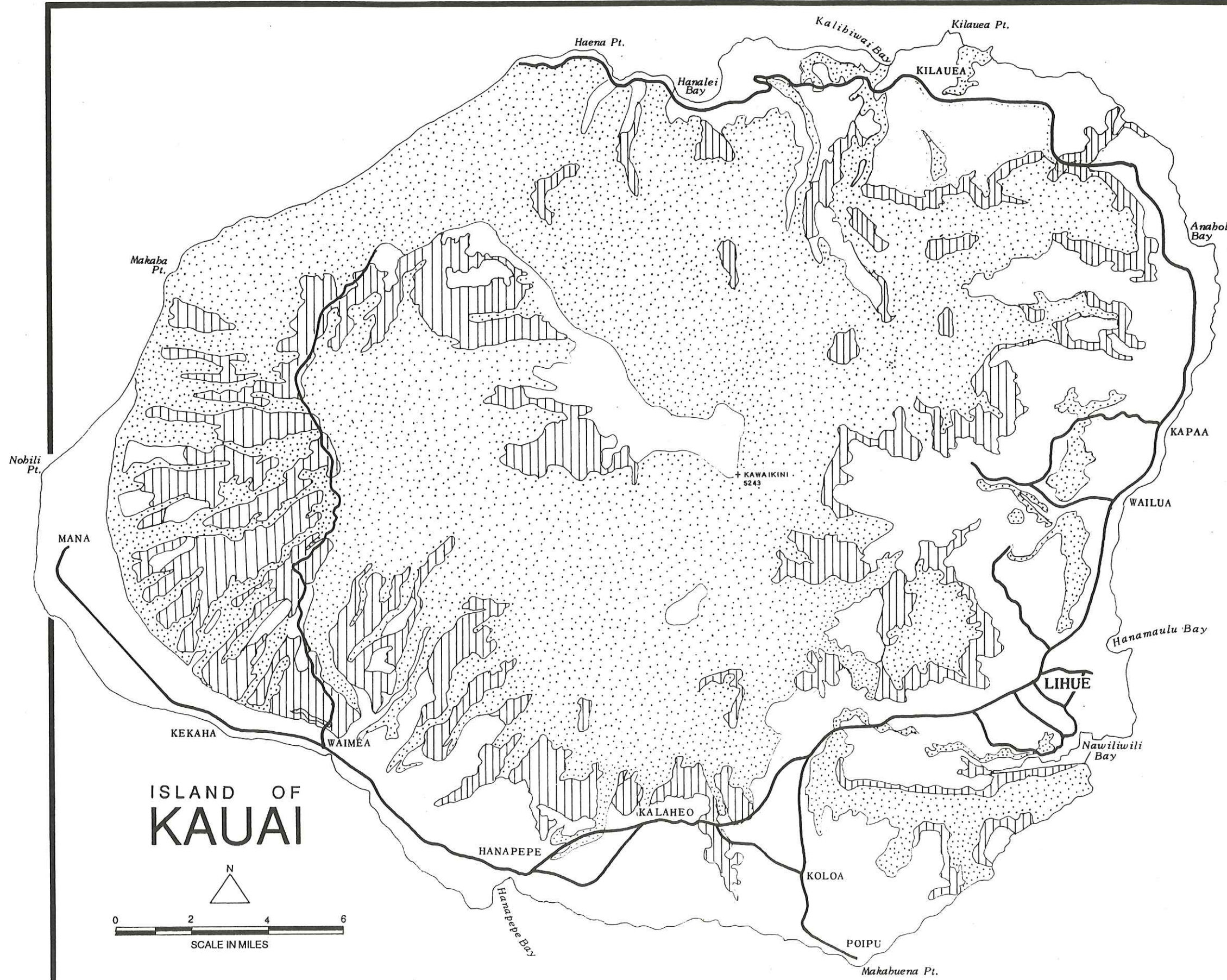
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<sup>53</sup> Department of Business, Economic Development & Tourism, State Data Book, 1990, p. 221.

<sup>54</sup> Harland Bartholomew & Associates, Land Use Districts for the State of Hawaii, 1961, p. 34.

Figure 12

# SLOPE OF LAND






ISLAND OF  
**KAUAI**



0 2 4 6  
SCALE IN MILES

PREPARED BY OFFICE OF STATE PLANNING  
1991

-  LESS THAN 10% SLOPE
-  10% TO 20% SLOPE
-  GREATER THAN 20% SLOPE

Source: U.S. Geological Survey map.





### Other Uses

Other uses in the Conservation District include several residential units at Haena in northwest Kauai. In addition, two golf courses are in the Conservation District. These are the entire Wailua Golf Course and portions of the Kukuioolono Golf Club. The remainder of the Kukuioolono course is in the Agricultural District.

It was not feasible within the scope of the review to assess whether these lands should remain in the Conservation District or be reclassified to another district. Some of these areas, specifically Haena, appear to have Conservation values which warrant their retention in the Conservation District.

### Conservation District Issues

Conservation District issues include discussions as to appropriate uses in the district and within each of the four subzones. The permitting of homes in the Conservation District is a big issue. A review of subzone criteria and permitted uses may be desirable. Management is another key issue. Environmental groups cite the need for better management of these lands. Landowners express concern that placing lands in the Conservation District may inhibit their ability to manage the resources on the land.

The need for enforcement and education regarding permitted uses in the district has also been raised.

There are two important areas statewide that warrant conservation land management and protection but are not covered in the Recommendations section of this report. These areas are an expanded shoreline and perennial streams and their corridors.

Shoreline. In 1970, the State Legislature enacted the shoreline setback law as part of the State Land Use Law, Chapter 205, HRS. In 1986, this law was transferred to Chapter 205A, Coastal Zone Management. However, the purpose which was to avoid permanent loss of valuable resources remained.

Currently, the shoreline setbacks range from 20-40 feet inland from the shoreline. These setbacks can be increased through County rule changes. OSP proposed legislation in 1991 to change the setback to 40 feet in the Urban District and 150 feet in non-Urban Districts with exceptions for small lots. This bill did not pass, however, and so the responsibility for increased shoreline setbacks rests with the County governments.

Perennial Streams. Perennial streams provide the link between our mountains and coastal waters. They provide unique and essential habitat for flora and fauna, have been an integral part of Hawaii's agricultural past and present, provide important recreational and scenic opportunities and play an essential role in determining the integrity of the local ecology and the quality of the nearshore waters.

Conservation District corridors have been identified and proposed for those streams identified as providing unique and essential habitat for flora and fauna, or, specifically those with outstanding aquatic or riparian values in the Agricultural District. These are included as recommendations in this report.

The inclusion of these selected streams does not suggest that the rest of Hawaii's perennial streams or the urbanized sections of perennial streams should not be protected. In fact, there are many streams statewide whose aquatic and riparian resources have not been fully identified. Excluding them now may threaten our statewide aquatic resource system. In addition, there are other values (e.g., recreational, cultural, and aesthetic) that may also justify the protection of Hawaii's streams. Stream protection may well be warranted for these important stream values, but no corridor recommendations have been solely based on them in this report because of the need to provide justification which would withstand potential challenges in a contested case proceeding. Urban areas were not included because to do so statewide would have potentially meant including a number of buildings in the Conservation District.

Protection can be achieved through Conservation District designation established by the Legislature, through Special Management Area designations by the Counties, or through conditions or easements negotiated during the reclassification process. Corridors of 100 feet extending from either side of the stream bank in the Agricultural District and 10 feet in the Urban and Rural Districts would serve to provide a buffer to protect streams. Corridors such as these have been established in states, counties and municipalities nationwide for river protection and should be considered at all levels of Hawaii's government.

#### Analysis of Conservation Lands

The focus of this Five-Year Boundary Review was on identifying areas not currently in the Conservation District which contain conservation resources and warrant reclassification to the Conservation District. The following guidelines for Kauai County were used to identify and recommend lands appropriate for reclassification to the Conservation District during the Five-Year Boundary Review. These land areas include:

1. Forest Reserve areas added by DLNR and which fall in the Agricultural District. These areas include the Moloaa Forest Reserve Addition and the Halelea Forest Reserve Addition in Waioli which is part of the Papalihala Marsh recommendation. It should be noted that the watershed area on Kauai is largely protected by Conservation zoning.
2. Special Streams identified as containing outstanding aquatic or riparian values in the Hawaii Stream Assessment or based on new information provided by DLNR or USFWS meeting the criteria for reclassification and which are in the Agricultural District. Many of these streams are also associated with a wetland or flood zone and are designated ""Open"" on the County General Plan.

3. Wetlands identified for protection and which are important to the recovery of endangered waterbirds as determined by the State Conservation Lands Functional Plan, State Recreation Functional Plan, Hawaiian Waterbirds Recovery Plan, or the Hawaiian Wetlands National Wildlife Refuge Complex Master Plan, or as recommended by the Division of Fish and Wildlife, DLNR, or the U.S. Fish and Wildlife Service. In Kauai County, these include Huleia Stream and Wetlands, Waita Reservoir, Papalihala Marsh, Puu Poa Marsh, Lumahai Valley Wetlands, and Hanalei Wetlands.

Huleia, Papalihala Marsh, and Lumahai were also recommended because they are associated with Special Streams.

4. Coastal areas which contain scenic, recreational and/or ecological resources designated as ""Open"" on the County General Plan or identified by State agencies and public input and assessed by staff. On Kauai, these areas are Polihale Dunes, Kekaha Beach, Salt Pond Park, Palama Beach, the Kipu Kai shoreline, the Hanamaulu coastline and Donkey Beach.
5. Significant scenic and historic resources identified primarily through public input or by State agencies and assessed by staff. These areas include Aahoaka, Kalepa Ridge, Sleeping Giant Mountain, Russian Fort Elizabeth State Historical Park, and Wailua River State Park.
6. Areas identified as ""Open"" in the General Plan which are logical extensions of the Conservation District (area surrounding Nomilu Fishpond and Palama Beach).

An assessment of lands which should be taken out of the Conservation District was not undertaken during the review. The above criteria are not intended to be used to identify lands which, lacking one or more of these criteria, should be taken out of the Conservation District.



## XI. POLICIES TO GUIDE BOUNDARY REVIEW AMENDMENT RECOMMENDATIONS

1. Approximately 1,100 acres of additional urban land are required to meet urban requirements to 2000.
2. Urban growth during the Boundary Review is directed to areas adjacent to existing Urban District lands at Anahola, Lihue, Hanamaulu and Kukuiula. Infrastructure improvements, particularly sewerage, have been planned for Lihue and Kukuiula.
3. No reclassification of lands for hotel purposes is recommended during the boundary review. However, future resort expansion should be directed to existing areas at Lihue and to Koloa-Poipu west of Keoniloa Bay and at Princeville.
4. Future residential growth shall be directed to Kilauea, Wailua-Kapaa, Lihue, Kalaheo, Koloa, Hanapepe-Elleele, Waimea and Kekaha.
5. Haena-Wainiha, Anahola, Lawai and Omao shall remain small rural communities.
6. Sufficient lands shall remain in the Agricultural District in Kekaha, Lihue, Koloa-Poipu, Hanapepe and Waimea-Kekaha to insure the viability of sugar plantations in these regions.
7. Agricultural lands shall be maintained in the North Shore, Wailua-Kapaa and Koloa-Poipu planning areas to promote diversified agriculture. Lands shall also be maintained in the Agricultural District to provide open space.
8. The Conservation District shall be amended to include expansion of forest reserves and protection of watershed areas, particularly at Waioli and Moloaa.
9. Important heritage resource areas which have natural, scenic and cultural significance, including but not limited to the following, shall remain in or be reclassified to the Conservation District: Na Pali Coast, Waimea Canyon, Kokee State Park, Alakai Swamp, Mahaulepu Coastline.
10. Significant native ecosystems and habitats of rare or endangered species, wetlands, special streams, beach and coastal resources, historic sites, scenic and open space areas and areas of natural hazards shall be reclassified to the Conservation District.



## XII. FINDINGS

### NORTH SHORE (including Kilauea)

Urban and Rural Districts. The existing Urban District includes a section of coast northwest of Wainiha Bay to Haena Point, Hanalei Town, the Hanalei peninsula which encompasses the Princeville development, a coastal strip along Anini Beach and Kalihikai Park and Kilauea Town. The Rural District comprises a narrow strip mauka of the highway above Wainiha Bay extending up into the lower reaches of Wainiha Valley.

Kauai's North Shore shall be primarily rural and agricultural in character except for resort and resort-related uses at Princeville. Residential and commercial uses shall be encouraged at Hanalei Town and Kilauea Town consistent with County plans.

There are sufficient urban lands to meet urban growth needs to 2000. Infrastructure deficiencies exist with respect to transportation, sewerage and water systems. No reclassifications to the Urban District are proposed.

By 2010, there will be a modest need for additional urban lands (249 acres). It is proposed that future urban expansion take place adjacent to the existing Urban District at Kilauea.

Agricultural District. This area is important for diversified agriculture. The North Shore produces a substantial portion of the State's taro and guava. Other crops include papaya, corn, bananas and watermelons. The Agricultural District should be maintained to protect diversified agricultural activities. However, changes have been proposed to place lands of high conservation value, e.g., wetlands, which are currently in the Agricultural District into the Conservation District.

Conservation District. The North Shore Planning area contains numerous significant scenic, recreational, ecological and open space resources including the Na Pali coastline, Lumahai and Hanalei Bay beaches, Kalihiwai River Valley and waterfalls, and forest reserve lands.

The Conservation District includes the entire Na Pali Coast, parts of the coastline from Wainiha Bay to the west side of Hanalei Bay, two fishponds on the east side of Hanalei Bay, portions of the coast below the cliffs at Princeville, the coastal area at Kalihiwai Bay and extending mauka along the river to the mountains, and a coastal strip from Kalihiwai Bay until the border with the Kapaa-Wailua Planning District and most of the higher elevation mauka lands.

Recommendations for additions to the Conservation District include an addition to the forest reserve at Moloaa for watershed purposes. The following Special Streams are recommended for reclassification into the Conservation District--Lumahai, Hanalei and portions of Kalihiwai not already in the Conservation District. An area stretching from the Hanalei River Valley to Waipa/Waikoko is identified as an Area of Critical Concern due to its streams, waterbird recovery habitat and flood hazard areas.

## WAILUA-KAPAA

Urban and Rural Districts. The Urban District includes a coastal stretch from Aliomanu to Anahola Bay, urban lands at Anahola including Hawaiian Home Lands, urban lands at Kealia, Kapaa Town and Kapaa Homesteads, Waipouli, Wailua Town and Houselots and portions of Wailua Homesteads. The Rural District consists of a parcel along the Kalama and Kipapa Roads in upland Wailua, a larger area on the leeward side of the Nonou Mountain Range called Olohena and another large section surrounding the Urban District parcel in that area.

Resort development shall be directed to the existing resort area. Kapaa, Wailua and Waipouli shall be maintained as residential/commercial communities consistent with County plans. Anahola shall remain a rural community.

Wailua-Kapaa will need an additional 202 acres to accommodate urban land requirements to 2000. However, the area faces severe infrastructure deficiencies including roads, sewerage and water systems. No additions to the Urban District are recommended at this time.

Agricultural District. Lands should continue to be maintained in the Agricultural District to support sugar and diversified agricultural crops. Those lands taken out of sugar cane cultivation at Kealia should be retained in the Agricultural District for diversified agricultural purposes to provide open space.

Conservation District. The Conservation District includes coastal resources along the shoreline area on the northern side of Moloaa Bay and its southern side extending past Papaa at Aliomanu and south of Anahola Bay to Kealia. Also included are the mountain areas generally above the 400-600 ft. contours in the Moloaa, Kealia and Lihue-Koloa Forest Reserves, the river and gorge comprising the Wailua River State Park and the Nonou Forest Reserve.

Recommendations for additions to the Conservation District include: Donkey Beach, the lower slopes of Sleeping Giant mountain, and the coastal section of Wailua River State Park.

Anahola and Kapaa Streams have been designated Special Streams and it is recommended that a buffer area surrounding portions of these streams be reclassified from the Agricultural District to the Conservation District.

Portions of the Wailua River in the Agricultural District have also been recommended for Conservation designation because of outstanding aquatic resources.

## LIHUE

Urban and Rural Districts. Lihue Town, surrounding residential areas, the airport area and Puhī are in the Urban District.



Urban growth in Lihue shall be encouraged consistent with its role as the civic, financial, commercial and transportation center of Kauai. However, its agricultural base shall also be maintained and supported.

There is a need for an additional 318 acres in Lihue to meet urban land requirements by 2000. For the island of Kauai, there will be a need for an additional 1,102 acres of urban land to meet needs to 2000. It is recommended that the major part of this growth be directed to Lihue with the remainder allocated to Kukuiula.

Although there are infrastructural deficiencies in the Lihue planning area, there are also plans to build bypass roads and expand sewerage capacity. These should help to alleviate some of the infrastructure problems.

Urbanization should be directed to infill areas near Lihue town and to the area near the airport.

Agricultural District. Agricultural lands shall be maintained in the Agricultural District to assure the continued viability of Lihue Plantation. The agricultural lands being recommended for reclassification to another land use district will not adversely affect Lihue Plantation.

Conservation District. Additions to the Conservation District include Aahoaka Mountain and parcels adjacent to and at the toe of Kalepa Ridge. The Huleia Stream has been designated a Special Stream which should be reclassified to Conservation.

#### KOLOA-POIPU

Urban and Rural Districts. The Urban District includes the coastal areas of Kukuiula and Poipu, extending north of Poipu to encompass the Kiahuna Village development. The communities of Koloa, Lawai and Kalaheo are designated Urban. Portions of Kalaheo (parts of Kalaheo Homesteads) and Omao are designated Rural.

No reclassifications for hotel purposes are recommended during the boundary review. Future resort growth shall be directed to Poipu which is designated as a resort destination area. However, growth should be confined to the area west of Keoniloa Bay. Kukuiula shall serve as a resort-residential area. Kalaheo, Omao, lower Lawai and Koloa shall serve as residential communities for the area, with Koloa also providing resort-commercial uses.

There will be a slight need for Urban lands in this area by 2000 (45 acres) and it is recommended that this and a portion of the island's total urban land requirements be allocated to Kukuiula. Therefore, urbanization is recommended at Kukuiula.

There are infrastructure constraints including sewerage, roads and water systems at Koloa-Poipu.

By 2010, there will be a need for an additional 535 acres. It is proposed that urban growth be directed to the resort area at Kukuiula and to Hanapepe-Eleele.

Agricultural District. Sufficient agricultural land shall be retained in the Agricultural District to promote the continued economic viability of McBryde Sugar Company's sugar and diversified agricultural operations and the Olokele Sugar Company. The minimum acreage for economic viability for the Olokele sugar plantation is presently estimated by the plantation to be 4,700 acres.

Conservation District. At Koloa-Poipu, the Conservation District includes parts of the coastline from Keoniloa Bay along Mahaulepu; the Haupu Ridge; Allerton Estate lands and nearby shoreline area at Lawai; Nomilu Fishpond; Kukuiolono Park and the Lihue-Koloa Forest Reserve.

Recommendations include adding areas surrounding Nomilu Fishpond, Palama Beach, Waita Reservoir and Salt Pond Park to the Conservation District. Mahaulepu is identified as an Area of Critical concern because of its biological, archaeological, geological, recreational and scenic resources.

#### WAIMEA-KEKAHA

Urban District. Hanapepe Town, Hanapepe Heights, Eleele, Port Allen, Port Allen Airport, Numila and Kaumakani are in the Urban District. There is a large Rural District near Hanapepe Heights. The Urban District also includes the communities of Waimea and Kekaha.

Residential growth is directed to Hanapepe-Eleele. Port Allen shall continue to provide for light industrial uses associated with harbor and airport activities.

Waimea and Kekaha shall serve primarily as residential communities. Both areas have sufficient lands to meet urban needs to 2010.

Agricultural District. Sugarcane lands of Kekaha Sugar and Gay & Robinson shall be retained in the Agricultural District to ensure their economic viability.

Conservation District. The Conservation District includes Barking Sands Military Reservation and Waimea Canyon. At Hanapepe-Eleele, the Conservation District includes the Hanapepe River Valley, Salt Pond and coastal areas excluding Port Allen, Hanapepe Bay, Port Allen Airport, Salt Pond Park and the area near Pakala Village. Recommended additions to the Conservation District include the Salt Pond Park, Russian Fort Elizabeth State Historical Park, Polihale Dunes and Kekaha Beach.

Upper elevation areas at Olokele (Manuahi to Mokuone) are identified as a conservation resource containing rare plants and native forest. However, further survey work is required to determine the boundaries of this area.

XIII. PRIORITY LISTING

CONSERVATION RECOMMENDATIONS - PRIORITY #1

	<u>REC.</u>	<u>ACREAGE</u>	<u>REASONS</u>
Lumahai Stream and Valley	A to C	929	Outstanding aquatic and riparian resources.
Hanalei River and Valley and Papalihala Marsh	A to C	761	Outstanding aquatic, riparian and estuarine resources. Threatened and endangered waterbird habitat. Wetland protection.
Puu Poa Marsh	U to C	17	Wetland. Protection of endangered waterbird habitat.
Kalihiwai Stream	A to C	78	To provide protection for the river which has an abundance of native aquatic species.
Moloaa Forest Reserve Addition	A to C	16	Protection of watershed.
Donkey Beach	A to C	92	Protection of coastal conservation resource, scenic and natural beauty.
Upper Wailua River	A to C	20	Protection of outstanding riparian resources. Wetland.
Huleia Stream and Wetlands	A to C	807	Preservation of high quality aquatic, riparian, and recreational stream resources. Portion of existing Huleia National Wildlife Refuge.
Waita Reservoir	A to C	123	Primary waterbird habitat. Endangered waterbirds.

CONSERVATION RECOMMENDATIONS - PRIORITY #2

	<u>REC.</u>	<u>ACREAGE</u>	<u>REASONS</u>
Kilauea Point National Wildlife Refuge	A to C	82	Preservation of coastal habitat of threatened and endangered birds. Existing national wildlife refuge. (C)
Kapaa Stream	A to C	84	Protection of outstanding aquatic resources. (B)
Sleeping Giant Mountain	A to C	100	Protection of scenic vistas. Steep slopes. (B)
Wailua River State Park	A to C	55	Protection of park lands, scenic and historic areas. (C)
Aahoaka	A to C	128	Protection of scenic resources. Steep slopes. (B)
Kalepa Ridge	A to C	89	Protection of scenic, recreational and open space areas. (B)
Hanamaulu Coastline	U to C	21	Protection of scenic resources. (B)
Kipu Kai Shoreline	A to C	65	Protection of scenic and recreational coastal resources. (B)
Area Surrounding Nomilu Fishpond & Palama Beach	A to C	38	Preservation of scenic and historic area. High quality coastal resources. (A/B)

The letters in parentheses indicate the reason for Priority 2 status. (A) indicates a need for further information; (B) indicates manpower/funding constraints; and (C) indicates government or Nature Conservancy ownership with conservation objectives.

CONSERVATION RECOMMENDATIONS - PRIORITY #2 (cont.)

	<u>REC.</u>	<u>ACREAGE</u>	<u>REASONS</u>
Salt Pond Park	U to C	65	Preservation of coastal recreation areas, historic sites, unique tidal pools. (A/B)
Russian Fort Elizabeth State Historical Park	A to C	17	Provision of land for parks preservation of scenic and historic areas. (C)
Kekaha Beach	A & U to C	85	Preservation of recreational and scenic resources. (A)
Polihale Dunes	A to C	30	Provision of lands necessary for parks, beach reserves and wilderness. (C)

The letters in parentheses indicate the reason for Priority 2 status. (A) indicates a need for further information; (B) indicates manpower/funding constraints; and (C) indicates government or Nature Conservancy ownership with conservation objectives.

<u>URBAN RECOMMENDATIONS</u>	<u>REC.</u>	<u>ACREAGE</u>	<u>REASONS</u>
Hanamaulu	A to U	792	To meet urban land requirements to 2000. Proximity to existing urban area.
Kauai Lagoons Resort	A to U	248	Housekeeping. 200 acres already in golf course use. Surrounded by urban land.
Kukuiula Phase II	A to U	800	To meet urban land requirements to 2000. Proximity to existing urban area.

AREAS OF CRITICAL CONCERN

Hanalei River and Valley to Waikoko		1,871	Protection of habitat for endangered waterbirds and native stream species. Outstanding aquatic and riparian stream resources. Wetlands, flood hazard areas. Scenic resources. Consistency with County "Open" District.
Mahaulepu Coastline	A to C	1,517	Preservation of coastal recreational resources, scenic and open space resources, unique limestone caves and archaeological resources. Protection of rare flora and fauna.

DEPARTMENT OF HAWAIIAN HOME LANDS

Anahola Stream	A to C	115	Preservation of high quality stream resources and wetland areas.
DHHL Anahola Houselots	A to U	224	Provision of housing to native Hawaiian beneficiaries. Proximity to existing urban areas.

No action will be taken on DHHL lands.

**RECOMMENDATIONS  
FOR  
STATE LAND USE DISTRICT  
BOUNDARY AMENDMENTS**





XIV. RECOMMENDATIONS FOR STATE LAND USE BOUNDARY AMENDMENTS

Priority #1 Conservation Recommendations

Lumahai Stream and Valley, 929 acres (A to C)

The proposed reclassification of Lumahai Stream and Valley from the Agricultural District to the Conservation District meets the following standards and criteria for the Conservation District contained in Section 205-2(e), HRS: Conservation districts shall include areas necessary for . . . conserving indigenous or endemic plants, fish, and wildlife, including those which are threatened or endangered; and preventing floods and soil erosion.

The proposed reclassification will impact favorably the following area of statewide concern set forth under Section 205-17(3), HRS, preservation or maintenance of important natural systems or habitats; and maintenance of valued . . . natural resources.

The proposed land use district boundary amendment meets the following standards for determining Conservation District boundaries contained in the Hawaii Administrative Rules:

Section 15-15-20(5) The area includes lands necessary for . . . conserving natural ecosystems of endemic plants, fish and wildlife . . . .

Section 15-15-20(4) The area includes lands necessary for the conservation, preservation, and enhancement of scenic . . . sites and sites of unique physiographic or ecologic significance . . . .

Lumahai Stream and Valley has been identified as a Special Stream using the Hawaii Stream Assessment and input from stream experts. Lumahai Stream has outstanding aquatic, riparian, and scenic values according to the Hawaii Stream Assessment. The presence of all four native aquatic species and the abundance of spawning of these species is indicative of a high quality ecosystem.

The wetlands at Lumahai have been identified as important to the recovery of endangered Hawaiian waterbirds in the Hawaiian Waterbirds Recovery Plan (1985) and Regional Wetlands Concept Plan (1990), by the U.S. Fish and Wildlife Service.

Reclassification of Lumahai Stream and Valley from the Agricultural to the Conservation District will conserve indigenous or endemic plants, fish and wildlife, preserve and maintain important natural systems and habitats, and conserve and preserve sites of unique ecological significance.

The proposed area for reclassification includes lands necessary for preserving natural ecosystems of native plants, fish, and wildlife, particularly those which are endangered.

The proposed reclassification also conforms to the objectives and policies of the Hawaii State Plan for the physical environment, Section 226-11, 12 and 13, HRS, including but not limited to, seeking effective protection of Hawaii's unique and fragile environmental resources, reducing the threat to life and property from erosion and flooding. Additionally, the proposed reclassification conforms to the Priority Guidelines for population growth and land resources, Section 226-104, HRS, including but not limited to: identifying critical environmental areas . . . to include . . . watershed and recharge areas, wildlife habitats, areas with endangered species . . . natural streams and water bodies . . . and utilizing Hawaii's limited land resources wisely, providing adequate land to accommodate projected population and economic growth while ensuring protection of the environment and the availability of the shoreline, conservation lands and other limited resources for future generations.

The County of Kauai has designated as "Open" the area along the Lumahai Stream course on the General Plan Map for the North Shore area. The purpose of the "Open" designation is "to preserve, maintain or improve the essential characteristics of the lands and water areas that are of significant value to the public, important to the structure of areas, necessary to buffer undesirable environmental factors, maintain the essential functions of ecological systems, and define and regulate development within areas which may be potentially hazardous." The North Shore Development Plan states ". . . area from Waioli Stream to Wainiha Valley, including all of Waipa and Lumahai Valleys . . . Its present function is to provide open space, scenic beauty along the coast and in the valleys, and for agriculture. This function should continue and development of residential or other uses be prohibited." The reclassification is also consistent with goals and objectives in the North Shore Development Plan, specifically "to preserve the wildlife and flora of the North Shore, recognizing man's dependence upon this preservation for his own health and welfare."

The Kauai County Zoning Ordinance (CZO) in Article 10 outlines Constraint Districts whose purpose(s) include: "to identify those areas where particular physical, biologic and ecologic characteristics of the land, water and atmosphere indicate that standard requirements for development, modification or use may be inadequate to insure the general health, safety and welfare of the public or the maintenance of established physical, geologic and ecologic forms and systems"; "to insure that development, modification or use will not create substantial threats to health, safety and welfare of people, or to the maintenance of established physical, biologic, and ecologic forms and systems"; and "to permit development, modification or use when it can be shown, within the limits of available knowledge, that ecologic interrelationship will be improved or not significantly depreciated."

There are six (6) Constraint Districts: Drainage, Flood, Shore, Slope, Soils, and Tsunami. The CZO includes language describing the types of areas to be included in each of the Constraint Districts and the restrictions on and requirements for development within them.

Lumaha'i Valley and Stream is identified on the Kauai County Constraint Maps to include the following constraints: slope (north and south sides), soils (along both sides of stream and on low-lying northern areas), and tsunami (shoreline extending inland).

The Federal Emergency Management Agency (FEMA) has prepared Flood Insurance Rate Maps (FIRM) which delineate various flood hazard districts subject to periodic inundation by flooding and/or tsunami. The County of Kauai includes in its Flood Constraint District "all lands subject to flooding and identified as flood fringe, floodway, and general floodplain areas by the Federal Insurance Administration" in a scientific and engineering report entitled, "The Flood Insurance Study for the County of Kauai," dated March 9, 1987, with accompanying Flood Insurance Rate Maps.

Portions of Lumaha'i Stream and Valley lie in FIRM zones of coastal flood with velocity hazard (wave action) and floodplain. The area subject to velocity hazard extends from the shore inland to the edge of the open water area of Lumaha'i Stream. The floodplain extends from the edge of the open water where it stretches from the base of the slopes on both sides of the valley, then narrowing proceeds mauka along the stream corridor.

Statewide soil surveys were cooperatively conducted between the U.S. Department of Agriculture Soil Conservation Service (SCS) and the University of Hawaii Agricultural Experiment Station in 1965. These maps showing soil types can be used to indicate areas of steep slopes, soil instabilities, and soils subject to periodic or frequent saturation (hydraulic).

Soils having slopes of 25-70 percent are indicated on both sides of the valley. Along the western side of the stream are soils having moderate shrink-swell and hydraulic characteristics.

Statewide slope maps were derived from the Detailed Land Classification studies done for each island by the Land Study Bureau in 1969. These maps included information on slopes, general soil character, depth to consolidated material, and type of underlying material.

Steep slopes of 30 percent or greater are indicated for both sides (west and east) of Lumaha'i Valley.

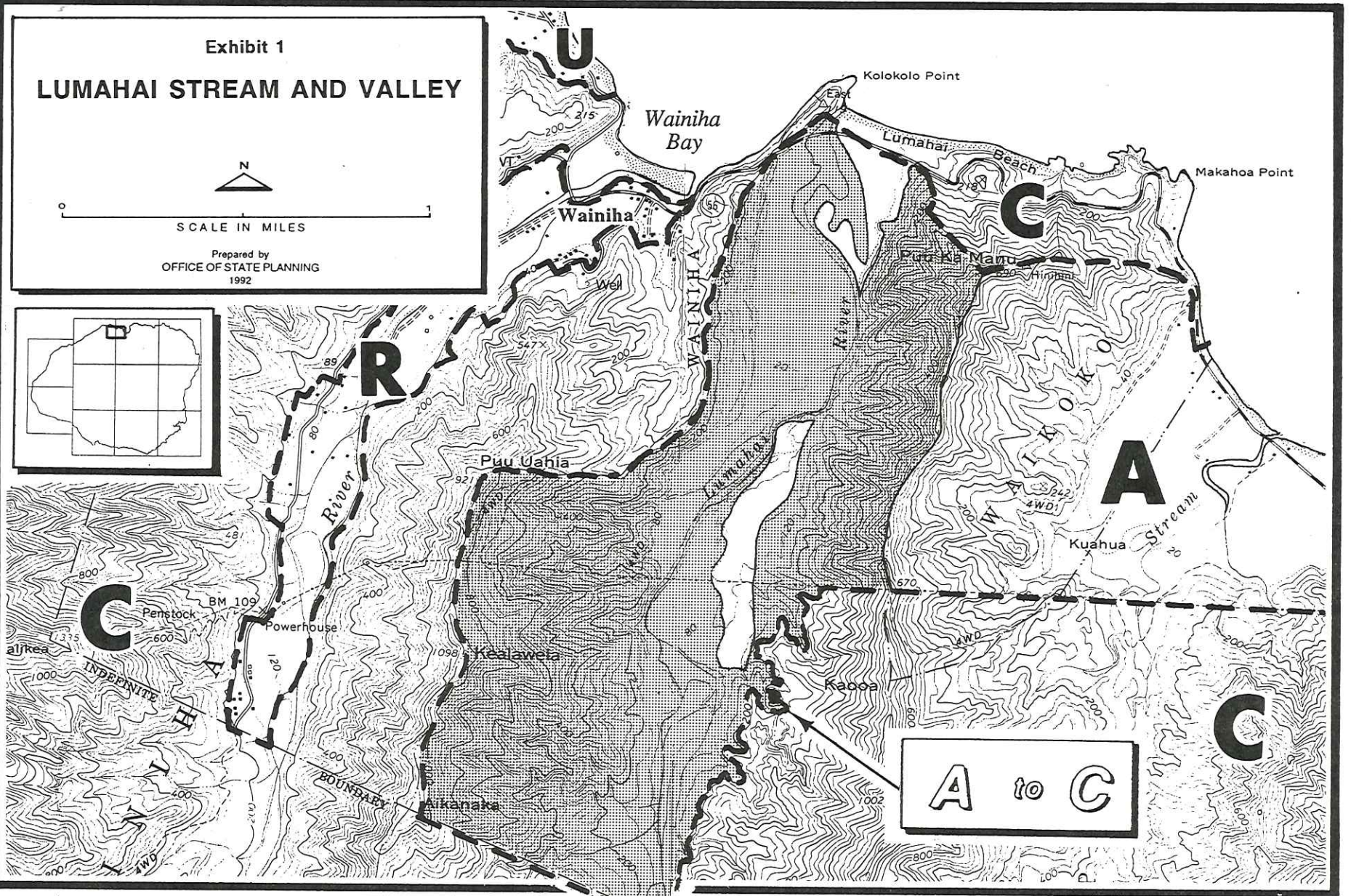
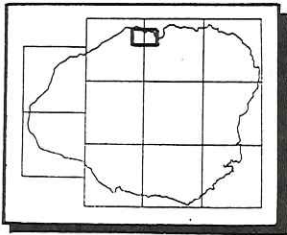


Exhibit 1

LUMAHAI STREAM AND VALLEY



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OFFICE OF STATE PLANNING  
1992





Hanalei River and Valley and Papalihala Marsh, 761 acres (A to C)

The proposed reclassification of the Hanalei River and Valley and associated wetlands including Papalihala Marsh, from the Agricultural District to the Conservation District, meets the following standards and criteria for the Conservation District contained in Section 205-2(e), HRS: Conservation districts shall include areas necessary for conserving indigenous or endemic plants, fish, and wildlife, including those which are threatened or endangered; open space areas whose existing openness, natural condition, or present state of use, if retained, would . . . maintain or enhance the conservation of natural or scenic resources; areas of value for recreational purposes; and preventing floods and soil erosion.

The proposed reclassification will impact favorably the following area of statewide concern set forth under Section 205-17, HRS, preservation or maintenance of important natural systems or habitats; maintenance of valued . . . natural resources; maintenance of valued cultural, historical, or natural resources; and maintenance of other natural resources relevant to Hawaii's economy.

The proposed land use district boundary amendment meets the following standards for determining Conservation District boundaries contained in the Hawaii Administrative Rules:

Section 15-15-20(1) ". . . shall include lands necessary for protecting watersheds, water resources, and other water supplies . . ."

Section 15-15-20(2) The area shall include lands susceptible to floods, erosion damage . . . and lands necessary for the protection of the health and welfare of the public by reason of the land's susceptibility to tsunami inundation and flooding . . .

Section 15-15-20(3) The area shall include lands used for national or state parks.

Section 15-15-20(4) The area shall include lands necessary for the conservation, preservation, and enhancement of scenic, cultural, historic or archaeological sites and sites of unique physiographic or ecologic significance . . .

Section 15-15-20(5) The area includes lands necessary for . . . conserving natural ecosystems of endemic plants, fish and wildlife . . .

Hanalei River has been identified as a Special Stream using the Hawaii Stream Assessment and input from stream experts. In addition, the Hawaii Stream Assessment recognized Hanalei as a Blue Ribbon stream resource due to its diversity and high quality aquatic, riparian, cultural, and recreational resources. An abundance and spawning of native aquatic species and the presence of all four native aquatic species indicate a

high quality aquatic environment. The riparian values include native forest in the upper reaches, threatened and endangered waterbirds, a large area of palustrine wetland, waterbird recovery habitat and high quality estuary.

The wetlands at Hanalei have been identified as important to the recovery of endangered Hawaiian waterbirds in the Hawaiian Waterbirds Recovery Plan, U.S. Fish and Wildlife Service and Department of Land and Natural Resources (1985), and the Hanalei taro fields are identified as important in the Regional Wetlands Concept Plan (1990) by the U.S. Fish and Wildlife Service.

Papalihala Marsh, also known as Waioli Marsh, has been identified as important wetland waterbird habitat in the State Conservation Lands Functional Plan.

The entire complex of wetlands in the Hanalei area support the Hanalei Wildlife Refuge and the other nearby waterbird recovery areas according to the U.S. Fish and Wildlife Service.

The valley floor lies within the 100-year floodplain and the stream floodway as established in the Flood Insurance Rate Maps (FIRM).

Reclassification of the Hanalei River area from the Agricultural to the Conservation District will conserve indigenous or endemic plants, fish and wildlife, protect against flooding or erosion damage, preserve and maintain important natural systems and habitats, and conserve and preserve sites of unique ecological significance.

The proposed area for reclassification includes lands necessary for preserving natural ecosystems of native plants, fish, and wildlife, particularly those which are endangered.

The proposed reclassification also conforms to the objectives and policies of the Hawaii State Plan for the physical environment, Section 226-11, 12 and 13, HRS, including but not limited to, seeking effective protection of Hawaii's unique and fragile environmental resources, reducing the threat to life and property from erosion and flooding. Additionally, the proposed reclassification conforms to the Priority Guidelines for population growth and land resources, Section 226-104, HRS, including but not limited to, utilizing Hawaii's limited land resources wisely, providing adequate land to accommodate projected population and economic growth needs while ensuring protection of the environment and the availability of the shoreline, conservation lands and other limited resources for future generations.

The proposed reclassification also addresses the State Conservation Lands Functional Plan and the State Tourism Functional Plan both contain actions to identify high priority recreational beach resources; and, the State Recreation Functional Plan which contains policies to identify and assess high quality and other streams for preservation.



The County of Kauai has designated as "Open" the area along the Hanalei River on the General Plan Map for the North Shore area. The purpose of the "Open" designation is "to preserve, maintain or improve the essential characteristics of the lands and water areas that are of significant value to the public, important to the structure of areas, necessary to buffer undesirable environmental factors, maintain the essential functions of ecological systems, and define and regulate development within areas which may be potentially hazardous." The reclassification is also consistent with goals and objectives in the North Shore Development Plan, specifically "to preserve the wildlife and flora of the North Shore, recognizing man's dependence upon this preservation for his own health and welfare." The North Shore Development Plan also indicates that frequent flooding occurs in areas adjacent to the Hanalei River and development should be restricted, except those agricultural uses which are compatible.

The Kauai County Zoning Ordinance (CZO) in Article 10 outlines Constraint Districts whose purpose(s) include: "to identify those areas where particular physical, biologic and ecologic characteristics of the land, water and atmosphere indicate that standard requirements for development, modification or use may be inadequate to insure the general health, safety and welfare of the public or the maintenance of established physical, geologic and ecologic forms and systems"; "to insure that development, modification or use will not create substantial threats to health, safety and welfare of people, or to the maintenance of established physical, biologic, and ecologic forms and systems"; and "to permit development, modification or use when it can be shown, within the limits of available knowledge, that ecologic interrelationship will be improved or not significantly depreciated."

There are six (6) Constraint Districts: Drainage, Flood, Shore, Slope, Soils, and Tsunami. The CZO includes language describing the types of areas to be included in each of the Constraint Districts and the restrictions on and requirements for development within them.

Hanalei River and Papalihala Marsh are identified on the Kauai County Constraint Maps to include the following constraints: slope (northeast of river), soils (entire recommendation area), flood (majority of recommended area except the steep slopes), and tsunami (majority of recommended area except the steep slopes).

The Federal Emergency Management Agency (FEMA) has prepared Flood Insurance Rate Maps (FIRM) which delineate various flood hazard districts subject to periodic inundation by flooding and/or tsunami. The County of Kauai includes in its Flood Constraint District "all lands subject to flooding and identified as flood fringe, floodway, and general floodplain areas by the Federal Insurance Administration in a scientific and engineering report entitled, "The Flood Insurance Study for the County of Kauai," dated March 9, 1987, with accompanying Flood Insurance Rate Maps.

Portions of the Hanalei River and Papalihala Marsh lie in FIRM zones of coastal flood with velocity hazard (wave action), floodway and floodplain.

Statewide soil surveys were cooperatively conducted between the U.S. Department of Agriculture Soil Conservation Service (SCS) and the University of Hawaii Agricultural Experiment Station in 1965. These maps showing soil types can be used to indicate areas of steep slopes, soil instabilities, and soils subject to periodic or frequent saturation (hydric).

Soils having moderate shrink-swell and hydric characteristics exist along the river at Papalihala Marsh and below steep mauka slopes. Some soils are also classified as potentially highly erodible by SCS. These are located primarily beneath the steep mauka slopes and along the river makai of the bridge.

As stated earlier in this report, Conservation District stream protection corridors have only been recommended for lengths of streams that pass through the State Agricultural District. However, because protection of the entire stream course is very important to the continued health of the stream, we are also recommending that stream corridors within the Urban and Rural Districts of these streams be considered Priority 2 areas.

A maximum 100-foot wide corridor would apply where practicable; otherwise a corridor would be narrowed to avoid existing structures or fences. For the Hanalei River, this area would be Urban District land from the makai border of the Agricultural District to Hanalei Bay on the town side of the river and the ridge on the Princeville side.

On the Hanalei town side, this Priority #2 area would include a 100-foot corridor through the existing Hanalei boat baseyard and the County Black Pot Park at the mouth of the river. On the Princeville side, this Priority #2 recommendation would include the hillside, encompassing the skeleton structures of the old Club Med resort. In addition to providing a buffer along the environmentally sensitive Hanalei Estuary and the area upland of Puu Poa Marsh, the protection of the ridge would maintain the natural geographic divider between Princeville and Hanalei town. Keeping the ridge free of development would also maintain the scenic experience for those recreating in the park, river or on the beach.

Although the initiation of petitions to reclassify these corridors to the Conservation District is not recommended at this time, any development in these areas that might negatively impact on a stream's aquatic resources should be thoroughly and critically reviewed.

Table 16

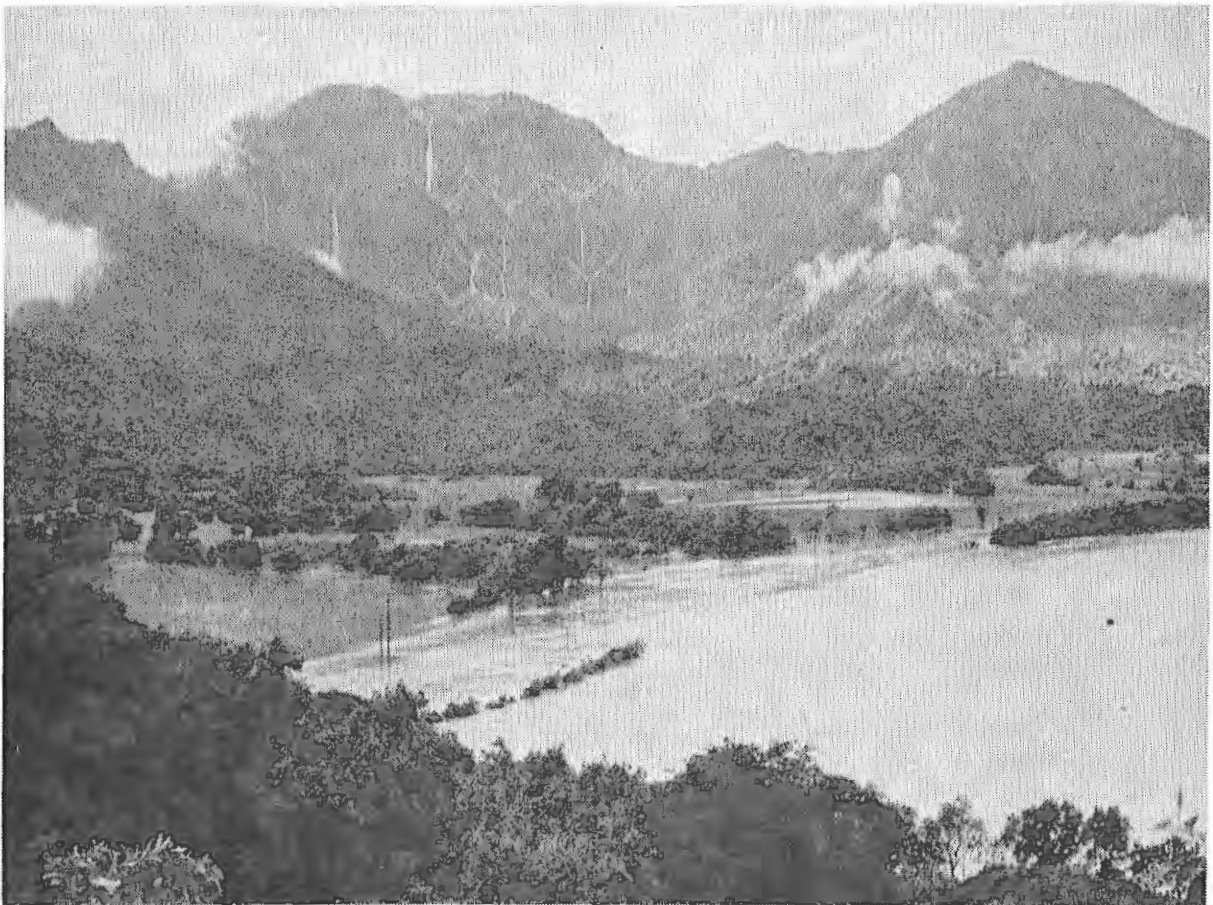
## *Hanalei's Conservation Values*

<b>Wetlands, Waterbirds and Recovery Habitat</b>	The Hanalei Valley provides important habitat for the endangered koloa duck, coot, stilt and gallinule.
<b>Aquatic Species</b>	The Hanalei River provides important habitat for a diversity and abundance of endemic aquatic species. This includes o'opu alamo'o, a category 1 candidate endangered fish. Ridge-to-ridge conservation district designation can protect the species from increased sediment loads, pollution and other harmful changes to the river habitat.
<b>Hanalei River Estuary</b>	The Hanalei River estuary was classified "high quality" by CZM's National Estuarine Sanctuary Program Site Evaluation study.
<b>Hanalei Bay</b>	<p>Hanalei Bay is Class AA waters. DOH Class AA embayments should "remain in their natural pristine state as nearly as possible with an absolute minimum of pollution or alteration of water quality from any human caused sources or actions. To the extent practicable, the wilderness character of these areas shall be protected."</p> <p>The Hanalei Bay is a delicate ecosystem subject to threats from pollution and is therefore the topic of several current studies. One is focused on habitat and fish resources; another related to sedimentation resulting from land uses and watershed destruction.</p>
<b>Hanalei River Floodplain</b>	The Hanalei area recommendation follows the boundaries of the Hanalei River floodway. The base flood elevations are between 13 and 35 feet. (see photo)
<b>Scenic Views</b>	The picturesque Hanalei River and nearby taro fields make the Hanalei Valley a significant scenic resource. It is one of the more photographed and better recognized areas on the island.
<b>County District-Open</b>	A large portion of the Hanalei Valley is designated County Open. The purpose of this district is to preserve, maintain or improve significant scenic or recreational land and water areas as well as physical or ecological systems; to regulate or prevent development within hazardous areas; or provide for other areas determined to be of significant value to the public.
<b>National Natural Landmark</b>	The National Park Service's National Natural Landmark program is designed to protect the best examples of landscapes, geological features and ecosystems. Their 1981 inventory identified the Hanalei Valley as an area potentially worthy of Landmark status.
<b>Wild and Scenic River</b>	In the early 1980's, the National Park Service identified rivers across the United States eligible for Wild and Scenic River status. Hanalei was one of those identified.

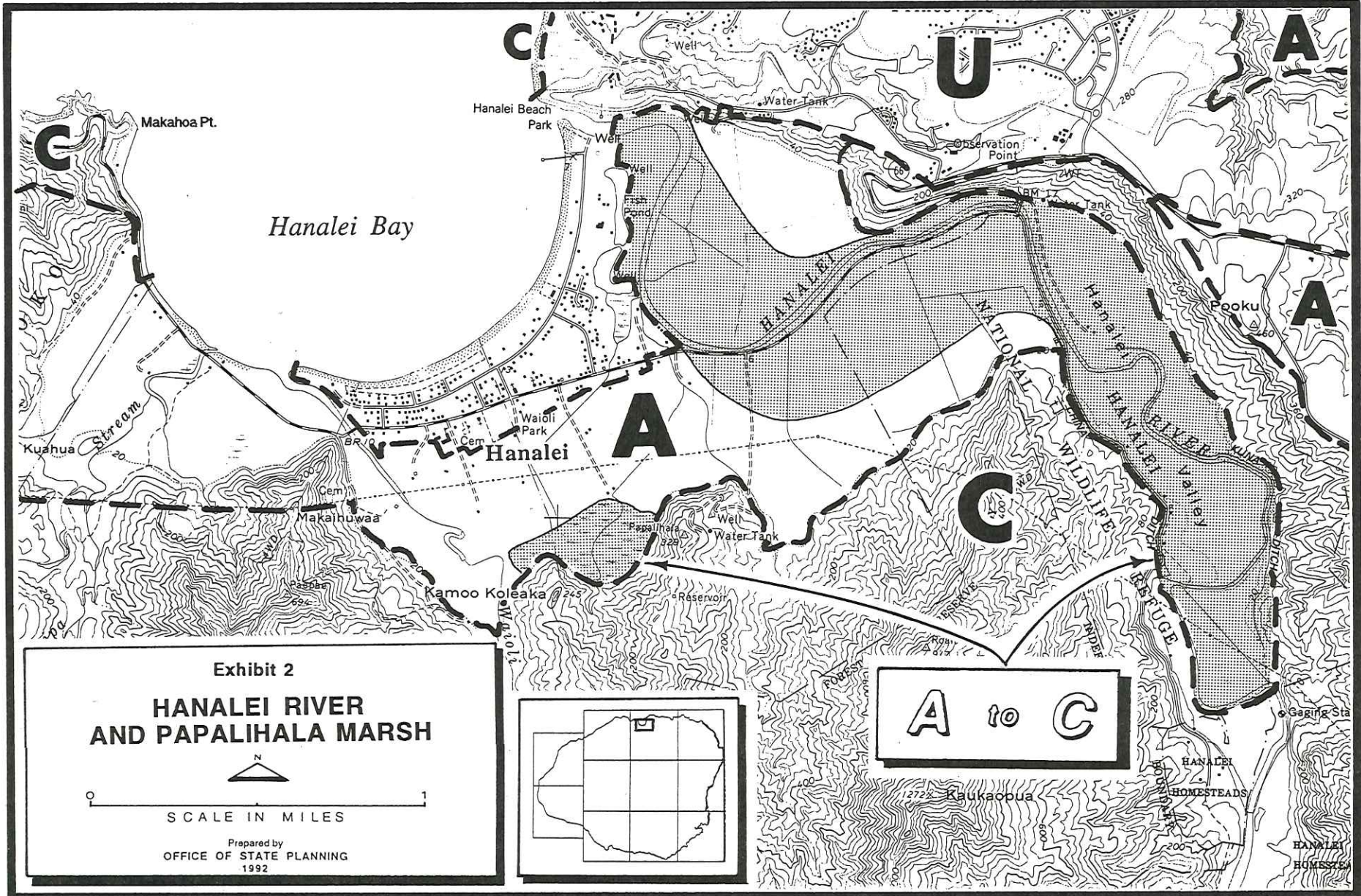
Table 16, continued

<p><b>Statutory Requirements</b></p>	<p>Section 205-18 requires the Office of State Planning to focus on the Hawaii State Plan and County General, Community and Development Plans.</p>
<p><b>The Conservation District Criteria</b></p>	<p>The Conservation District includes areas necessary for protecting watersheds, scenic and historic areas, parks, wilderness, beach reserves, forest reserves, open space, recreational areas and habitats of endemic plants, fish and wildlife, and all submerged lands seaward of the shoreline. It also includes lands subject to flooding and soil erosion.</p>
<p><b>Conservation District Reclassification Recommendations</b></p>	<p>Lands with high conservation value are recommended for placement in the conservation district.</p> <ul style="list-style-type: none"> <li>• Native Ecosystems and Rare Species</li> <li>• Endangered Forest Bird Habitats</li> <li>• Concentrations of Rare Plants</li> <li>• Significant Beaches or Coastal Areas</li> <li>• Significant Scenic, Open Space Areas</li> <li>• Mauka Watersheds</li> <li>• Native Forests</li> <li>• Wetlands</li> <li>• Significant Historic Sites</li> <li>• Streams with Outstanding Aquatic or Riparian Values</li> </ul>

Hanalei River Floodway



Hawaii Water Resources Plan. U.S. Water Resources Council and DLNR. 1979.





Puu Poa Wetlands, 17 acres (U to C)

The proposed reclassification of Puu Poa Wetlands from the Urban District to the Conservation District meets the following standards and criteria for the Conservation District contained in Section 205-2(e), HRS: Conservation districts shall include areas necessary for conserving indigenous or endemic plants, fish, and wildlife, including those which are threatened or endangered; and preventing floods and soil erosion.

The proposed reclassification will impact favorably the following area of statewide concern set forth under Section 205-17, HRS, preservation or maintenance of important natural systems or habitats; and maintenance of valued . . . natural resources.

The proposed land use district boundary amendment meets the following standards for determining Conservation District boundaries contained in the Hawaii Administrative Rules:

Section 15-15-20(5) The area includes lands necessary for . . . conserving natural ecosystems of endemic plants, fish and wildlife . . .

The Puu Poa Wetlands has been identified as important to the recovery of endangered Hawaiian waterbirds in the Hawaiian Waterbirds Recovery Plan (1985) and Regional Wetlands Concept Plan (1990), by the U.S. Fish and Wildlife Service.

In granting a permit to owners of the property, which includes Puu Poa Wetlands, to discharge earth fill during construction of a swimming pool and comfort station, special conditions were required by the Army Corps of Engineers. Special condition (g) states "that no further destruction of wetland habitat beyond that currently proposed at the project will occur." Other special conditions relate to minimization of runoff, visual impact, and insuring sufficient water flow in the future to maintain a healthy environment for birds.

The protection of the Hanalei River corridor through the Priority #2 Urban to Conservation recommendation would also help protect Puu Poa Wetlands. Disturbances on the ridge that divides the river from the wetlands could have a severe impact on both the stream and the wetland area.

The proposed area for reclassification includes areas necessary for preserving natural ecosystems of native plants, fish, and wildlife, particularly those which are threatened and endangered.

The proposed reclassification also conforms to the objectives and policies of the Hawaii State Plan for the physical environment, Section 226-11, 12 and 13, HRS, including but not limited to, seeking effective protection of Hawaii's unique and fragile environmental resources, reducing the threat to life and property from erosion and flooding. Additionally, the proposed reclassification conforms to the Priority Guidelines for population growth and land resources, Section 226-104,

HRS, including but not limited to, utilizing Hawaii's limited land resources wisely, providing adequate land to accommodate projected population and economic growth needs while ensuring protection of the environment and the availability of the shoreline, conservation lands and other limited resources for future generations.

The proposed reclassification also addresses the State Conservation Lands Functional Plan and the State Recreation Functional Plan which contain policies to protect top priority wetlands, specifically Puu Poa.

The reclassification is also consistent with goals and objectives in the North Shore Development Plan, specifically "to preserve the wildlife and flora of the North Shore, recognizing man's dependence upon this preservation for his own health and welfare."

The Kauai County Zoning Ordinance (CZO) in Article 10 outlines Constraint Districts whose purpose(s) include: "to identify those areas where particular physical, biologic and ecologic characteristics of the land, water and atmosphere indicate that standard requirements for development, modification or use may be inadequate to insure the general health, safety and welfare of the public or the maintenance of established physical, geologic and ecologic forms and systems"; "to insure that development, modification or use will not create substantial threats to health, safety and welfare of people, or to the maintenance of established physical, biologic, and ecologic forms and systems"; and "to permit development, modification or use when it can be shown, within the limits of available knowledge, that ecologic interrelationship will be improved or not significantly depreciated."

There are six (6) Constraint Districts: Drainage, Flood, Shore, Slope, Soils, and Tsunami. The CZO includes language describing the types of areas to be included in each of the Constraint Districts and the restrictions on and requirements for development within them.

Puu Poa Wetlands is identified on the Kauai County Constraint Maps to include the following constraints: drainage and tsunami.

The Federal Emergency Management Agency (FEMA) has prepared Flood Insurance Rate Maps (FIRM) which delineate various flood hazard districts subject to periodic inundation by flooding and/or tsunami. The County of Kauai includes in its Flood Constraint District "all lands subject to flooding and identified as flood fringe, floodway, and general floodplain areas by the Federal Insurance Administration" in a scientific and engineering report entitled, "The Flood Insurance Study for the County of Kauai," dated March 9, 1987, with accompanying Flood Insurance Rate Maps.

The entire wetland area and adjacent coastline lie in FIRM zones of coastal flood with velocity hazard (wave action) and floodplain. The area subject to velocity hazard and floodplain extends from the shore inland to the base of the slopes behind the wetland.



Statewide soil surveys were cooperatively conducted between the U.S. Department of Agriculture Soil Conservation Service (SCS) and the University of Hawaii Agricultural Experiment Station in 1965. These maps showing soil types can be used to indicate areas of steep slopes, soil instabilities, and soils subject to periodic or frequent saturation (hydric).

Soils having moderate shrink-swell and hydric characteristics are indicated in the wetland area just behind the shoreline.

Steep slopes of 30 percent or greater are indicated surrounding and behind the wetland area.

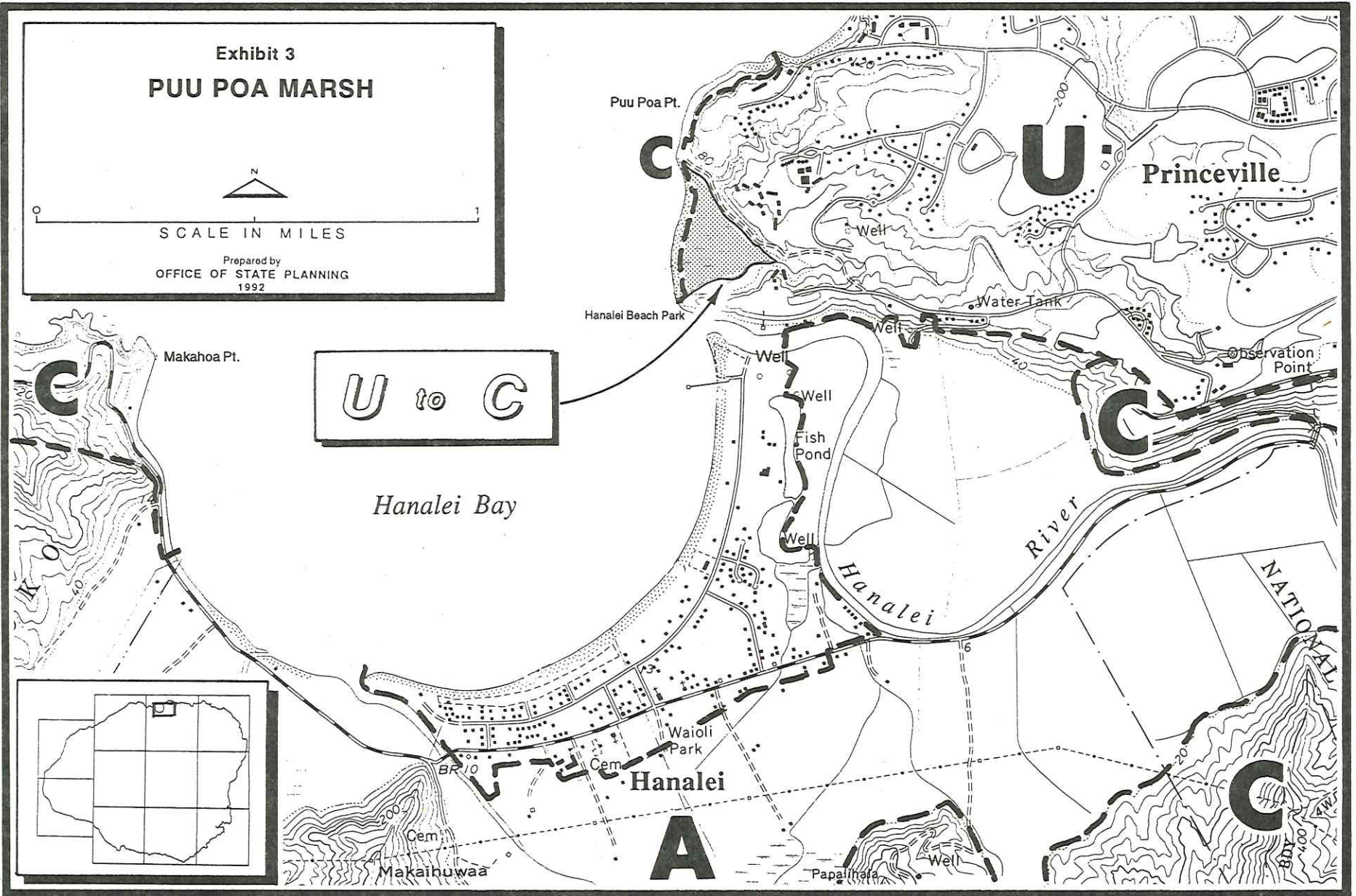


Exhibit 3  
**PUU POA MARSH**



SCALE IN MILES

Prepared by  
OFFICE OF STATE PLANNING  
1992





Portion of Kalihiwai Stream, 78 acres (A to C)

The proposed reclassification of the Kalihiwai Stream from the Agricultural District to the Conservation District meets the following standards and criteria for the Conservation District contained in Section 205-2(e), HRS: Conservation districts shall include areas necessary for conserving indigenous or endemic plants, fish, and wildlife, including those which are threatened or endangered; and preventing floods and soil erosion.

The proposed reclassification will impact favorably the following area of statewide concern set forth under Section 205-17, HRS, preservation or maintenance of important natural systems or habitats; and maintenance of valued . . . natural resources.

The proposed land use district boundary amendment meets the following standards for determining Conservation District boundaries contained in the Hawaii Administrative Rules:

Section 15-15-20(5) The area includes lands necessary for . . . conserving natural ecosystems of endemic plants, fish and wildlife . . .

Kalihiwai Stream has been identified as a Special Stream using the Hawaii Stream Assessment and input from stream experts. Kalihiwai Stream has outstanding aquatic resources and an abundance of native aquatic species according to the Hawaii Stream Assessment. The area prepared for reclassification contains the Kalihiwai Wetland identified by Elliot and Hall in Wetlands and Wetland Vegetation of Hawaii, 1977.

Reclassification of the area adjacent to Kalihiwai Stream from the Agricultural to the Conservation District will protect aquatic, riparian and scenic values. The area bordering the stream has slopes greater than 20 percent.

The proposed area for reclassification includes lands necessary for preserving natural ecosystems of native plants, fish, and wildlife, particularly those which are endangered.

The proposed reclassification also conforms to the objectives and policies of the Hawaii State Plan for the physical environment, Section 226-11, 12 and 13, HRS, including but not limited to, seeking effective protection of Hawaii's unique and fragile environmental resources, reducing the threat to life and property from erosion and flooding. Additionally, the proposed reclassification conforms to the Priority Guidelines for population growth and land resources, Section 226-104, HRS, including but not limited to, utilizing Hawaii's limited land resources wisely, providing adequate land to accommodate projected population and economic growth needs while ensuring protection of the environment and the availability of the shoreline, conservation lands and other limited resources for future generations.

The County of Kauai has designated as "Open" the area along the Kalihiwai Stream on the General Plan Map for the North Shore area. The purpose of the "Open" designation is "to preserve, maintain or improve the essential characteristics of the lands and water areas that are of significant value to the public, important to the structure of areas, necessary to buffer undesirable environmental factors, maintain the essential functions of ecological systems, and define and regulate development within areas which may be potentially hazardous."

The Kauai County Zoning Ordinance (CZO) in Article 10 outlines Constraint Districts whose purpose(s) include: "to identify those areas where particular physical, biologic and ecologic characteristics of the land, water and atmosphere indicate that standard requirements for development, modification or use may be inadequate to insure the general health, safety and welfare of the public or the maintenance of established physical, geologic and ecologic forms and systems"; "to insure that development, modification or use will not create substantial threats to health, safety and welfare of people, or to the maintenance of established physical, biologic, and ecologic forms and systems"; and "to permit development, modification or use when it can be shown, within the limits of available knowledge, that ecologic interrelationship will be improved or not significantly depreciated."

There are six (6) Constraint Districts: Drainage, Flood, Shore, Slope, Soils, and Tsunami. The CZO includes language describing the types of areas to be included in each of the Constraint Districts and the restrictions on and requirements for development within them.

Kalihiwai Stream is identified on the Kauai County Constraint Maps to include the following constraints: slope, drainage, soils, and tsunami.

The Federal Emergency Management Agency (FEMA) has prepared Flood Insurance Rate Maps (FIRM) which delineate various flood hazard districts subject to periodic inundation by flooding and/or tsunami. The County of Kauai includes in its Flood Constraint District "all lands subject to flooding and identified as flood fringe, floodway, and general floodplain areas by the Federal Insurance Administration" in a scientific and engineering report entitled, "The Flood Insurance Study for the County of Kauai," dated March 9, 1987, with accompanying Flood Insurance Rate Maps.

Portions of the Kalihiwai River lie in FIRM zones of coastal flood with velocity hazard (wave action) and floodplain.

Statewide soil surveys were cooperatively conducted between the U.S. Department of Agriculture Soil Conservation Service (SCS) and the University of Hawaii Agricultural Experiment Station in 1965. These maps showing soil types can be used to indicate areas of steep slopes, soil instabilities, and soils subject to periodic or frequent saturation (hydic).

Soils having moderate shrink-swell and hydic characteristics are identified along the northern side of the stream below Kuhio Highway and on both sides above the highway.

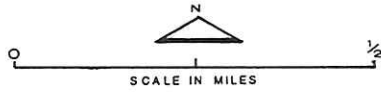
Statewide slope maps were derived from the Detailed Land Classification studies done for each island by the Land Study Bureau in 1969. These maps included information on slope, general soil character, depth to consolidated material, and the type of underlying material.

Steep slopes of 30 percent or greater are indicated for both sides (northwest and northeast) bordering the Kalihiwai Stream.

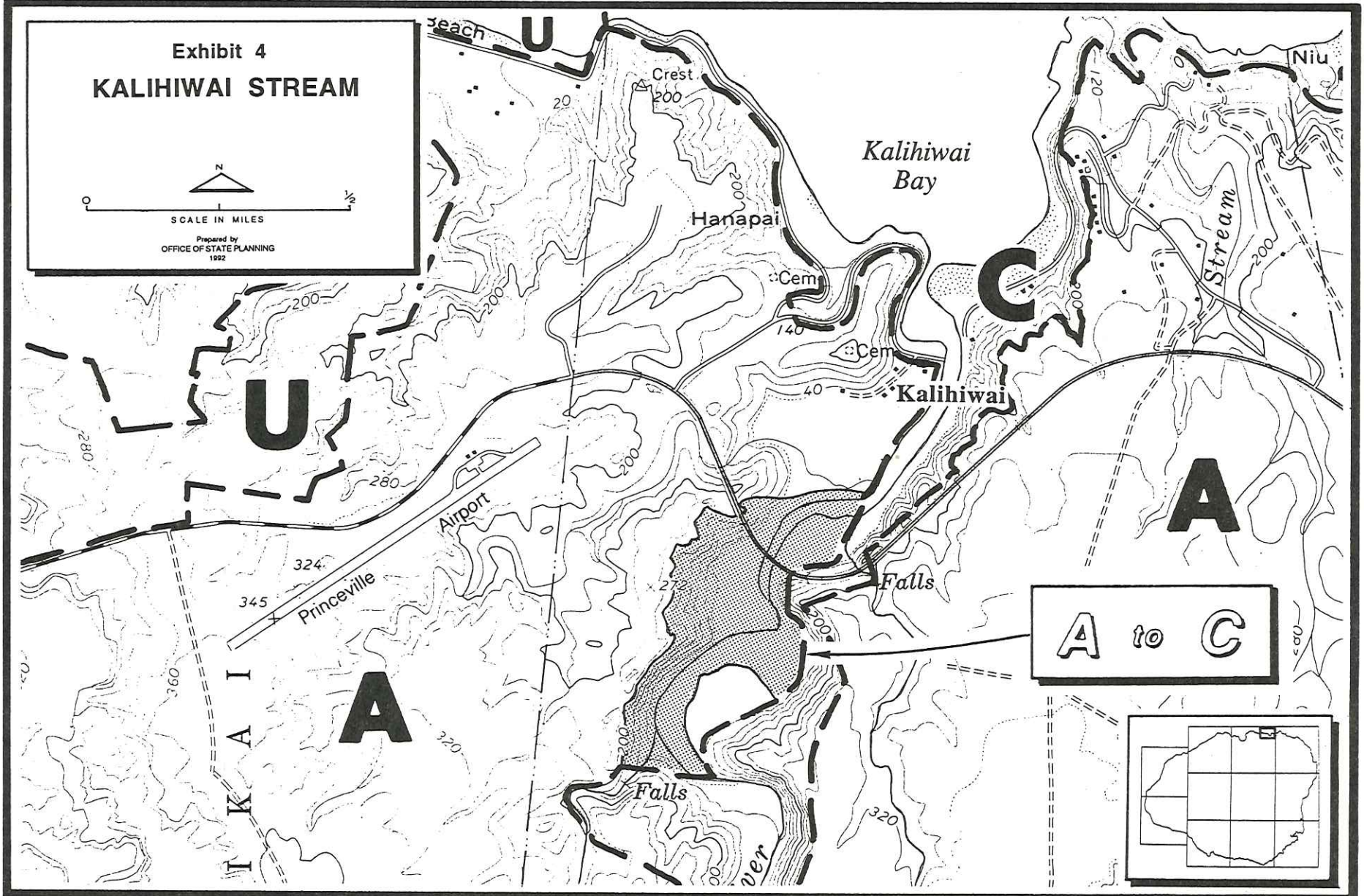




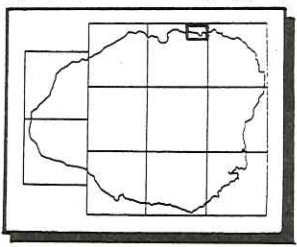
Exhibit 4  
**KALIHIWAI STREAM**



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1992



**A to C**





Moloaa Forest Reserve Addition, 16 acres (A to C)

The proposed reclassification of an area at Moloaa from the Agricultural District to the Conservation District meets the following standards and criteria for the Conservation District contained in Section 205-2(e), HRS: Conservation districts shall include areas necessary for protecting watersheds and water resources; conserving indigenous or endemic plants, fish, and wildlife, including those which are threatened or endangered; forestry; or would maintain or enhance the conservation of natural or scenic resources.

The proposed reclassification will impact favorably the following area of statewide concern set forth under Section 205-17, HRS, preservation or maintenance of important natural systems or habitats; and maintenance of valued . . . natural resources.

The proposed land use district boundary amendment meets the following standards for determining Conservation District boundaries contained in the Hawaii Administrative Rules:

Section 15-15-20(1) The area includes lands necessary for protecting watersheds, water resources, and water supplies  
. . . .

Section 15-15-20(5) The area includes lands necessary for  
. . . conserving natural ecosystems of endemic plants, fish and wildlife . . .

Reclassification of an area at Moloaa from the Agricultural to the Conservation District will serve to protect watersheds, to allow for reforestation, recreation and timber resource production. Reclassification of this parcel will be consistent with the State Department of Land and Natural Resources' recent action to add 212 acres to the existing Moloaa Forest Reserve, of which all are presently in the State Conservation District except this 15-acre parcel.

The proposed area for reclassification includes lands and water necessary for protecting watersheds, water resources and water supplies; and, areas necessary for preserving natural ecosystems of native plants, fish, and wildlife, particularly those which are endangered.

The proposed reclassification also conforms to the objectives and policies of the Hawaii State Plan for the physical environment, Section 226-11, 12 and 13, HRS, including but not limited to, seeking effective protection of Hawaii's unique and fragile environmental resources, reducing the threat to life and property from erosion and flooding. Additionally, the proposed reclassification conforms to the Priority Guidelines for population growth and land resources, Section 226-104, HRS, including but not limited to, utilizing Hawaii's limited land resources wisely, providing adequate land to accommodate projected population and economic growth needs while ensuring protection of the environment and the availability of the shoreline, conservation lands and other limited resources for future generations.

The proposed reclassification also addresses the State Conservation Lands Functional Plan which contains policies to expand the forest reserve system.

The County of Kauai has designated as "Open" the area in Moloaa adjacent to the Moloaa Forest Reserve on the General Plan Map for the North Shore area. The purpose of the "Open" designation is "to preserve, maintain or improve the essential characteristics of the lands and water areas that are of significant value to the public, important to the structure of areas, necessary to buffer undesirable environmental factors, maintain the essential functions of ecological systems, and define and regulate development within areas which may be potentially hazardous."

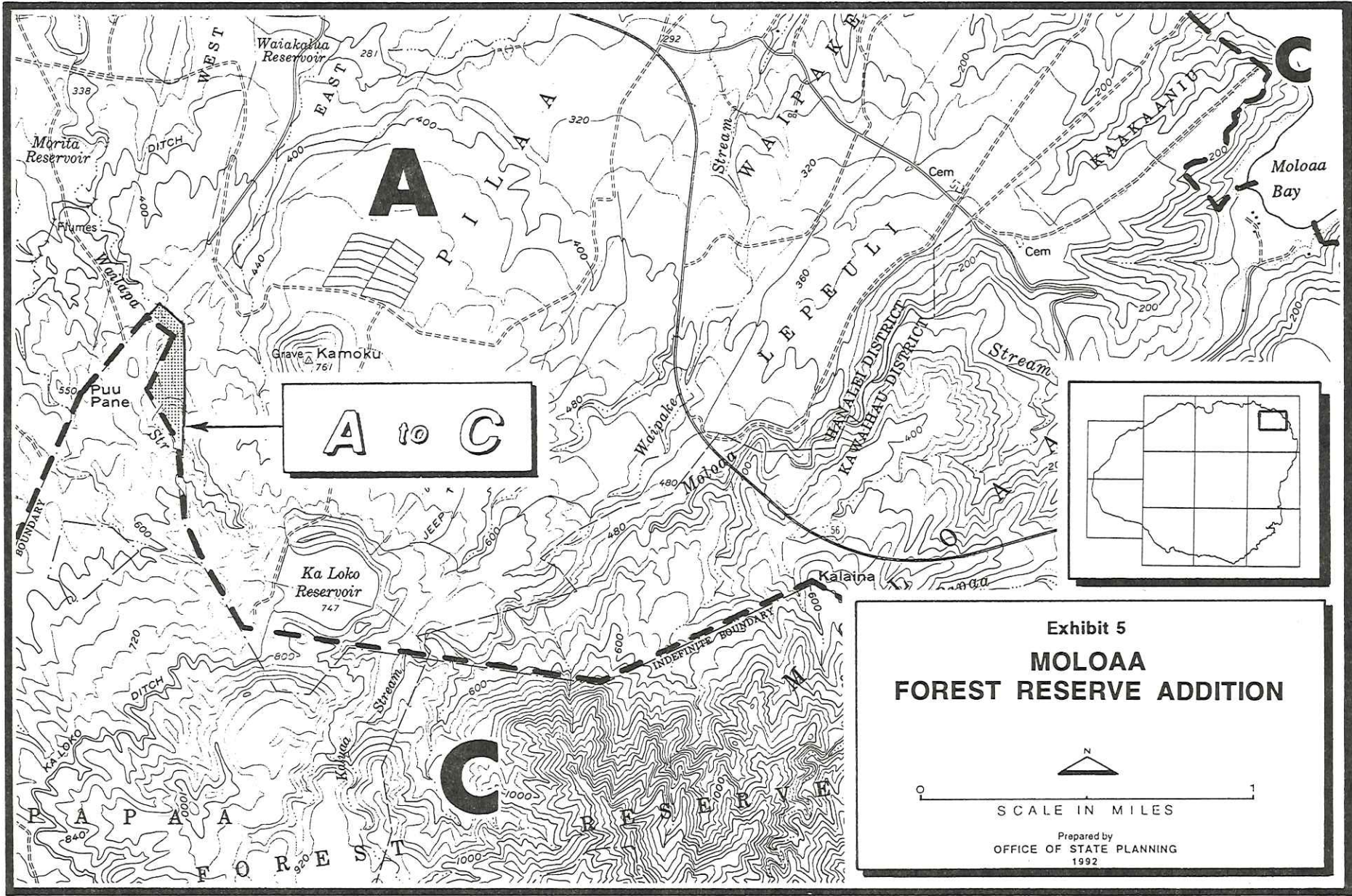
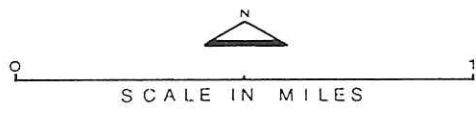


Exhibit 5  
**MOLOAA  
 FOREST RESERVE ADDITION**



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Donkey Beach, 92 acres (A to C)

The proposed reclassification of Donkey Beach from the Agricultural District to the Conservation District meets the following standards and criteria for the Conservation District contained in Section 205-2(e), HRS: Conservation districts shall include areas necessary for providing parklands, wilderness, and beach reserves; open space areas whose existing openness, natural condition, or present state of use, if retained, would enhance the present or potential value of abutting or surrounding communities, or would maintain or enhance the conservation of natural or scenic resources; and areas of value for recreational purposes.

The proposed reclassification will impact favorably the following area of statewide concern set forth under Section 205-17, HRS, maintenance of valued cultural, historical, or natural resources; and, maintenance of other natural resources relevant to Hawaii's economy . . .

The proposed land use district boundary amendment meets the following standards for determining Conservation District boundaries contained in the Hawaii Administrative Rules:

Section 15-15-20(5) The area includes lands necessary for . . . providing and preserving parklands, wilderness and beach reserves . . .

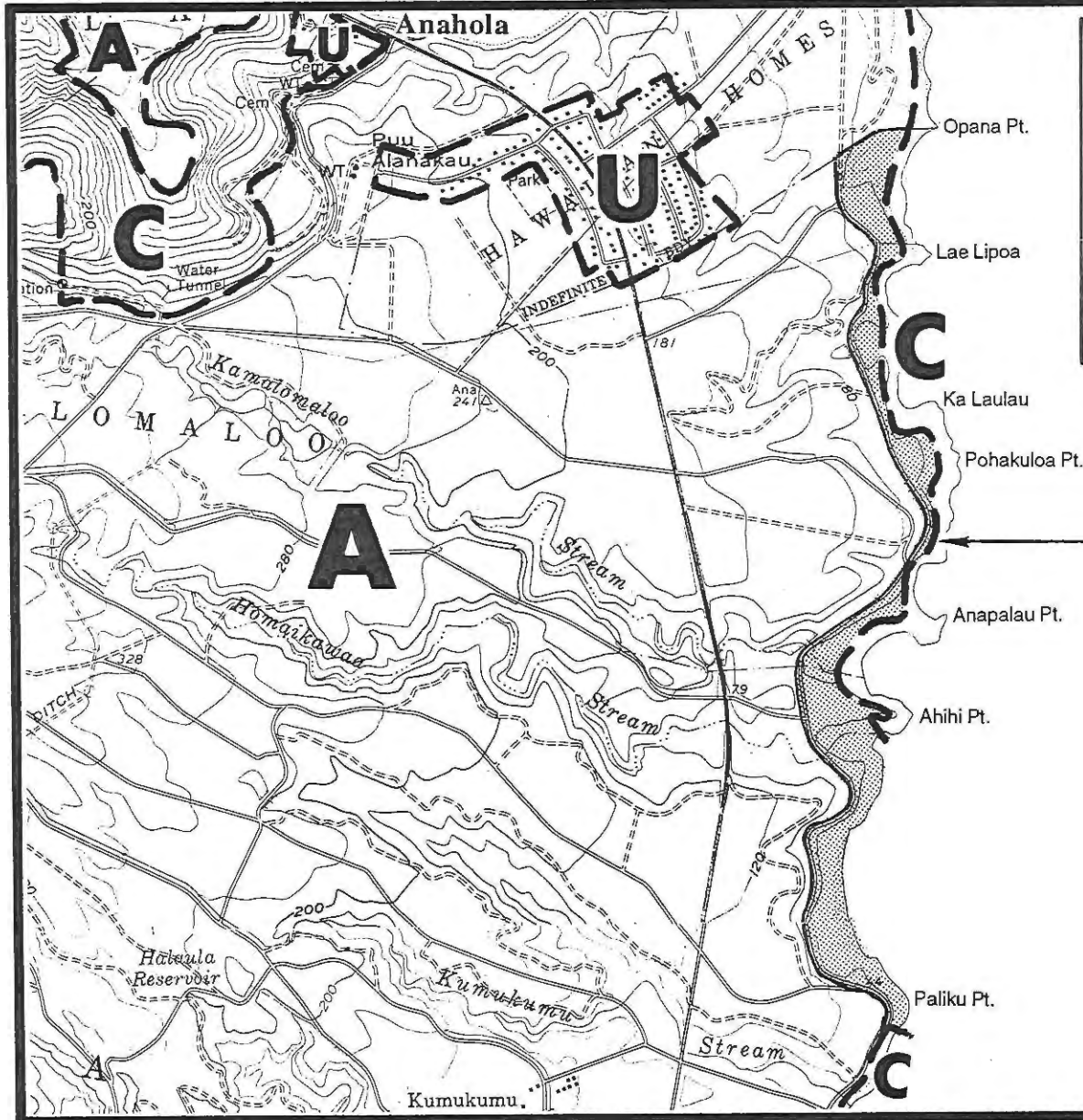
The proposed area for reclassification includes lands necessary for providing future parkland and lands presently used for State, County or private parks, and lands suitable for outdoor recreational uses such as hunting, fishing, hiking, camping, and picnicking.

The proposed reclassification also conforms to the objectives and policies of the Hawaii State Plan for the physical environment, Section 226-11, 12 and 13, HRS, including but not limited to, promoting increased accessibility and prudent use of inland and shoreline areas for public recreational, educational, and scientific purposes. Additionally, the proposed reclassification conforms to the Priority Guidelines for population growth and land resources, Section 226-104, HRS, including but not limited to, utilizing Hawaii's limited land resources wisely, providing adequate land to accommodate projected population and economic growth needs while ensuring protection of the environment and the availability of the shoreline, conservation lands and other limited resources for future generations.


The Na Ala Hele Program Plan (May 1991) prepared by DLNR has identified priority trails on the island of Kauai. A Lihue-Anahola Coastal Trail is proposed as a coastal scenic path which passes numerous beaches, including Donkey Beach, and would accommodate pedestrians, bicycles and horseback riders.

The County of Kauai has designated as "Open" the area along the coast which includes Donkey Beach. The purpose of the "Open" designation is "to preserve, maintain or improve the essential characteristics of the lands and water areas that are of significant value to the public, important to the structure of areas, necessary to buffer undesirable environmental factors, maintain the essential functions of ecological systems, and define and regulate development within areas which may be potentially hazardous."



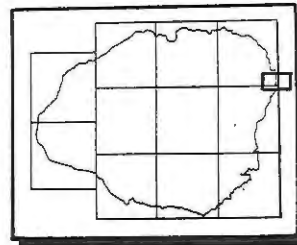


**Exhibit 6**  
**DONKEY BEACH**

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 SCALE IN MILES

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1992

**A to C**





Upper Wailua River, 20 acres (A to C)

The proposed reclassification of the Upper Wailua River from the Agricultural District to the Conservation District meets the following standards and criteria for the Conservation District contained in Section 205-2(e), HRS: Conservation districts shall include areas necessary for conserving indigenous or endemic plants, fish, and wildlife, including those which are threatened or endangered; and preventing floods and soil erosion.

The proposed reclassification will impact favorably the following area of statewide concern set forth under Section 205-17, HRS, preservation or maintenance of important natural systems or habitats; and maintenance of valued . . . natural resources.

The proposed land use district boundary amendment meets the following standards for determining Conservation District boundaries contained in the Hawaii Administrative Rules:

Section 15-15-20(5) The area includes lands necessary for . . . conserving natural ecosystems of endemic plants, fish and wildlife . . .

Upper Wailua River has been identified as a Special Stream using the Hawaii Stream Assessment and input from stream experts. Upper Wailua River contains native aquatic species, a large area of palustrine wetland, and waterbird recovery habitat according to the Hawaii Stream Assessment.

The Upper Wailua River and a 100-foot corridor extending from the bank is proposed for reclassification. The 100-foot buffer will conserve indigenous or endemic plants, fish and wildlife, preserve and maintain important natural systems and habitats, and conserve and preserve sites of unique ecological significance. The conservation buffer will provide for regulation of uses adjacent to the stream, e.g., structures, assuring enhanced protection of the stream.

Reclassification of the Upper Wailua River from the Agricultural to the Conservation District will protect outstanding aquatic and wetland resources.

The proposed area for reclassification includes areas necessary for preserving natural ecosystems of native plants, fish, and wildlife, particularly those which are endangered.

The proposed reclassification also conforms to the objectives and policies of the Hawaii State Plan for the physical environment, Section 226-11, 12 and 13, HRS, including but not limited to, seeking effective protection of Hawaii's unique and fragile environmental resources, reducing the threat to life and property from erosion and flooding. Additionally, the proposed reclassification conforms to the Priority Guidelines for population growth and land resources, Section 226-104, HRS, including but not limited to, utilizing Hawaii's limited land

resources wisely, providing adequate land to accommodate projected population and economic growth needs while ensuring protection of the environment and the availability of the shoreline, conservation lands and other limited resources for future generations.

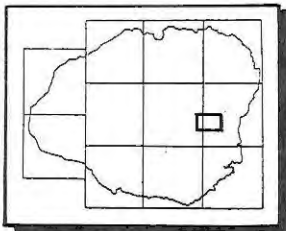
The proposed reclassification also is consistent with the State Conservation Lands Functional Plan which contains policies to identify and assess high quality and other streams for preservation.

The County of Kauai has designated as "Open" the area along the Upper Wailua River corridor on the General Plan Map for the North Shore area. The purpose of the "Open" designation is "to preserve, maintain or improve the essential characteristics of the lands and water areas that are of significant value to the public, important to the structure of areas, necessary to buffer undesirable environmental factors, maintain the essential functions of ecological systems, and define and regulate development within areas which may be potentially hazardous."

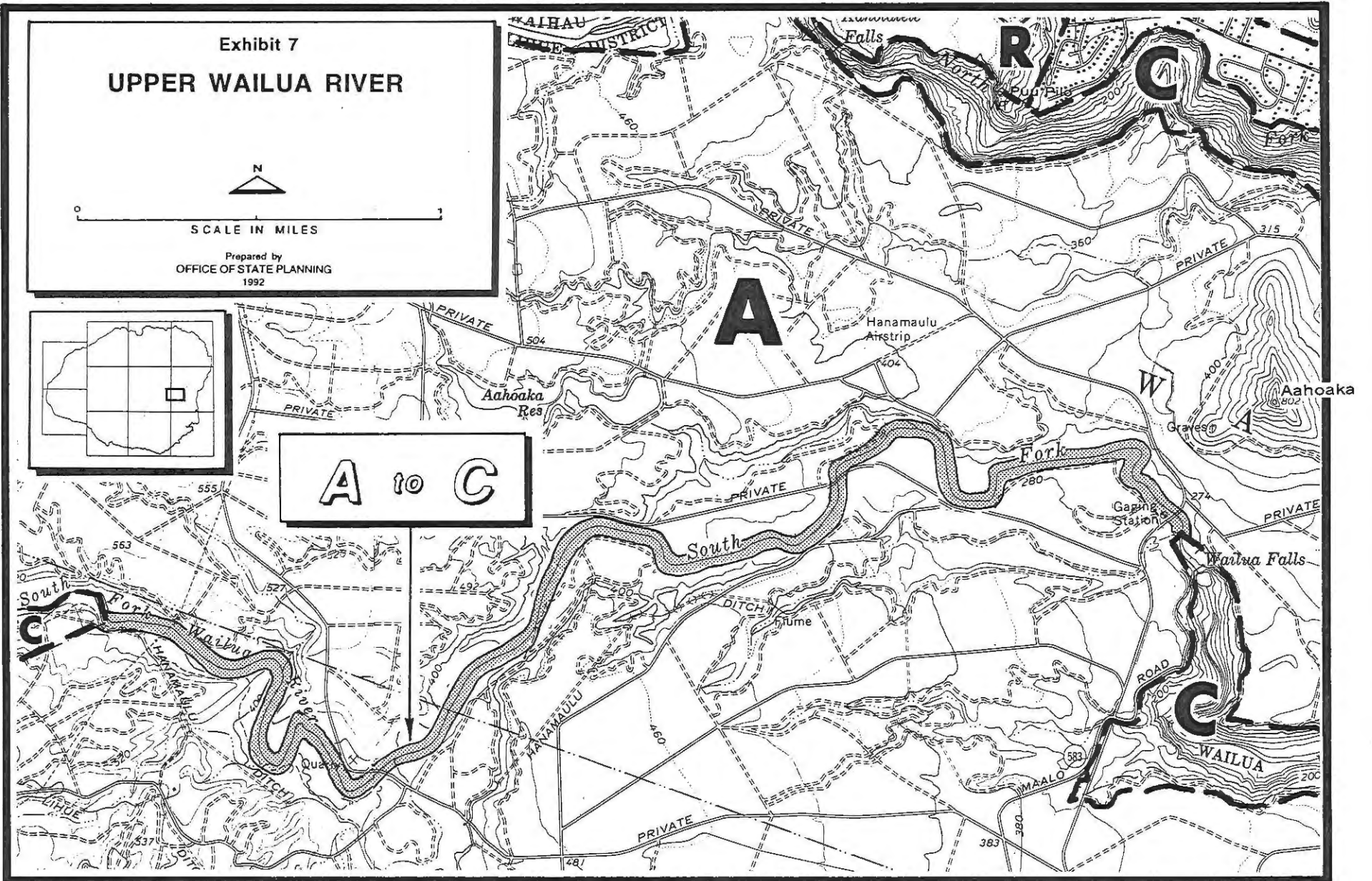
Exhibit 7  
UPPER WAILUA RIVER



Prepared by  
OFFICE OF STATE PLANNING  
1992



A to C





Huleia Stream Tributaries and Wetlands, 807 acres (A to C)

The proposed reclassification of Huleia Stream and Wetlands from the Agricultural District to the Conservation District meets the following standards and criteria for the Conservation District contained in Section 205-2(e), HRS: Conservation districts shall include areas necessary for conserving indigenous or endemic plants, fish, and wildlife, including those which are threatened or endangered; preventing floods and soil erosion; areas of value for recreational purposes; and preserving scenic and historic areas.

The proposed reclassification will impact favorably the following area of statewide concern set forth under Section 205-17, HRS, preservation or maintenance of important natural systems or habitats; and maintenance of valued cultural, historical and natural resources.

The proposed land use district boundary amendment meets the following standards for determining Conservation District boundaries contained in the Hawaii Administrative Rules:

Section 15-15-20(3) The area includes lands used for national or state parks . . .

Section 15-15-20(4) The area includes lands necessary for the conservation, preservation, and enhancement of scenic, cultural, historic or archaeological sites and sites of unique physiographic or ecological significance . . .

Section 15-15-20(5) The area includes lands necessary for . . . conserving natural ecosystems of endemic plants, fish and wildlife . . .

Huleia Stream has been identified as a Special Stream using the Hawaii Stream Assessment and input from stream experts. Huleia Stream contains outstanding aquatic, riparian, archaeological, and recreational resources according to the Hawaii Stream Assessment and has an abundance of native aquatic species, native forest, threatened and endangered birds, a large area of palustrine wetland and waterbird recovery habitat.

The Huleia Stream and a 100-foot corridor extending from the bank are proposed for reclassification. The 100-foot buffer will conserve indigenous or endemic plants, fish and wildlife, preserve and maintain important natural systems and habitats, and conserve and preserve sites of unique ecological significance. The conservation buffer will provide for regulation of uses adjacent to the stream, e.g. structures, assuring enhanced protection of the stream.

The wetlands at Huleia have been identified as important to the recovery of endangered Hawaiian waterbirds in the Hawaiian Waterbirds Recovery Plan (1985), the Draft National Wetlands Priority Conservation Plan (1987), and the Master Plan for the Hawaiian Wetlands National Wildlife Refuge Complex (1985), by the U.S. Fish and Wildlife Service.

The proposed area for reclassification includes areas necessary for preserving natural ecosystems of native plants, fish, and wildlife, particularly those which are endangered.

The proposed reclassification also conforms to the objectives and policies of the Hawaii State Plan for the physical environment, Section 226-11, 12 and 13, HRS, including but not limited to, seeking effective protection of Hawaii's unique and fragile environmental resources, reducing the threat to life and property from erosion and flooding. Additionally, the proposed reclassification conforms to the Priority Guidelines for population growth and land resources, Section 226-104, HRS, including but not limited to, utilizing Hawaii's limited land resources wisely, providing adequate land to accommodate projected population and economic growth needs while ensuring protection of the environment and the availability of the shoreline, conservation lands and other limited resources for future generations.

The proposed reclassification also is consistent with the State Conservation Lands Functional Plan which contains policies to identify and assess high quality and other streams for preservation.

The County of Kauai has designated as "Open" the Huleia Stream and corridor on the General Plan Map for the Lihue area. The purpose of the "Open" designation is "to preserve, maintain or improve the essential characteristics of the lands and water areas that are of significant value to the public, important to the structure of areas, necessary to buffer undesirable environmental factors, maintain the essential functions of ecological systems, and define and regulate development within areas which may be potentially hazardous."

The Kauai County Zoning Ordinance (CZO) in Article 10 outlines Constraint Districts whose purpose(s) include: "to identify those areas where particular physical, biologic and ecologic characteristics of the land, water and atmosphere indicate that standard requirements for development, modification or use may be inadequate to insure the general health, safety and welfare of the public or the maintenance of established physical, geologic and ecologic forms and systems"; "to insure that development, modification or use will not create substantial threats to health, safety and welfare of people, or to the maintenance of established physical, biologic, and ecologic forms and systems"; and "to permit development, modification or use when it can be shown, within the limits of available knowledge, that ecologic interrelationship will be improved or not significantly depreciated."

There are six (6) Constraint Districts: Drainage, Flood, Shore, Slope, Soils, and Tsunami. The CZO includes language describing the types of areas to be included in each of the Constraint Districts and the restrictions on and requirements for development within them.

Huleia Stream and Wetlands are identified on the Kauai County Constraint Maps to include the following constraints: slope and flood.



The Federal Emergency Management Agency (FEMA) has prepared Flood Insurance Rate Maps (FIRM) which delineate various flood hazard districts subject to periodic inundation by flooding and/or tsunami. The County of Kauai includes in its Flood Constraint District "all lands subject to flooding and identified as flood fringe, floodway, and general floodplain areas by the Federal Insurance Administration" in a scientific and engineering report entitled, "The Flood Insurance Study for the County of Kauai," dated March 9, 1987, with accompanying Flood Insurance Rate Maps.

Portions of Huleia Stream and Wetlands lie in FIRM zones of floodway and floodplain. The floodway begins at roughly the 200-foot contour interval along Papakolea Stream and extends down slope in both directions along Huleia Stream, encompassing most of the Huleia National Wildlife Refuge. The floodplain extends on both sides of the stream up to the beginning of the slopes.

Statewide soil surveys were cooperatively conducted between the U.S. Department of Agriculture Soil Conservation Service (SCS) and the University of Hawaii Agricultural Experiment Station in 1965. These maps showing soil types can be used to indicate areas of steep slopes, soil instabilities, and soils subject to periodic or frequent saturation (hydric).

Soils having slopes of 25-70 percent are indicated on both sides of Huleia Stream. There are small areas of high erosion potential along the slopes of both Papakolea and Huleia Streams.

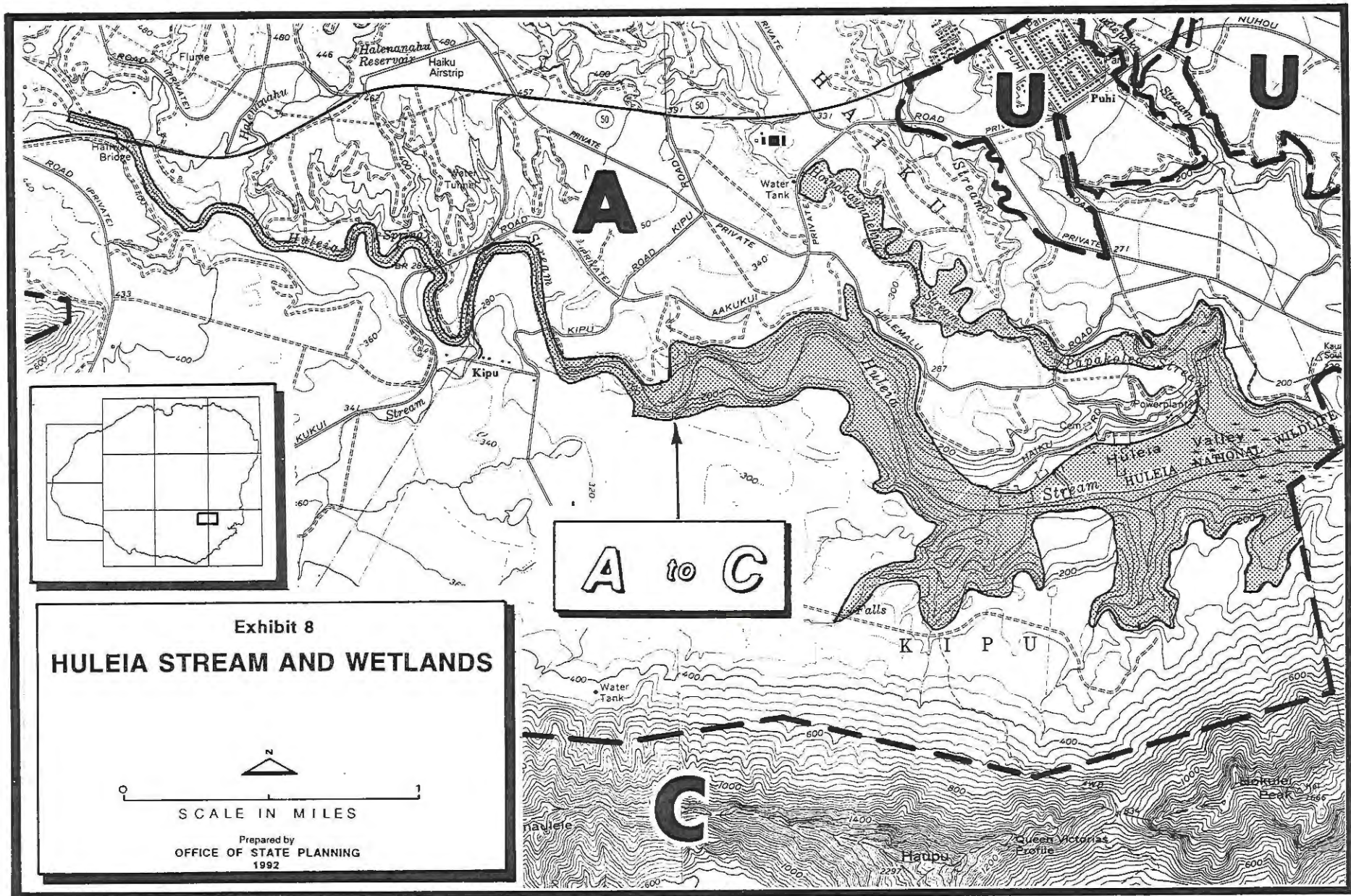
Statewide slope maps were derived from the Detailed Land Classification studies done for each island by the Land Study Bureau in 1969. These maps included information on slope, general soil character, depth to consolidated material, and the type of underlying material.

Steep slopes of 30 percent or greater are indicated for the slopes directly behind the Huleia National Wildlife Refuge, along the Papakolea Stream course, and along the banks of Huleia Stream south of and above the refuge.

The area above Half-Way Bridge to the source of Huleia Stream is not recommended as a Priority #1 area. However, because the protection of the entire stream course is very important to the health of the stream, we are recommending that the stream and 100-foot corridor be considered a Priority #2 area.

Any development in these areas that might have a negative impact on the stream's aquatic resources should be thoroughly and critically reviewed.





**A**

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**A to C**

K I P U

**C**

**Exhibit 8**  
**HULEIA STREAM AND WETLANDS**

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SCALE IN MILES

Prepared by  
**OFFICE OF STATE PLANNING**  
 1992



Waita Reservoir, 123 acres (A to C)

The proposed reclassification of Waita Reservoir from the Agricultural District to the Conservation District meets the following standards and criteria for the Conservation District contained in Section 205-2(e), HRS: Conservation districts shall include areas necessary for conserving indigenous or endemic plants, fish, and wildlife, including those which are threatened or endangered; areas of value for recreational purposes; preserving scenic and historic areas; and preventing floods and soil erosion.

The proposed reclassification will impact favorably the following area of statewide concern set forth under Section 205-17, HRS, preservation or maintenance of important natural systems or habitats; and maintenance of valued . . . natural resources.

The proposed land use district boundary amendment meets the following standards for determining Conservation District boundaries contained in the Hawaii Administrative Rules:

Section 15-15-20(4) The area includes lands necessary for the conservation, preservation, and enhancement of scenic . . . sites and sites of unique physiographic or ecologic significance . . .

Section 15-15-20(5) The area includes lands necessary for . . . conserving natural ecosystems of endemic plants, fish and wildlife . . .

Waita Reservoir has been identified as important to the recovery of endangered Hawaiian waterbirds in the Hawaiian Waterbirds Recovery Plan (1985).

The proposed area for reclassification includes areas necessary for preserving natural ecosystems of native plants, fish, and wildlife, particularly those which are endangered. The northern section has been proposed for reclassification because this is the most important area for waterbirds, according to the Department of Land and Natural Resources. A 300-foot buffer area around the reservoir is also proposed to assure protection of the resources by regulating uses around the wetland, e.g., structures.

The proposed reclassification also conforms to the objectives and policies of the Hawaii State Plan for the physical environment, Section 226-11, 12 and 13, HRS, including but not limited to, seeking effective protection of Hawaii's unique and fragile environmental resources, reducing the threat to life and property from erosion and flooding. Additionally, the proposed reclassification conforms to the Priority Guidelines for population growth and land resources, Section 226-104, HRS, including but not limited to, utilizing Hawaii's limited land resources wisely, providing adequate land to accommodate projected population and economic growth needs while ensuring protection of the environment and the availability of the shoreline, conservation lands and other limited resources for future generations.

The proposed reclassification also addresses the State Conservation Lands Functional Plan and the State Recreation Functional Plan which contain actions to protect top priority wetlands.

The County of Kauai has designated as "Open" the area around Waita Reservoir on the General Plan Map for the Koloa-Poipu area. The purpose of the "Open" designation is "to preserve, maintain or improve the essential characteristics of the lands and water areas that are of significant value to the public, important to the structure of areas, necessary to buffer undesirable environmental factors, maintain the essential functions of ecological systems, and define and regulate development within areas which may be potentially hazardous." The Koloa-Poipu Development Plan (1977) recognizes Waita Reservoir as "a potential recreational resource to provide boating, fishing, picnic and camping areas and wildlife habitat."

The Kauai County Zoning Ordinance (CZO) in Article 10 outlines Constraint Districts whose purpose(s) include: "to identify those areas where particular physical, biologic and ecologic characteristics of the land, water and atmosphere indicate that standard requirements for development, modification or use may be inadequate to insure the general health, safety and welfare of the public or the maintenance of established physical, geologic and ecologic forms and systems"; "to insure that development, modification or use will not create substantial threats to health, safety and welfare of people, or to the maintenance of established physical, biologic, and ecologic forms and systems"; and "to permit development, modification or use when it can be shown, within the limits of available knowledge, that ecologic interrelationship will be improved or not significantly depreciated."

There are six (6) Constraint Districts: Drainage, Flood, Shore, Slope, Soils, and Tsunami. The CZO includes language describing the types of areas to be included in each of the Constraint Districts and the restrictions on and requirements for development within them.

Waita Reservoir is identified on the Kauai County Constraint Maps to include the following constraints: flood, soils and slope.

Statewide soil surveys were cooperatively conducted between the U.S. Department of Agriculture Soil Conservation Service (SCS) and the University of Hawaii Agricultural Experiment Station in 1965. These maps showing soil types can be used to indicate areas of steep slopes, soil instabilities, and soils subject to periodic or frequent saturation (hydric).

Soils having slopes of 20-70 percent are indicated along the southeastern side of the large pond area and portions of the west and north sides of the small pond area. The soils around most of the reservoir pond areas are identified as being highly erodible, according to the SCS. In addition, soils around both of the pond areas are identified as having high shrink-swell potential and hydric characteristics.

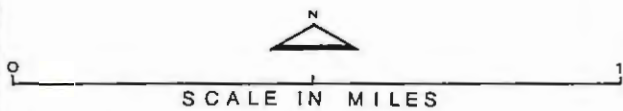
Statewide slope maps were derived from the Detailed Land Classification studies done for each island by the Land Study Bureau in 1969. These maps included information on slope, general soil character, depth to consolidated material, and the type of underlying material.

Steep slopes of 30 percent or greater are indicated along the eastern and southwestern shore of the large pond area and along the eastern shore of the small pond area.



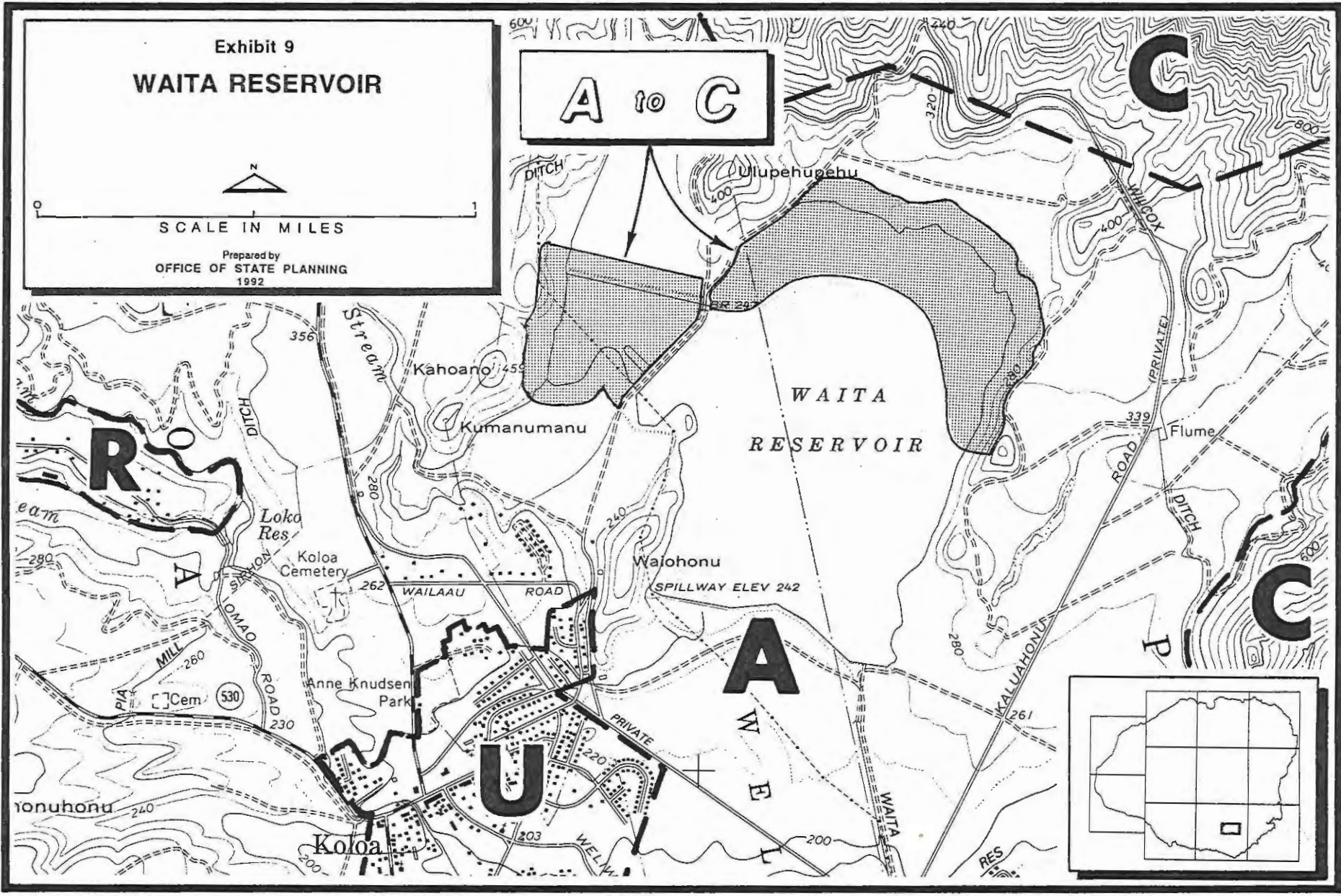


Exhibit 9  
**WAITA RESERVOIR**



Prepared by  
OFFICE OF STATE PLANNING  
1992

**A to C**





Priority #2 Conservation Recommendations

Kilauea Point National Wildlife Refuge, 82 acres (A to C)

The proposed reclassification of the Kilauea Point National Wildlife Refuge from the Agricultural District to the Conservation District meets the following standards and criteria for the Conservation District contained in Section 205-2(e), HRS: Conservation districts shall include areas necessary for conserving indigenous or endemic plants, fish, and wildlife, including those which are threatened or endangered; open space areas whose existing openness, natural condition, or present state of use, if retained, would . . . maintain or enhance the conservation of natural or scenic resources; areas of value for recreational purposes; and preventing floods and soil erosion.

The proposed reclassification will impact favorably the following area of statewide concern set forth under Section 205-17, HRS, preservation or maintenance of important natural systems or habitats; maintenance of valued . . . natural resources; maintenance of valued cultural, historical, or natural resources; and maintenance of other natural resources relevant to Hawaii's economy.

The proposed land use district boundary amendment meets the following standards for determining Conservation District boundaries contained in the Hawaii Administrative Rules:

Section 15-15-20(2) The area shall include lands susceptible to floods, erosion damage . . . and lands necessary for the protection of the health and welfare of the public by reason of the land's susceptibility to tsunami inundation and flooding . . .

Section 15-15-20(3) The area shall include lands used for national or state parks.

Section 15-15-20(4) The area shall include lands necessary for the conservation, preservation, and enhancement of scenic, cultural, historic or archaeological sites and sites of unique physiographic or ecologic significance . . .

Section 15-15-20(5) The area includes lands necessary for . . . conserving natural ecosystems of endemic plants, fish and wildlife . . .

Reclassification of the Kilauea National Wildlife Refuge from the Agricultural to the Conservation District will conserve indigenous or endemic plants, fish and wildlife; protect against flooding or erosion damage; preserve and maintain important natural systems and habitats; and conserve and preserve sites of unique ecological significance.

The proposed area for reclassification includes lands necessary for preserving natural ecosystems of native plants, fish, and wildlife, particularly those which are endangered.

The proposed area for reclassification also conforms to the objectives and policies of the Hawaii State Plan for the physical environment, Section 226-11, 12, and 13, HRS, including but not limited to, seeking effective protection of Hawaii's unique and fragile environmental resources, reducing the threat to life and property from erosion and flooding. Additionally, the proposed reclassification conforms to the Priority Guidelines for population growth and land resources, Section 225-104, HRS, including but not limited to, utilizing Hawaii's limited land resources wisely, providing adequate land to accommodate projected population and economic growth needs while ensuring protection of the environment and the availability of the shoreline, conservation lands and other limited resources for future generations.

The proposed reclassification also addresses the State Conservation Lands Functional Plan which contains policies to intensify protection of important aquatic ecosystems and species. The reef areas offshore of Kilauea Point have been suggested for establishment of a State Marine Life Conservation District (MLCD) in the State Conservation Lands Functional Plan.

The State Recreation Program Handbook (1978) by the Department of Land and Natural Resources identifies the Kilauea Point area as one of 14 Statewide Value Sites and "a recreational complex of exceptional scenic and natural values that encompass the shoreline and stream system." The seabird habitat offers the public an opportunity "unequaled elsewhere on the main Hawaiian Islands" to closely observe endangered and threatened species in their nesting grounds. Further, the Kilauea Point Lighthouse is listed on the Hawaii Register of Historic Places and has been nominated to the National Register.

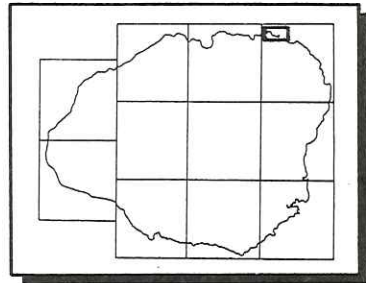
The County of Kauai has designated as "Open" and "Scenic/Ecologic Resources Special Treatment District" the area at Kilauea Point and adjacent areas on the General Plan Map for the North Shore area. The purpose of the "Open" designation is "to preserve, maintain or improve the essential characteristics of the lands and water areas that are of significant value to the public, important to the structure of areas, necessary to buffer undesirable environmental factors, maintain the essential functions of ecological systems, and define and regulate development within areas which may be potentially hazardous." The Special Treatment-R includes land and water areas which have unique natural forms, biologic systems, or aesthetic characteristics which are of particular significance and value to the general public.



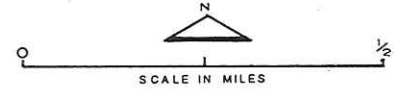
Mokuiaea

Kilauea Pt.

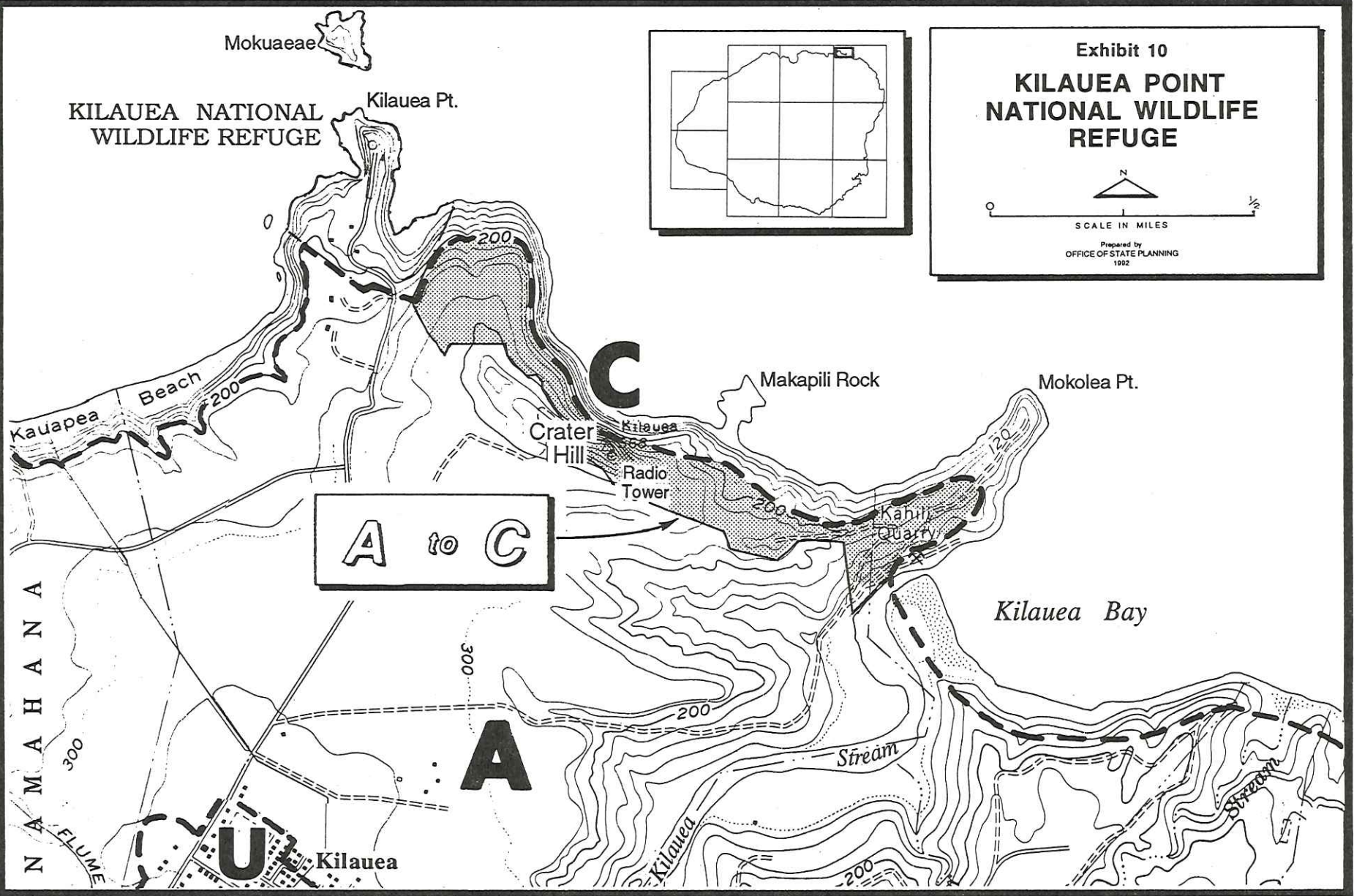
# KILAUEA NATIONAL WILDLIFE REFUGE



## Exhibit 10 KILAUEA POINT NATIONAL WILDLIFE REFUGE



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Kapaa Stream and Tributaries, 84 acres (A to C)

The proposed reclassification of Kapaa Stream from the Agricultural District to the Conservation District meets the following standards and criteria for the Conservation District contained in Section 205-2(e), HRS: Conservation districts shall include areas necessary for . . . conserving indigenous or endemic plants, fish, and wildlife, including those which are threatened or endangered; and preventing floods and soil erosion.

The proposed reclassification will impact favorably the following area of statewide concern set forth under Section 205-17(3), HRS, preservation or maintenance of important natural systems or habitats; and maintenance of valued . . . natural resources.

The proposed land use district boundary amendment meets the following standards for determining Conservation District boundaries contained in the Hawaii Administrative Rules:

Section 15-15-20(5) The area includes lands necessary for . . . conserving natural ecosystems of endemic plants, fish and wildlife . . .

Kapaa Stream has been identified as a Special Stream using the Hawaii Stream Assessment and input from stream experts. Kapaa Stream has an abundance of native aquatic species and the presence of Lentipes ('o'opu alamo'o) according to the Hawaii Stream Assessment.

Reclassification of Kapaa Stream from the Agricultural to the Conservation District will conserve indigenous or endemic plants, fish and wildlife, and preserve and maintain important natural systems and habitats.

The proposed area for reclassification includes lands necessary for preserving natural ecosystems of native plants, fish, and wildlife, particularly those which are endangered.

The proposed reclassification also conforms to the objectives and policies of the Hawaii State Plan for the physical environment, Section 226-11, 12 and 13, HRS, including but not limited to, seeking effective protection of Hawaii's unique and fragile environmental resources, and reducing the threat to life and property from erosion and flooding. Additionally, the proposed reclassification conforms to the Priority Guidelines for population growth and land resources, Section 226-104, HRS, including but not limited to, identifying critical environmental areas . . . to include . . . watershed and recharge areas, wildlife habitats, areas with endangered species . . . natural streams and water bodies . . . and utilizing Hawaii's limited land resources wisely, providing adequate land to accommodate projected population and economic growth needs while ensuring protection of the environment and the availability of the shoreline, conservation lands and other limited resources for future generations.

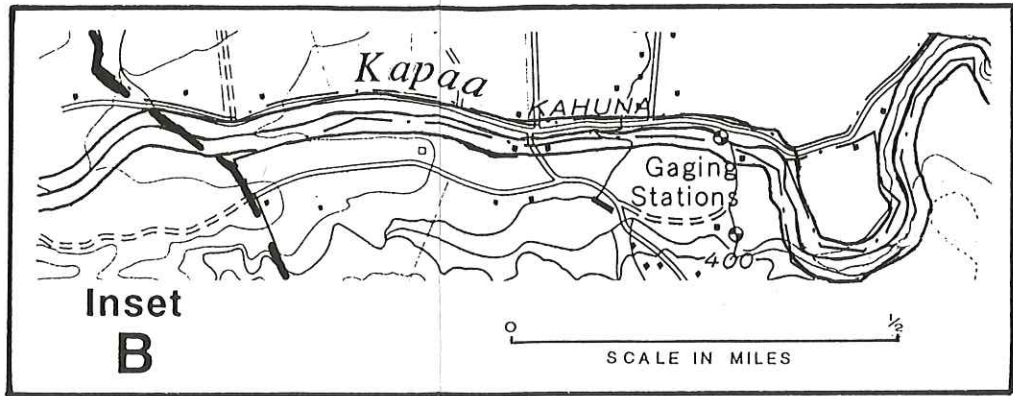
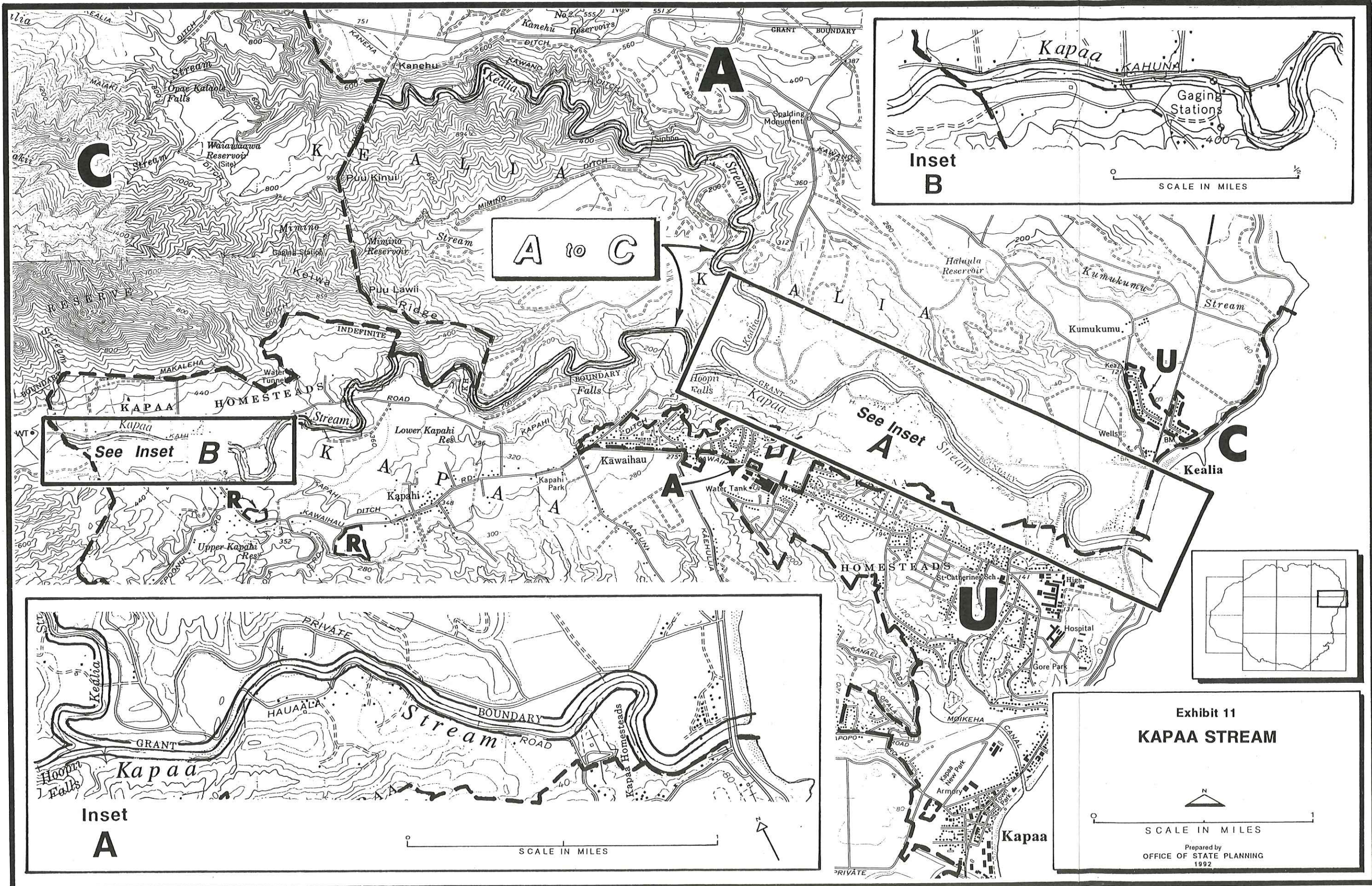
The County of Kauai has designated as "Open" the area along Kapaa Stream course on the General Plan Map for the Kapaa-Wailua area. The purpose of the "Open" designation is "to preserve, maintain or improve the essential characteristics of the lands and water areas that are of significant value to the public, important to the structure of areas, necessary to buffer undesirable environmental factors, maintain the essential functions of ecological systems, and define and regulate development within areas which may be potentially hazardous."

As stated earlier in this report, Conservation District stream protection corridors have only been recommended for lengths of streams that pass through the State Agricultural District. However, because protection of the entire stream course is very important to the continued health of the stream, we are also recommending that stream corridors within the Urban and Rural Districts of these streams be considered Priority 2 areas.

A maximum 100-foot wide corridor would apply where practicable; otherwise a corridor would be narrowed to avoid existing structures or fences. For the Kapaa Stream, this area would be Urban land from the makai border of the Agricultural District to the ocean, 100 feet wide on both sides of the stream.

Although the initiation of petitions to reclassify these corridors to the Conservation District is not recommended at this time, any development in these areas that might negatively impact on a stream's aquatic resources should be thoroughly and critically reviewed.





A to C

See Inset B

See Inset A

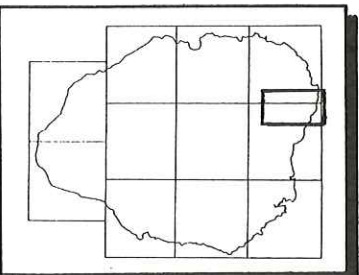
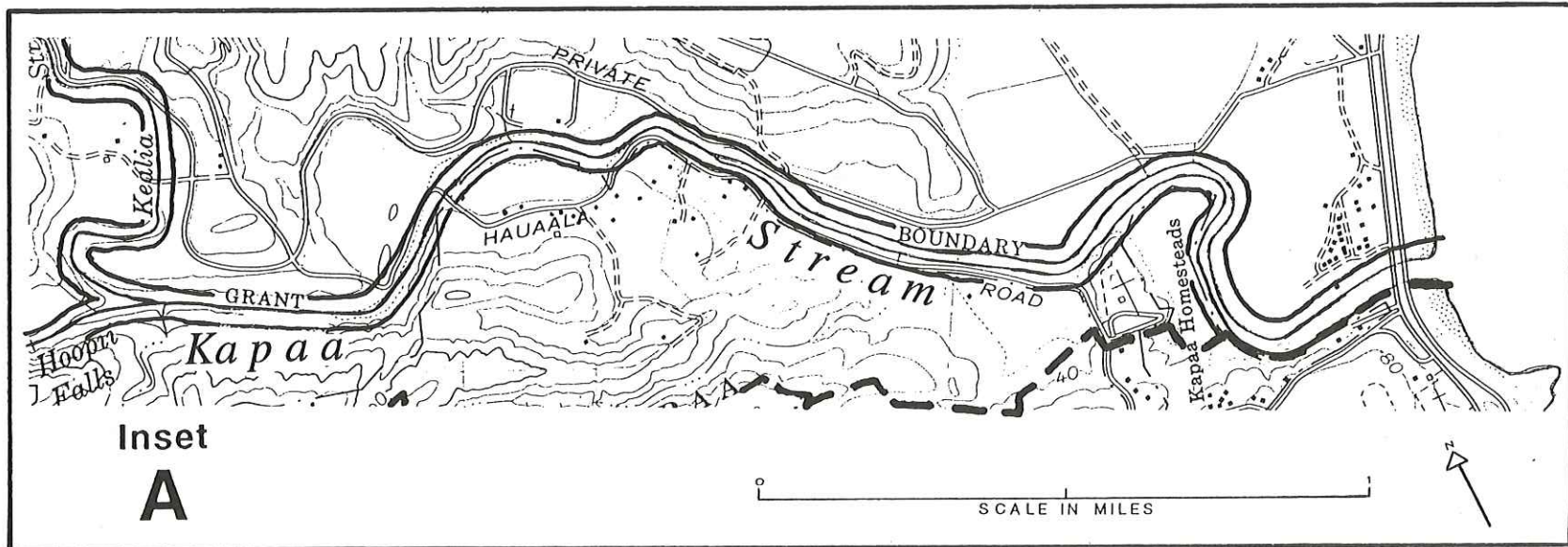


Exhibit 11  
**KAPAA STREAM**

SCALE IN MILES

Prepared by  
 OFFICE OF STATE PLANNING  
 1992



Sleeping Giant Mountain, 100 acres (A to C)

The proposed reclassification of lands along the fringe of Sleeping Giant Mountain from the Agricultural District to the Conservation District meets the following standards and criteria for the Conservation District contained in Section 205-2(e), HRS: Conservation districts shall include areas necessary for preserving scenic and historic areas and preventing floods and soil erosion. The recommended parcel lies below the north and west slopes of the Nonou Forest Reserve boundary at the toe of Sleeping Giant Mountain between approximately 200 and 462 feet in elevation.

The proposed reclassification will impact favorably the following area of statewide concern set forth under Section 205-17, HRS, preservation or maintenance of important natural systems or habitats; and maintenance of valued . . . natural resources.

The proposed land use district boundary amendment meets the following standards for determining Conservation District boundaries contained in the Hawaii Administrative Rules:

Section 15-15-20(7) The area includes lands with topography, soils, climate, or other related environmental factors that may not be normally adaptable or presently needed for urban, rural, or agricultural use, and lands with a general slope of 20 percent or more which provide for open space amenities or scenic values . . .

The proposed area for reclassification includes lands susceptible to floods and soil erosion. The General Soil Map, Island of Kauai (USDA Soil Conservation Service, 1972) indicates that this parcel's soil composition is Rough Mountainous-Rough Broken Land-Rock outcrop association. These soil types occur in areas which are very steep to precipitous.

The proposed reclassification also conforms to the objectives and policies of the Hawaii State Plan for the physical environment, Section 226-11, 12 and 13, HRS, including but not limited to, seeking effective protection of Hawaii's unique and fragile environmental resources and reducing the threat to life and property from erosion and flooding. Additionally, the proposed reclassification conforms to the Priority Guidelines for population growth and land resources, Section 226-104, HRS, including but not limited to, utilizing Hawaii's limited land resources wisely, providing adequate land to accommodate projected population and economic growth needs while ensuring protection of the environment, and the availability of the shoreline, conservation lands and other limited resources for future generations.

The County of Kauai has designated as "Open" on the General Plan Map portions of the area along Sleeping Giant Mountain for the Kapaa-Wailua area. The purpose of the "Open" designation is "to preserve, maintain or improve the essential characteristics of the lands and water areas that are of significant value to the public, important to the structure of areas necessary to buffer undesirable environmental factors, maintain

the essential functions of ecological systems, and define and regulate development within areas which may be potentially hazardous." The Kapaa-Wailua Development Plan (1975) indicates that the Nonou Mountains (Sleeping Giant) are a major visual element that is used for orientation throughout the community area and provides an important recreational resource for the area.

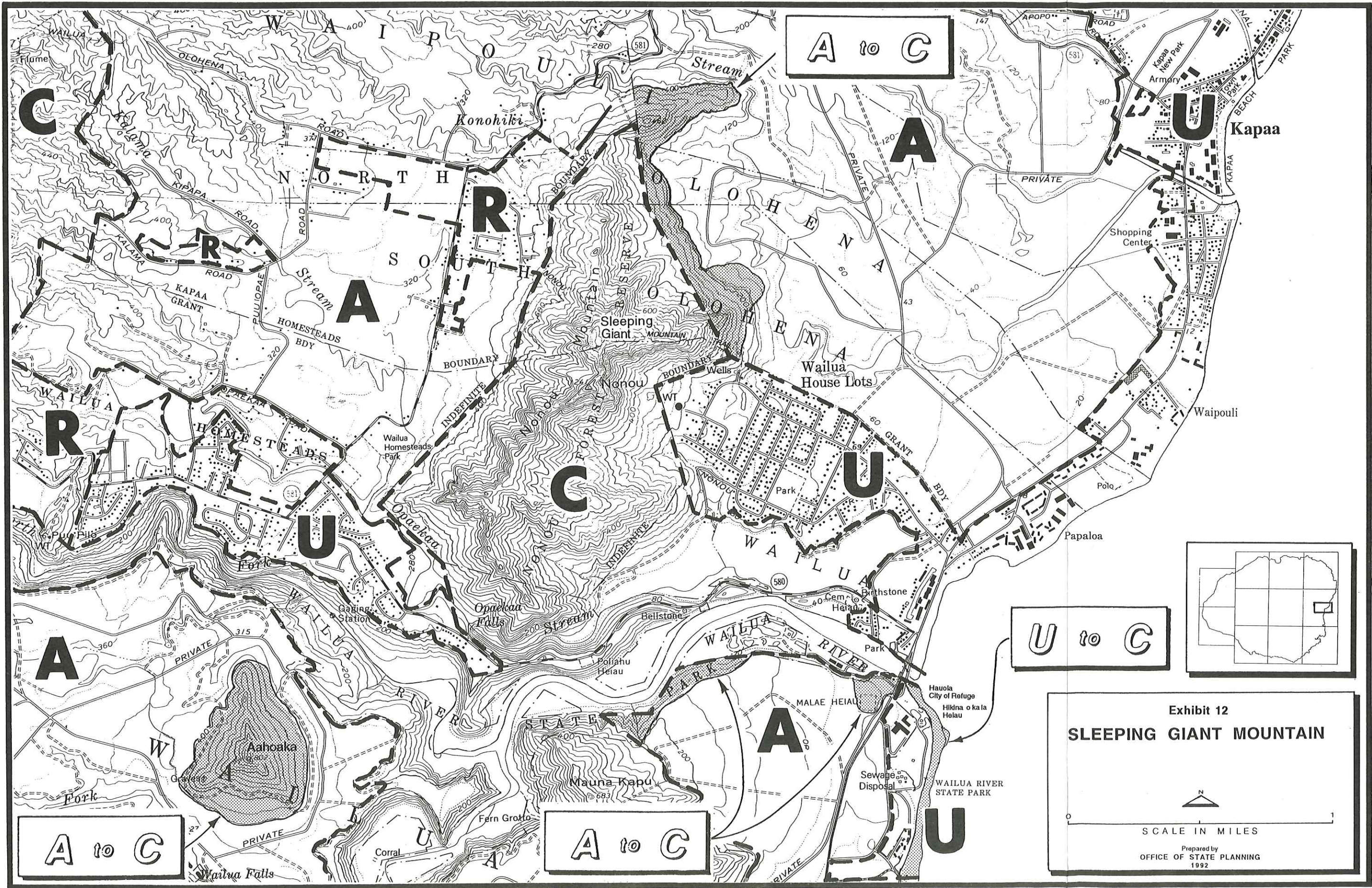


Exhibit 12  
**SLEEPING GIANT MOUNTAIN**

SCALE IN MILES

Prepared by  
 OFFICE OF STATE PLANNING  
 1992



Wailua River State Park, 55 acres (A and U to C)

The proposed reclassification of portions of the existing Wailua River State Park from the Agricultural District to the Conservation District meets the following standards and criteria for the Conservation District contained in Section 205-2(e), HRS: Conservation districts shall include areas necessary for conserving indigenous or endemic plants, fish, and wildlife, including those which are threatened or endangered; providing parklands, wilderness, and beach reserves; areas of value for recreational purposes; and preventing floods and soil erosion.

The proposed reclassification will impact favorably the following area of statewide concern set forth under Section 205-17, HRS, preservation or maintenance of important natural systems or habitats; and maintenance of valued cultural, historical and natural resources.

The proposed land use district boundary amendment meets the following standards for determining Conservation District boundaries contained in the Hawaii Administrative Rules:

Section 15-15-20(3) The area includes lands used for national or state parks . . .

Section 15-15-20(4) The area shall include lands necessary for the conservation, preservation, and enhancement of scenic, cultural, historic or archaeologic sites and sites of unique physiographic or ecologic significance . . .

Reclassification of portions of the existing Wailua River State Park from the Agricultural to the Conservation District will preserve lands with historic or archaeologic sites and lands currently used for State parks.

The proposed area for reclassification includes lands presently used for national, State, County or private parks.

The proposed reclassification also conforms to the objectives and policies of the Hawaii State Plan for the physical environment, Section 226-11, 12 and 13, HRS, including but not limited to, seeking effective protection of Hawaii's unique and fragile environmental resources and reducing the threat to life and property from erosion and flooding. Additionally, the proposed reclassification conforms to the Priority Guidelines for population growth and land resources, Section 226-104, HRS, including but not limited to, utilizing Hawaii's limited land resources wisely, providing adequate land to accommodate projected population and economic growth needs while ensuring protection of the environment, and the availability of the shoreline, conservation lands and other limited resources for future generations.

The County of Kauai has designated areas along the Wailua River including State parklands as Open on the General Plan Map for the Kapaa-Wailua area. The purpose of the Open designation is "to preserve, maintain or improve the essential characteristics of the lands and water areas that are of significant value to the public, important to the structure of areas

necessary to buffer undesirable environmental factors, maintain the essential functions of ecological systems, and define and regulate development within areas which may be potentially hazardous."

As stated earlier in this report, Conservation District stream protection corridors have only been recommended for lengths of streams that pass through the State Agricultural District. However, because protection of the entire stream course is very important to the continued health of the stream, we are also recommending that stream corridors within the Urban and Rural Districts be considered as Priority 2 areas.

A maximum 100-foot wide corridor would apply where practicable, otherwise a corridor would be narrowed to avoid existing structures or fences. For the Wailua River, this area would be Urban District land on the north and south sides of the river, mauka and makai at Kuhio Highway.

Although the initiation of petitions to reclassify these corridors to the Conservation District is not recommended at this time, any development in these areas that might negatively impact on a stream's aquatic resources should be thoroughly and critically reviewed.



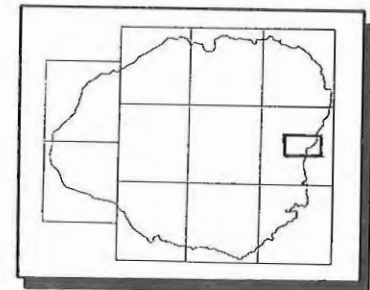
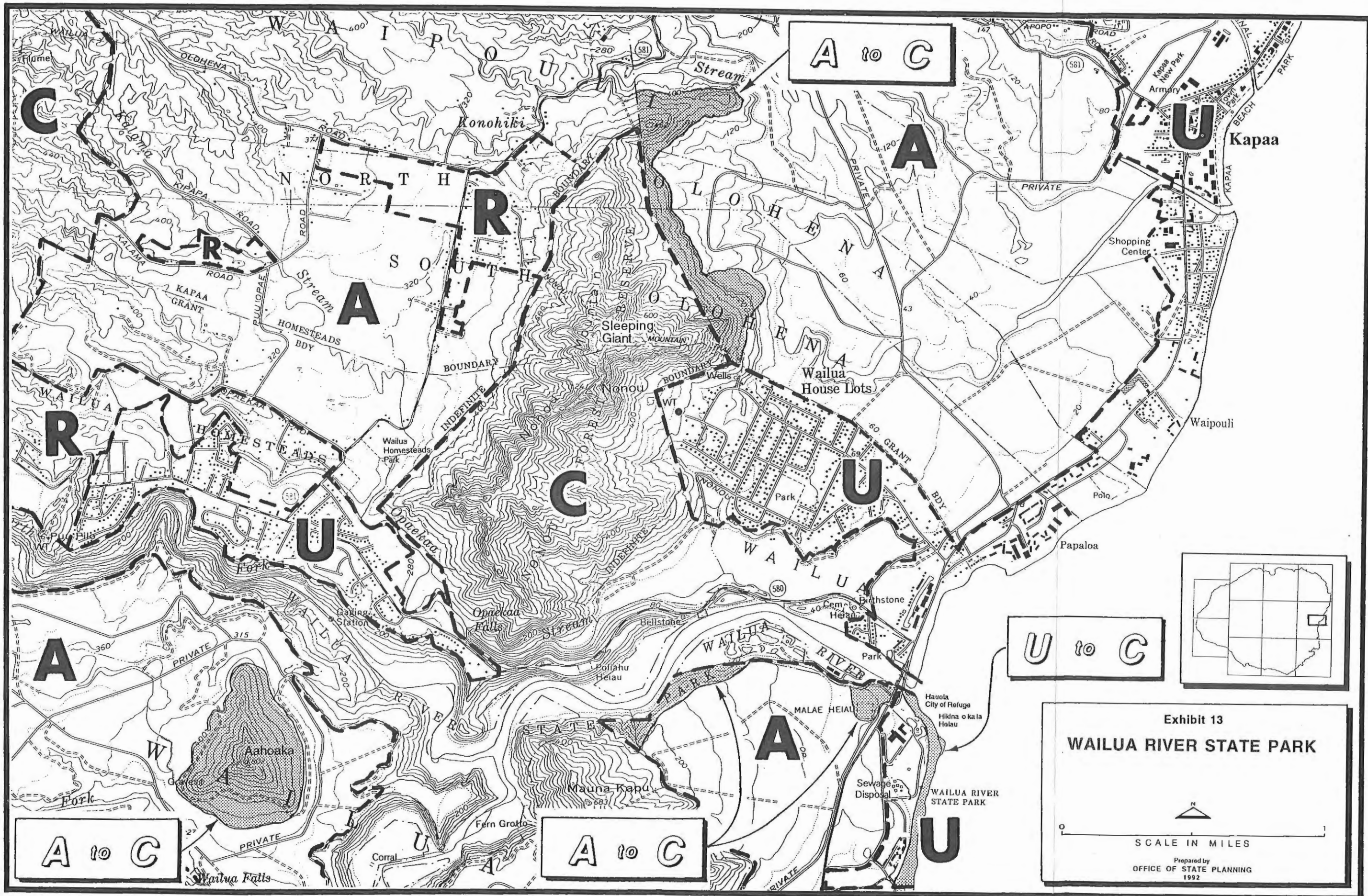


Exhibit 13  
**WAILUA RIVER STATE PARK**

SCALE IN MILES

Prepared by  
 OFFICE OF STATE PLANNING  
 1992



Aahoaka, 128 acres (A to C)

The proposed reclassification of Aahoaka from the Agricultural District to the Conservation District meets the following standards and criteria for the Conservation District contained in Section 205-2(e), HRS: Conservation districts shall include areas necessary for preserving scenic and historic areas; open space areas whose existing openness, natural condition, or present state of use, if retained, . . . would maintain or enhance the conservation of natural or scenic resources; and areas of value for recreational purposes. The reclassification area includes lands at the 380 to 802-foot elevation (peak of Aahoaka).

The proposed reclassification will impact favorably the following area of statewide concern set forth under Section 205-17, HRS, maintenance of valued cultural, historical, or natural resources.

The proposed land use district boundary amendment meets the following standards for determining Conservation District boundaries contained in the Hawaii Administrative Rules:

Section 15-15-20(4) The area shall include lands necessary for the conservation, preservation, and enhancement of scenic, cultural, historic or archaeological sites and sites of unique physiographic or ecologic significance . . .

Section 15-15-20(5) The area includes lands necessary for providing and preserving parklands, wilderness, and beach reserves . . .

Reclassification of Aahoaka from the Agricultural to the Conservation District will include lands necessary for preserving parklands and those used for State parks.

The proposed area for reclassification includes lands necessary for providing future parkland and lands presently used for national, State, County, or private parks.

The proposed reclassification also conforms to the objectives and policies of the Hawaii State Plan for the physical environment, Section 226-11, 12 and 13, HRS, including but not limited to, seeking effective protection of Hawaii's unique and fragile environmental resources, reducing the threat to life and property from erosion and flooding. Additionally, the proposed reclassification conforms to the Priority Guidelines for population growth and land resources, Section 226-104, HRS, including but not limited to, utilizing Hawaii's limited land resources wisely, providing adequate land to accommodate projected population and economic growth needs while ensuring protection of the environment, and the availability of the shoreline, conservation lands and other limited resources for future generations.

The County of Kauai has designated the area which includes Aahoaka as "Open" on the General Plan Map for the Kapaa-Wailua area and the Lihue area. The purpose of the "Open" designation is "to preserve, maintain or improve the essential characteristics of the lands and water areas that are of significant value to the public, important to the structure of areas necessary to buffer undesirable environmental factors, maintain the essential functions of ecological systems, and define and regulate development within areas which may be potentially hazardous."

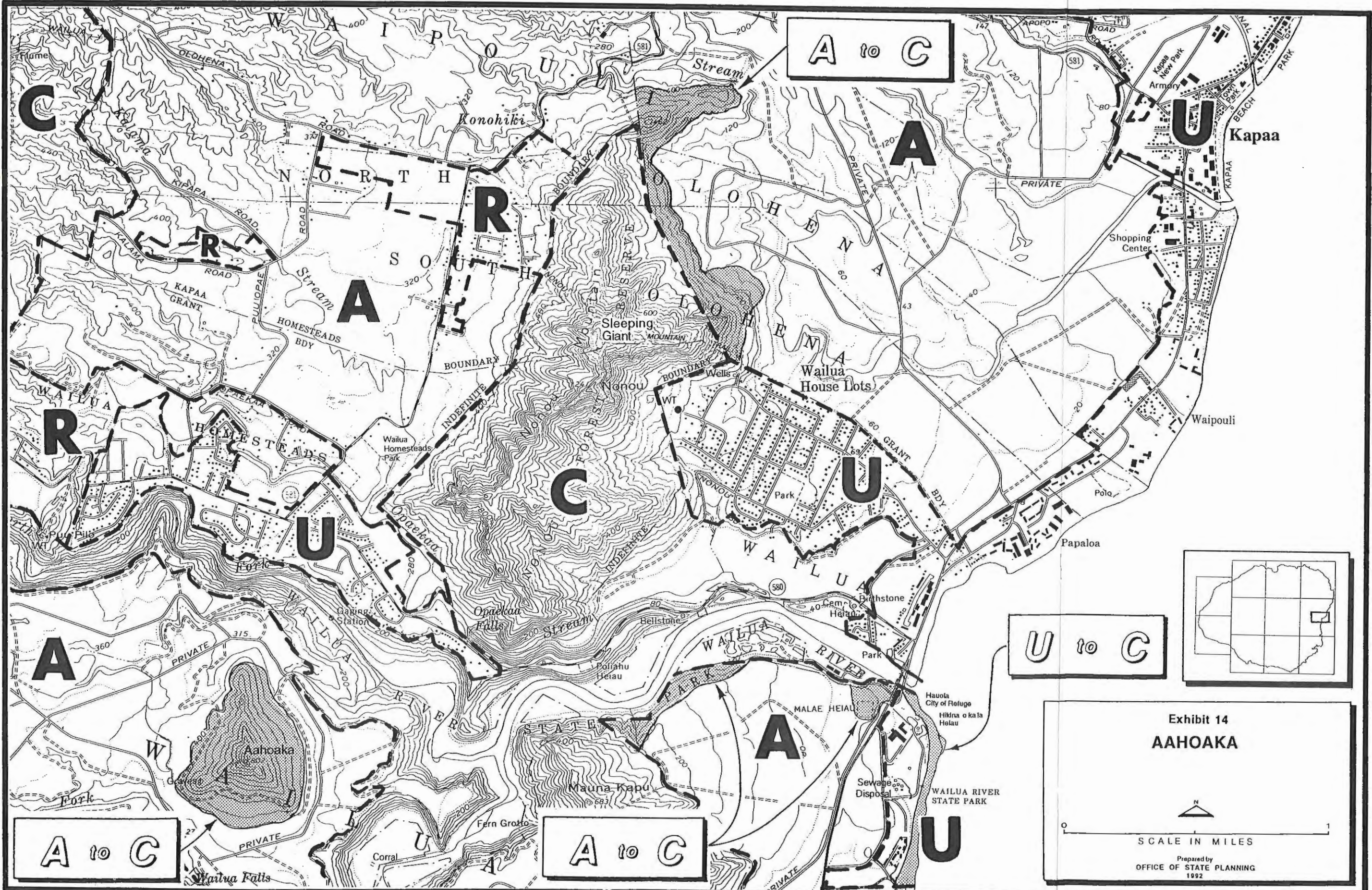


Exhibit 14  
**AAHOAKA**

0 1  
 SCALE IN MILES

Prepared by  
 OFFICE OF STATE PLANNING  
 1992



Kalepa Ridge, 89 acres (A to C)

The proposed reclassification of Kalepa Ridge from the Agricultural District to the Conservation District meets the following standards and criteria for the Conservation District contained in Section 205-2(e), HRS: Conservation districts shall include areas necessary for conserving indigenous or endemic plants, fish, and wildlife, including those which are threatened or endangered; areas of value for recreational purposes; and preventing floods and soil erosion.

The proposed reclassification will impact favorably the following area of statewide concern set forth under Section 205-17, HRS, preservation or maintenance of important natural systems or habitats; and maintenance of valued . . . natural resources.

The proposed land use district boundary amendment meets the following standards for determining Conservation District boundaries contained in the Hawaii Administrative Rules:

Section 15-15-20(5) The area includes lands necessary for providing and preserving parklands, wilderness, and beach reserves . . .

Reclassification of Kalepa Ridge from the Agricultural to the Conservation District will protect scenic, recreational, and open space areas and areas needed to provide access to existing or planned recreational resources.

The proposed area for reclassification includes lands suitable for outdoor recreational uses such as hunting, fishing, hiking, camping, and picnicking.

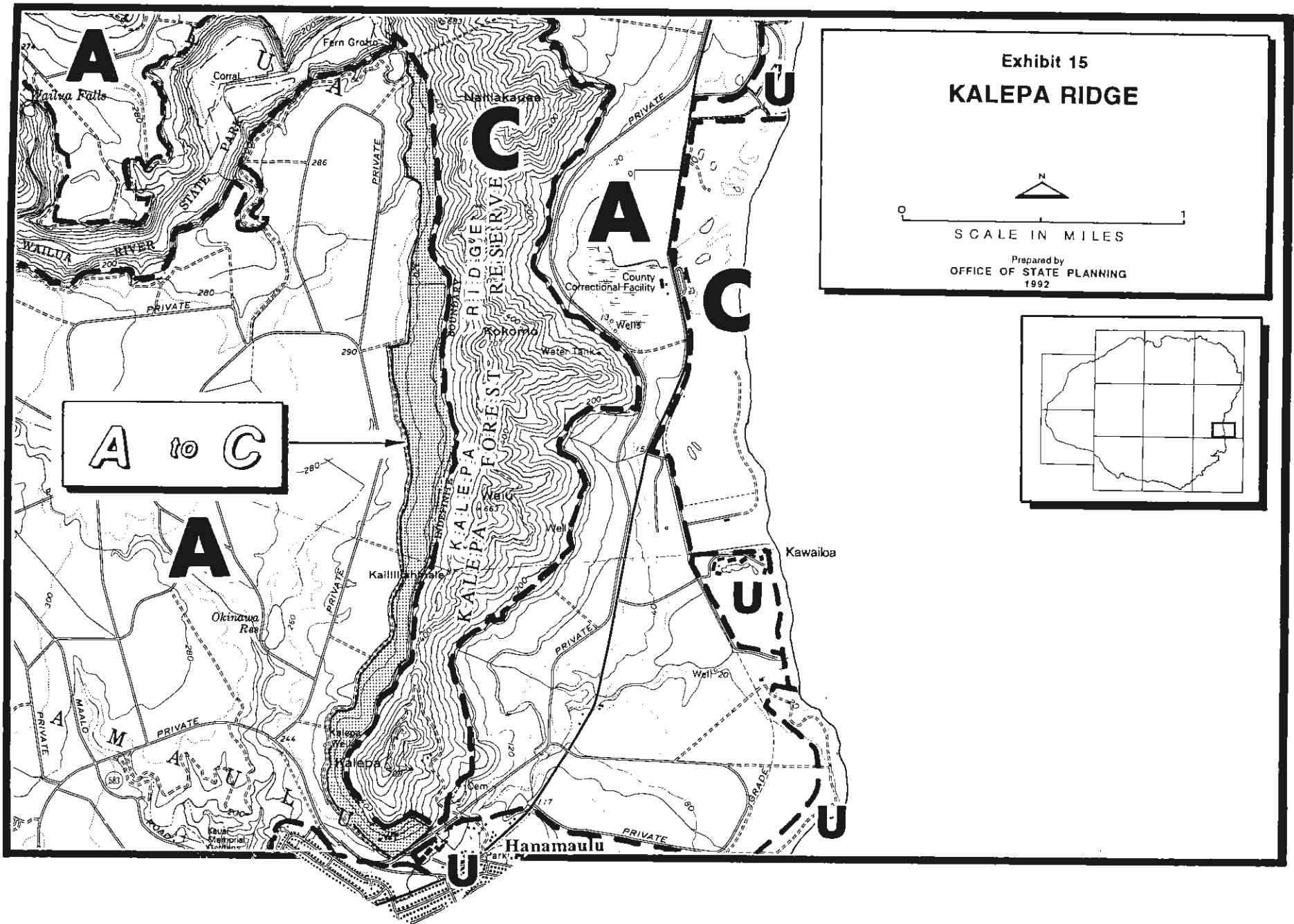
The proposed reclassification also conforms to the objectives and policies of the Hawaii State Plan for the physical environment, Section 226-11, 12 and 13, HRS, including but not limited to, seeking effective protection of Hawaii's unique and fragile environmental resources, reducing the threat to life and property from erosion and flooding.

Additionally, the proposed reclassification conforms to the Priority Guidelines for population growth and land resources, Section 226-104, HRS, including but not limited to, utilizing Hawaii's limited land resources wisely, providing adequate land to accommodate projected population and economic growth needs while ensuring protection of the environment, and the availability of the shoreline, conservation lands and other limited resources for future generations.

The Na Ala Hele Program Plan (May 1991) prepared by the Department of Land and Natural Resources, has identified priority trails on the island of Kauai. A Kalepa Ridge Access Trail is proposed that would enable public access to the presently landlocked Kalepa Ridge Forest Reserve where a trail network could be developed. The 0.1 mile long access (and future trails in the Reserve) would afford another outdoor recreational opportunity near the communities of Lihue, Hanamaulu, and Wailua.

The County of Kauai has designated portions of the proposed area along Kalepa Ridge as "Open" on the General Plan Map for the Lihue area. The purpose of the "Open" designation is "to preserve, maintain or improve the essential characteristics of the lands and water areas that are of significant value to the public, important to the structure of areas necessary to buffer undesirable environmental factors, maintain the essential functions of ecological systems, and define and regulate development within areas which may be potentially hazardous."

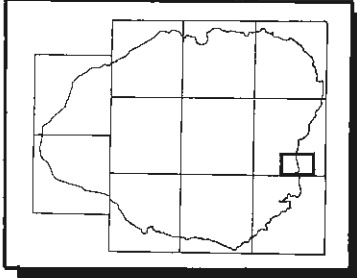




**Exhibit 15  
KALEPA RIDGE**



Prepared by  
OFFICE OF STATE PLANNING  
1992





Hanamaulu Coastline, 21 acres (U to C)

The proposed reclassification of a portion of the Hanamaulu coastline from the Urban District to the Conservation District meets the following standards and criteria for the Conservation District contained in Section 205-2(e), HRS: Conservation districts shall include areas necessary for preserving scenic and historic areas, and open space areas whose existing openness, natural condition, or present state of use, if retained, would enhance the present or potential value of abutting or surrounding communities, or would maintain or enhance the conservation of natural or scenic resources.

The proposed reclassification will impact favorably the following area of statewide concern set forth under Section 205-17, HRS, preservation or maintenance of important natural systems or habitats; and maintenance of valued . . . natural resources.

The proposed land use district boundary amendment meets the following standards for determining Conservation District boundaries contained in the Hawaii Administrative Rules:

Section 15-15-20(4) The area includes lands necessary for the conservation, preservation, and enhancement of scenic, cultural, historic or archaeological sites and sites of unique physiographic or ecologic significance . . .

Section 15-15-20(8) The area includes lands with a general slope of twenty percent or more which provides for open space amenities or scenic values . . .

Reclassification of this portion of the Hanamaulu coastline from the Urban to the Conservation District will provide protection of scenic coastal resources and steep slopes.

The proposed area for reclassification includes lands susceptible to floods and soil erosion, and lands with topography, soils, climate, or other related environmental factors that may not be normally adaptable or presently needed for urban, rural, or agricultural use.

The proposed reclassification also conforms to the objectives and policies of the Hawaii State Plan for the physical environment, Section 226-11, 12 and 13, HRS, including but not limited to, seeking effective protection of Hawaii's unique and fragile environmental resources, reducing the threat to life and property from erosion and flooding. Additionally, the proposed reclassification conforms to the Priority Guidelines for population growth and land resources, Section 226-104, HRS, including but not limited to, utilizing Hawaii's limited land resources wisely, providing adequate land to accommodate projected population and economic growth needs while ensuring protection of the environment and the availability of the shoreline, conservation lands and other limited resources for future generations.

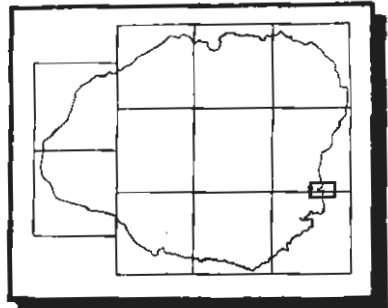
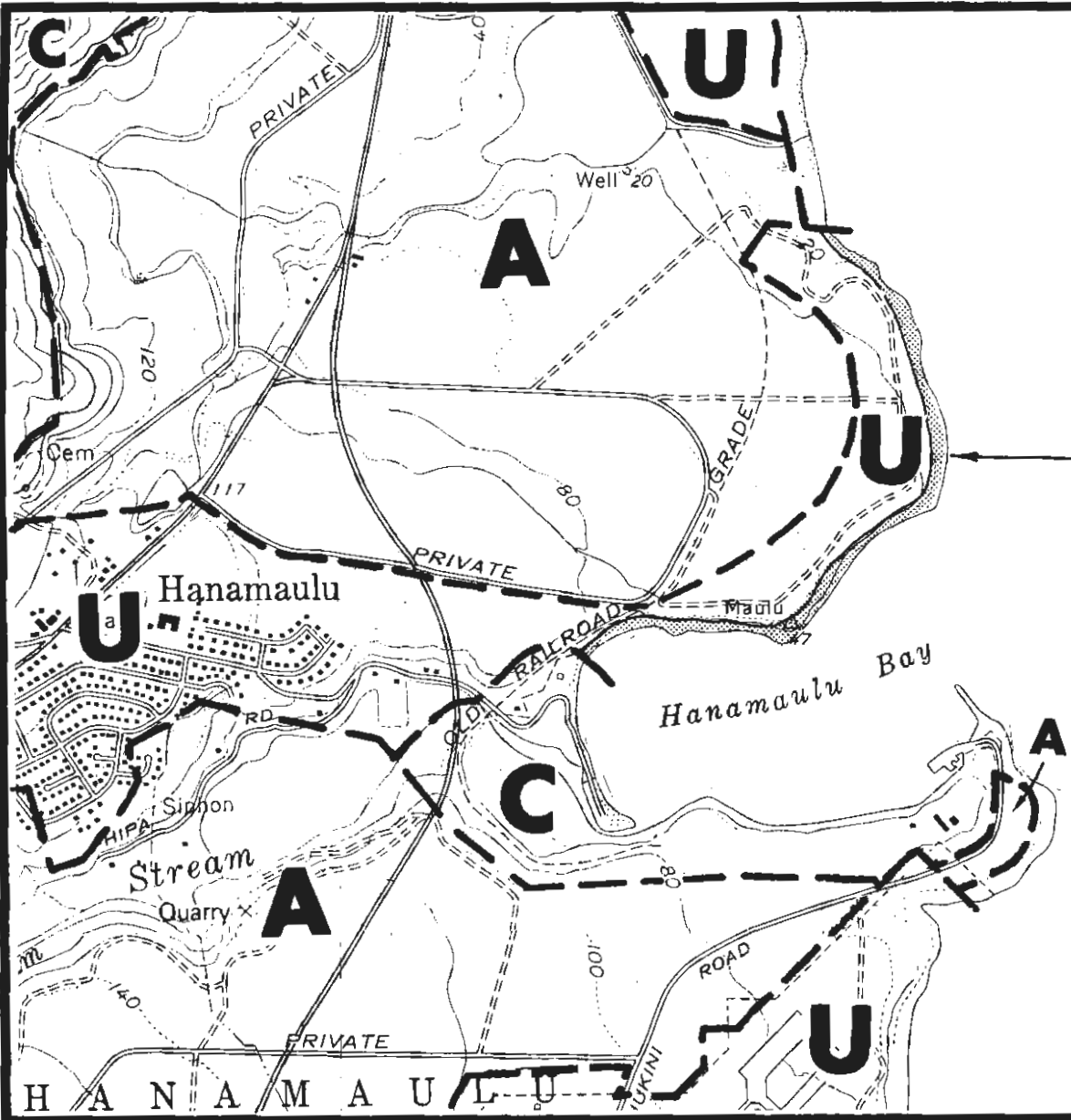


Exhibit 16  
**HANAMAULU COASTLINE**



Prepared by  
OFFICE OF STATE PLANNING  
1992

U to C





Kipu Kai Shoreline, 65 acres (A to C)

The proposed reclassification of the Kipu Kai Shoreline from the Agricultural District to the Conservation District meets the following standards and criteria for the Conservation District contained in Section 205-2(e), HRS: Conservation districts shall include areas necessary for preserving scenic and historic areas, and providing parklands, wilderness, and beach reserves.

The proposed reclassification will impact favorably the following area of statewide concern set forth under Section 205-17, HRS, maintenance of valued cultural, historical or natural resources.

The proposed land use district boundary amendment meets the following standards for determining Conservation District boundaries contained in the Hawaii Administrative Rules:

Section 15-15-20(4) The area includes lands necessary for the conservation, preservation, and enhancement of scenic, cultural, historic or archaeological sites and sites of unique physiographic or ecologic significance . . .

Section 15-15-20(5) The area shall include lands necessary for providing and preserving parklands, wilderness, and beach reserves . . .

Reclassification of the Kipu Kai Shoreline from the Agricultural to the Conservation District will provide lands for parks and preserve historic and scenic areas.

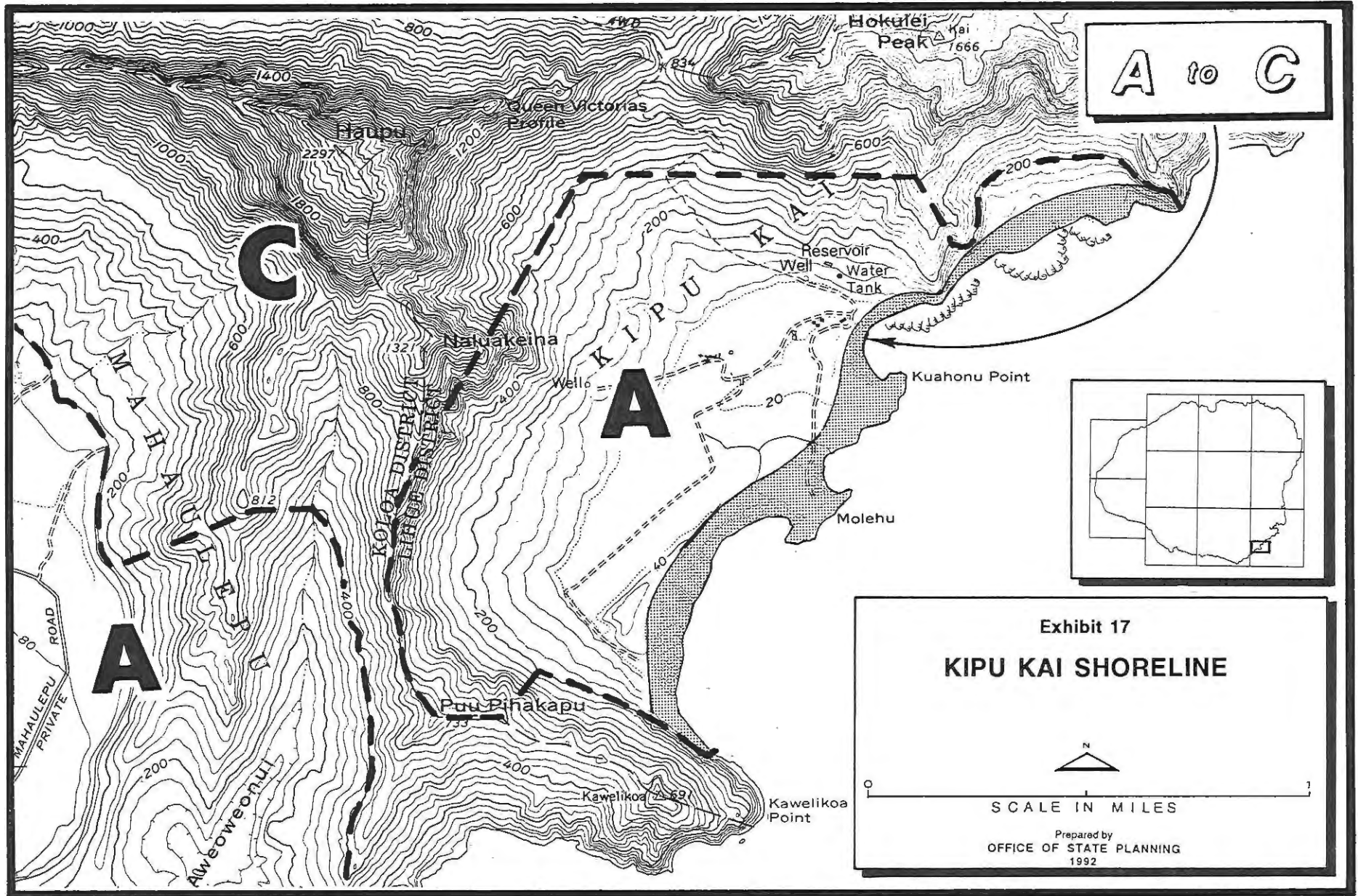
The proposed area for reclassification includes lands necessary for the provision of future parkland and lands presently used for national, State, County or private parks.

The proposed reclassification also conforms to the objectives and policies of the Hawaii State Plan for the physical environment, Section 226-11, 12 and 13, HRS, including but not limited to, seeking effective protection of Hawaii's unique and fragile environmental resources, reducing the threat to life and property from erosion and flooding. Additionally, the proposed reclassification conforms to the Priority Guidelines for population growth and land resources, Section 226-104, HRS, including but not limited to, utilizing Hawaii's limited land resources wisely, providing adequate land to accommodate projected population and economic growth needs while ensuring protection of the environment and the availability of the shoreline, conservation lands and other limited resources for future generations.

The County of Kauai has designated the Kipu Kai Shoreline as "Open" on the General Plan Map for the Lihue area. The purpose of the "Open" designation is "to preserve, maintain or improve the essential characteristics of the lands and water areas that are of significant value to the public, important to the structure of areas, necessary to buffer undesirable environmental factors, maintain the essential functions of ecological systems, and define and regulate development within areas which may be potentially hazardous."







A to C

Exhibit 17  
**KIPU KAI SHORELINE**

SCALE IN MILES

Prepared by  
 OFFICE OF STATE PLANNING  
 1992



Nomilu Fishpond and Palama Beach, 38 acres (A to C)

The proposed reclassification of Palama Beach and the area surrounding the Nomilu Fishpond from the Agricultural District to the Conservation District meets the following standards and criteria for the Conservation District contained in Section 205-2(e), HRS: Conservation districts shall include areas necessary for conserving indigenous or endemic plants, fish, and wildlife, including those which are threatened or endangered; and preventing floods and soil erosion.

The proposed reclassification will impact favorably the following area of statewide concern set forth under Section 205-17, HRS, preservation or maintenance of important natural systems or habitats; and maintenance of valued . . . natural resources.

The proposed land use district boundary amendment meets the following standards for determining Conservation District boundaries contained in the Hawaii Administrative Rules:

Section 15-15-20(4) The area includes lands necessary for the conservation, preservation, and enhancement of scenic, cultural, historic or archaeological sites and sites of unique physiographic or ecologic significance . . .

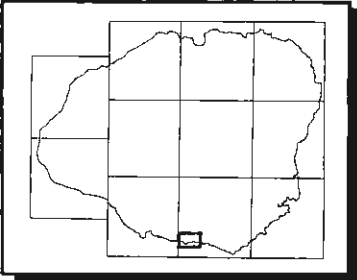
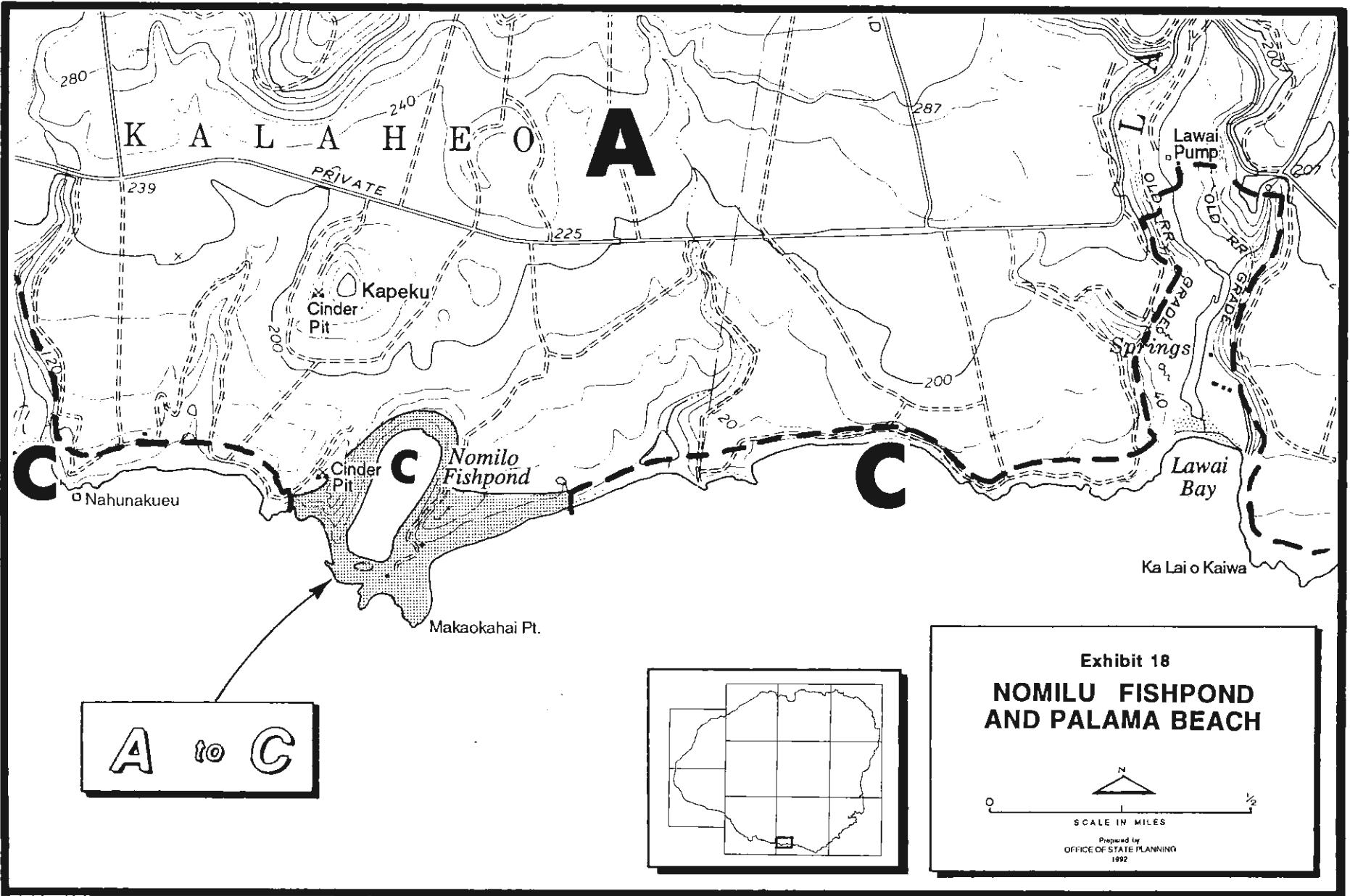
Reclassification of Palama Beach and the area surrounding Nomilu Fishpond from the Agricultural to the Conservation District will preserve scenic areas with high quality coastal resources.

The proposed area for reclassification includes lands suitable for outdoor recreational uses such as hunting, fishing, hiking, camping, and picnicking.

The proposed reclassification also conforms to the objectives and policies of the Hawaii State Plan for the physical environment, Section 226-11, 12 and 13, HRS, including but not limited to, seeking effective protection of Hawaii's unique and fragile environmental resources, reducing the threat to life and property from erosion and flooding. Additionally, the proposed reclassification conforms to the Priority Guidelines for population growth and land resources, Section 226-104, HRS, including but not limited to, utilizing Hawaii's limited land resources wisely, providing adequate land to accommodate projected population and economic growth needs while ensuring protection of the environment and the availability of the shoreline, conservation lands and other limited resources for future generations.

The County of Kauai has designated the area which includes Palama Beach and Nomilu Fishpond as "Open" on the General Plan Map for the Hanapepe area. The purpose of the "Open" designation is "to preserve, maintain or improve the essential characteristics of the lands and water areas that are of significant value to the public, important to the structure of areas, necessary to buffer undesirable environmental factors, maintain the essential functions of ecological systems, and define and regulate development within areas which may be potentially hazardous."





**Exhibit 18**

**NOMILU FISHPOND AND PALAMA BEACH**

N

0 1/2

SCALE IN MILES

Prepared by  
OFFICE OF STATE PLANNING  
1992



Salt Pond Park, 65 acres (U to C)

The proposed reclassification of Salt Pond Park from the Urban District to the Conservation District meets the following standards and criteria for the Conservation District contained in Section 205-2(e), HRS: Conservation districts shall include areas necessary for conserving indigenous or endemic plants, fish, and wildlife, including those which are threatened or endangered; preserving scenic and historic areas; and preventing floods and soil erosion.

The proposed reclassification will impact favorably the following area of statewide concern set forth under Section 205-17, HRS, preservation or maintenance of important natural systems or habitats; and maintenance of valued . . . natural resources.

The proposed land use district boundary amendment meets the following standards for determining Conservation District boundaries contained in the Hawaii Administrative Rules:

Section 15-15-20(4) The area includes lands necessary for the conservation, preservation, and enhancement of scenic, cultural, historic or archaeological sites and sites of unique physiographic or ecological significance . . .

Reclassification of Salt Pond Park from the Urban to the Conservation District will preserve coastal recreation areas, historic sites, and unique tidal pools.

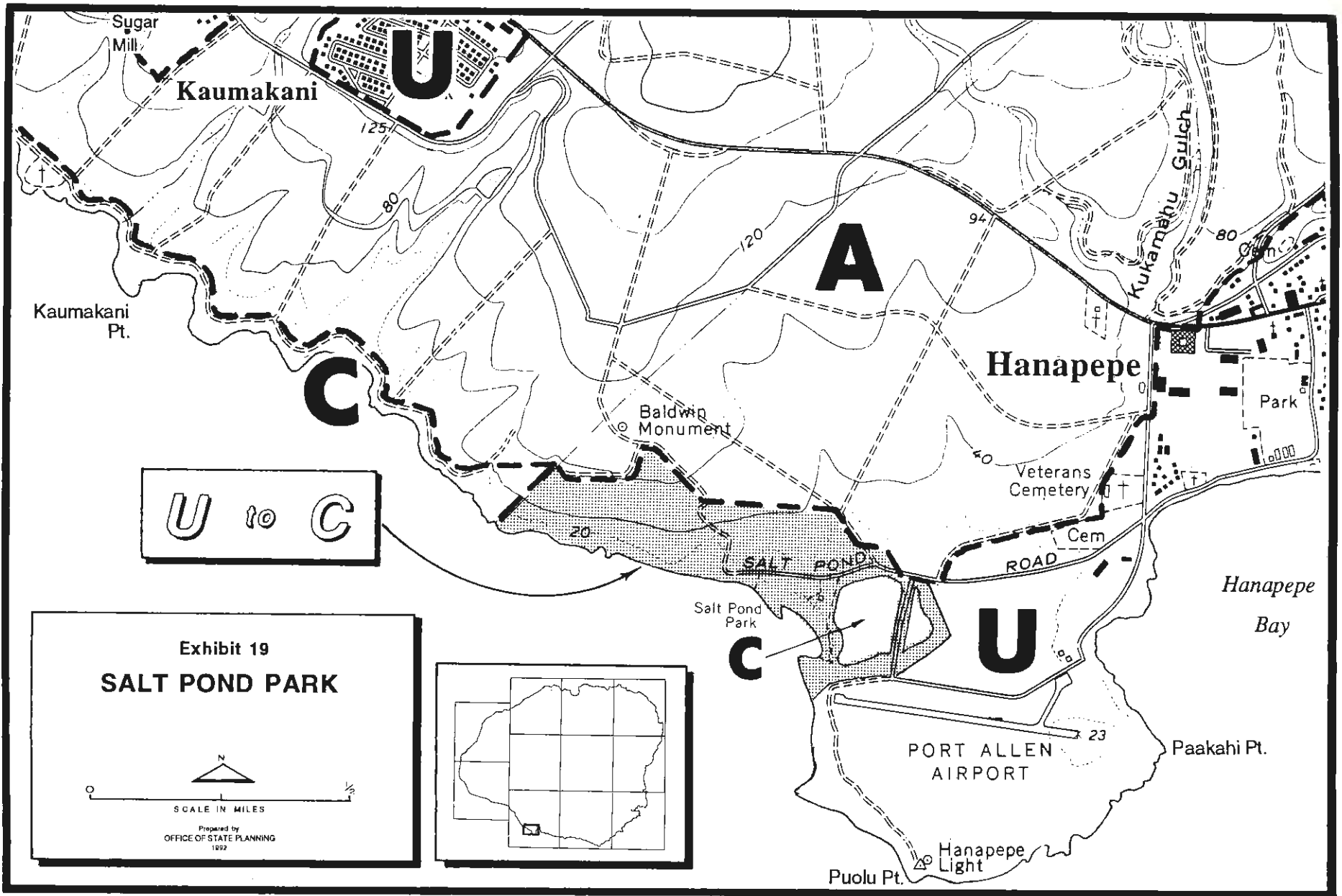
The proposed area for reclassification includes lands suitable for outdoor recreational uses such as hunting, fishing, hiking, camping, and picnicking.

The proposed reclassification also conforms to the objectives and policies of the Hawaii State Plan for the physical environment, Section 226-11, 12 and 13, HRS, including but not limited to, seeking effective protection of Hawaii's unique and fragile environmental resources, reducing the threat to life and property from erosion and flooding. Additionally, the proposed reclassification conforms to the Priority Guidelines for population growth and land resources, Section 226-104, HRS, including but not limited to, utilizing Hawaii's limited land resources wisely, providing adequate land to accommodate projected population and economic growth needs while ensuring protection of the environment and the availability of the shoreline, conservation lands and other limited resources for future generations.

Salt Pond Park is recognized in the Statewide Recreation Resources Inventory (1987) done by the Department of Land and Natural Resources, as having "high islandwide significance."







**U to C**

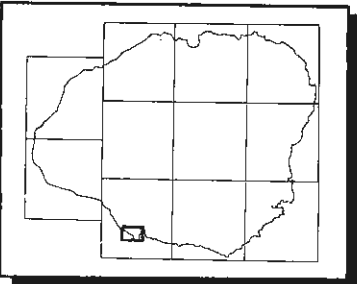
**Exhibit 19**

**SALT POND PARK**

0 ———— N ———— 1/2

SCALE IN MILES

Prepared by  
OFFICE OF STATE PLANNING  
1952





Russian Fort Elizabeth State Historical Park, 17 acres (A to C)

The proposed reclassification of Russian Fort Elizabeth State Historical Park and the adjacent area across the Waimea River at Cook's Landing from the Agricultural District to the Conservation District meets the following standards and criteria for the Conservation District contained in Section 205-2(e), HRS: Conservation districts shall include areas necessary for preserving scenic and historic areas; and providing parklands, wilderness, and beach reserves.

The proposed reclassification will impact favorably the following area of statewide concern set forth under Section 205-17, HRS, maintenance of valued cultural, historical or natural resources.

The proposed land use district boundary amendment meets the following standards for determining Conservation District boundaries contained in the Hawaii Administrative Rules:

Section 15-15-20(3) The area may include lands used for national or state parks . . .

Section 15-15-20(4) The area includes lands necessary for the conservation, preservation, and enhancement of scenic, cultural, historic or archaeological sites and sites of unique physiographic or ecologic significance . . .

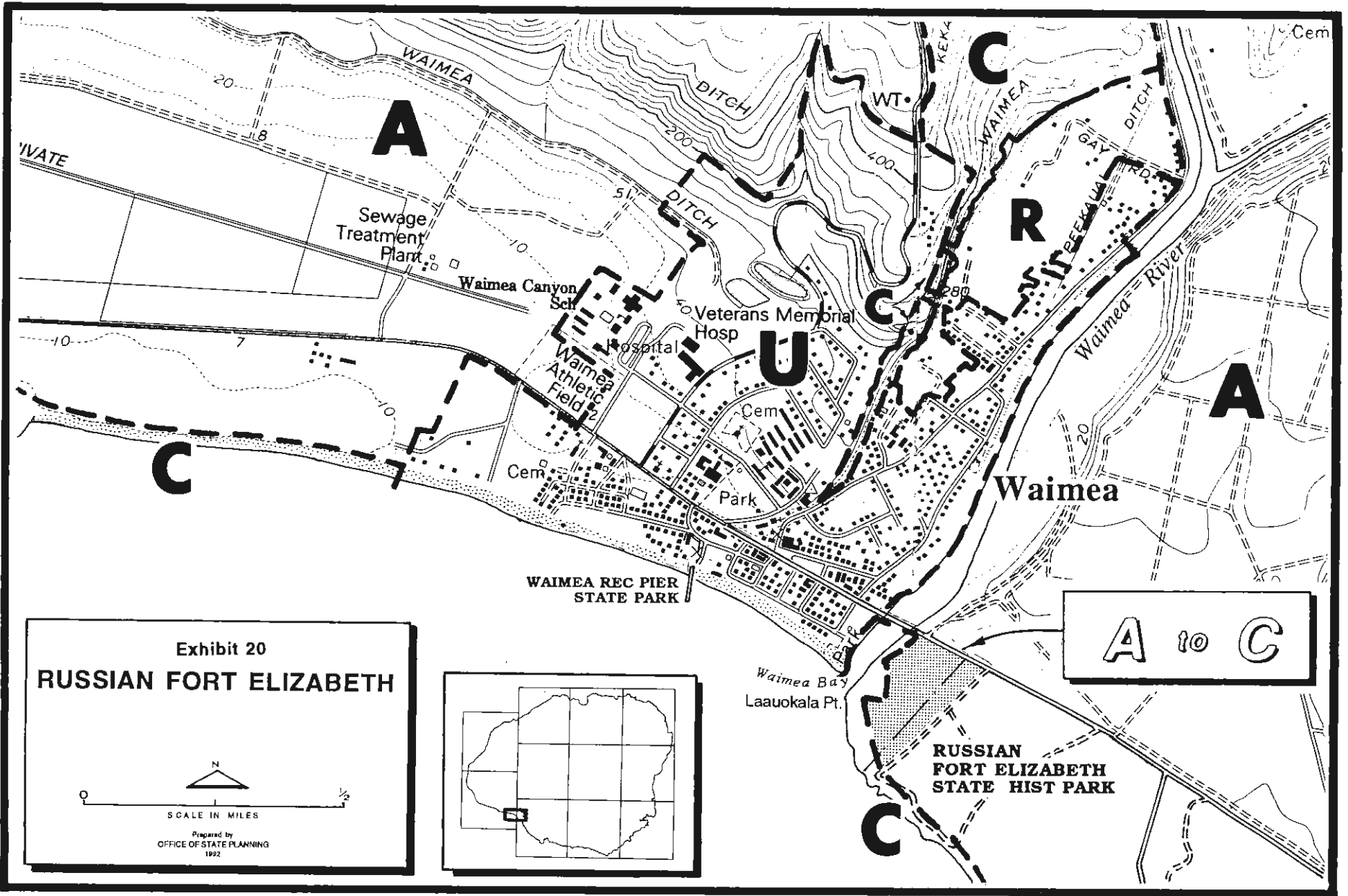
Reclassification of Russian Fort Elizabeth State Historical Park from the Agricultural to the Conservation District will provide lands for parks and preserve historic and scenic areas.

The proposed area for reclassification includes lands and waters necessary for the preservation and enhancement of designated historic or archaeological sites.

The proposed reclassification also conforms to the objectives and policies of the Hawaii State Plan for the physical environment, Section 226-11, 12 and 13, HRS, including but not limited to, seeking effective protection of Hawaii's unique and fragile environmental resources, reducing the threat to life and property from erosion and flooding. Additionally, the proposed reclassification conforms to the Priority Guidelines for population growth and land resources, Section 226-104, HRS, including but not limited to, utilizing Hawaii's limited land resources wisely, providing adequate land to accommodate projected population and economic growth needs while ensuring protection of the environment and the availability of the shoreline, conservation lands and other limited resources for future generations.

The County of Kauai has designated the Russian Fort Elizabeth State Historical Park as Special Treatment-Cultural and "Open" on the General Plan Map for the Hanapepe area. The purpose of the "Open" designation is "to preserve, maintain or improve the essential characteristics of the lands and water areas that are of significant value to the public, important to the structure of areas, necessary to buffer undesirable environmental factors, maintain the essential functions of ecological systems, and define and regulate development within areas which may be potentially hazardous."







Kekaha Beach, 85 acres (A & U to C)

The proposed reclassification of Kekaha Beach from the Agricultural District to the Conservation District meets the following standards and criteria for the Conservation District contained in Section 205-2(e), HRS: Conservation districts shall include areas necessary for preserving scenic and historic areas; and providing parklands, wilderness, and beach reserves.

The proposed reclassification will impact favorably the following area of statewide concern set forth under Section 205-17, HRS, maintenance of valued cultural, historical or natural resources.

The proposed land use district boundary amendment meets the following standards for determining Conservation District boundaries contained in the Hawaii Administrative Rules:

Section 15-15-20(3) The area may include lands used for national or state parks . . .

Section 15-15-20(4) The area includes lands necessary for the conservation, preservation, and enhancement of scenic, cultural, historic or archaeological sites and sites of unique physiographic or ecologic significance . . .

Reclassification of Kekaha Beach from the Agricultural to the Conservation District will provide lands for parks and preserve historic and scenic areas.

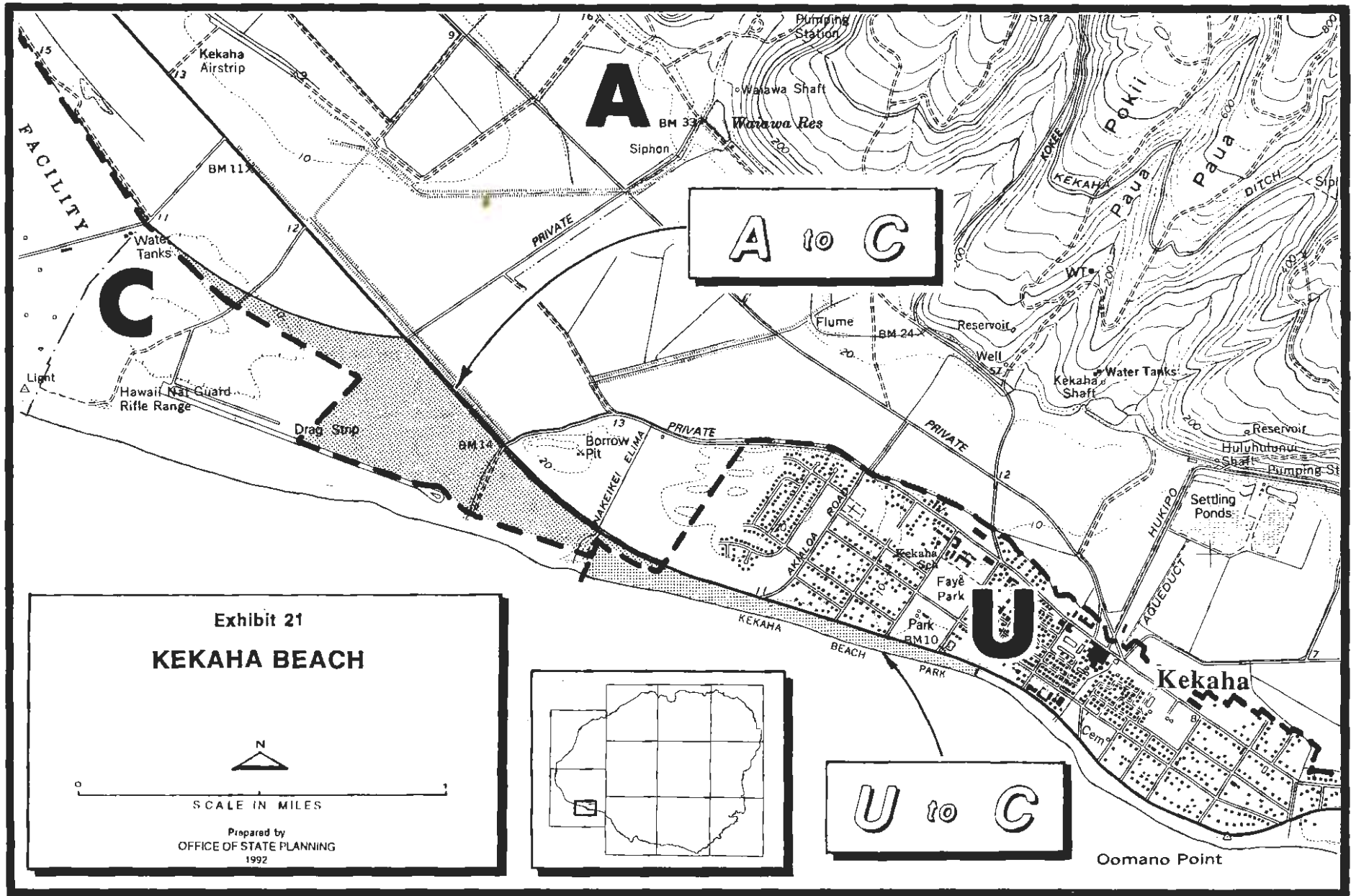
The proposed area for reclassification includes lands necessary for the provision of future parkland and lands presently used for national, State, County or private parks.

The proposed reclassification also conforms to the objectives and policies of the Hawaii State Plan for the physical environment, Section 226-11, 12 and 13, HRS, including but not limited to, seeking effective protection of Hawaii's unique and fragile environmental resources, reducing the threat to life and property from erosion and flooding. Additionally, the proposed reclassification conforms to the Priority Guidelines for population growth and land resources, Section 226-104, HRS, including but not limited to, utilizing Hawaii's limited land resources wisely, providing adequate land to accommodate projected population and economic growth needs while ensuring protection of the environment and the availability of the shoreline, conservation lands and other limited resources for future generations.

The County of Kauai has designated Kekaha Beach as "Open" on the General Plan Map for the Kekaha-Waimea area. The purpose of the "Open" designation is "to preserve, maintain or improve the essential characteristics of the lands and water areas that are of significant value to the public, important to the structure of areas, necessary to buffer undesirable environmental factors, maintain the essential functions of ecological systems, and define and regulate development within areas which may be potentially hazardous."







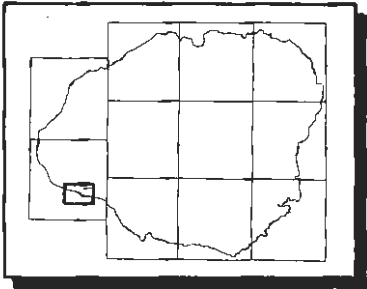
**A to C**

**Exhibit 21**  
**KEKAHA BEACH**

N

SCALE IN MILES

Prepared by  
 OFFICE OF STATE PLANNING  
 1992



**U to C**

Oomano Point



Polihale Dunes, 30 acres (A to C)

The proposed reclassification of Polihale Dunes from the Agricultural District to the Conservation District meets the following standards and criteria for the Conservation District contained in Section 205-2(e), HRS: Conservation districts shall include areas necessary for preserving scenic and historic areas; and providing parklands, wilderness, and beach reserves.

The proposed reclassification will impact favorably the following area of statewide concern set forth under Section 205-17, HRS, maintenance of valued cultural, historical or natural resources.

The proposed land use district boundary amendment meets the following standards for determining Conservation District boundaries contained in the Hawaii Administrative Rules:

Section 15-15-20(3) The area may include lands used for national or state parks . . .

Section 15-15-20(4) The area includes lands necessary for the conservation, preservation, and enhancement of scenic, cultural, historic or archaeological sites and sites of unique physiographic or ecologic significance . . .

Reclassification of the Polihale Dunes from the Agricultural to the Conservation District will provide lands for parks, conserve endemic plants including those which are threatened or endangered, and preserve historic and scenic areas.

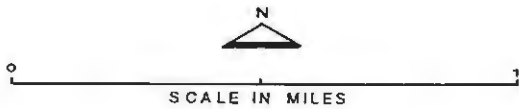
The proposed area for reclassification includes lands necessary for the provision of future parkland and lands presently used for national, State, County or private parks.

The proposed reclassification also conforms to the objectives and policies of the Hawaii State Plan for the physical environment, Section 226-11, 12 and 13, HRS, including but not limited to, seeking effective protection of Hawaii's unique and fragile environmental resources, reducing the threat to life and property from erosion and flooding. Additionally, the proposed reclassification conforms to the Priority Guidelines for population growth and land resources, Section 226-104, HRS, including but not limited to, utilizing Hawaii's limited land resources wisely, providing adequate land to accommodate projected population and economic growth needs while ensuring protection of the environment and the availability of the shoreline, conservation lands and other limited resources for future generations.

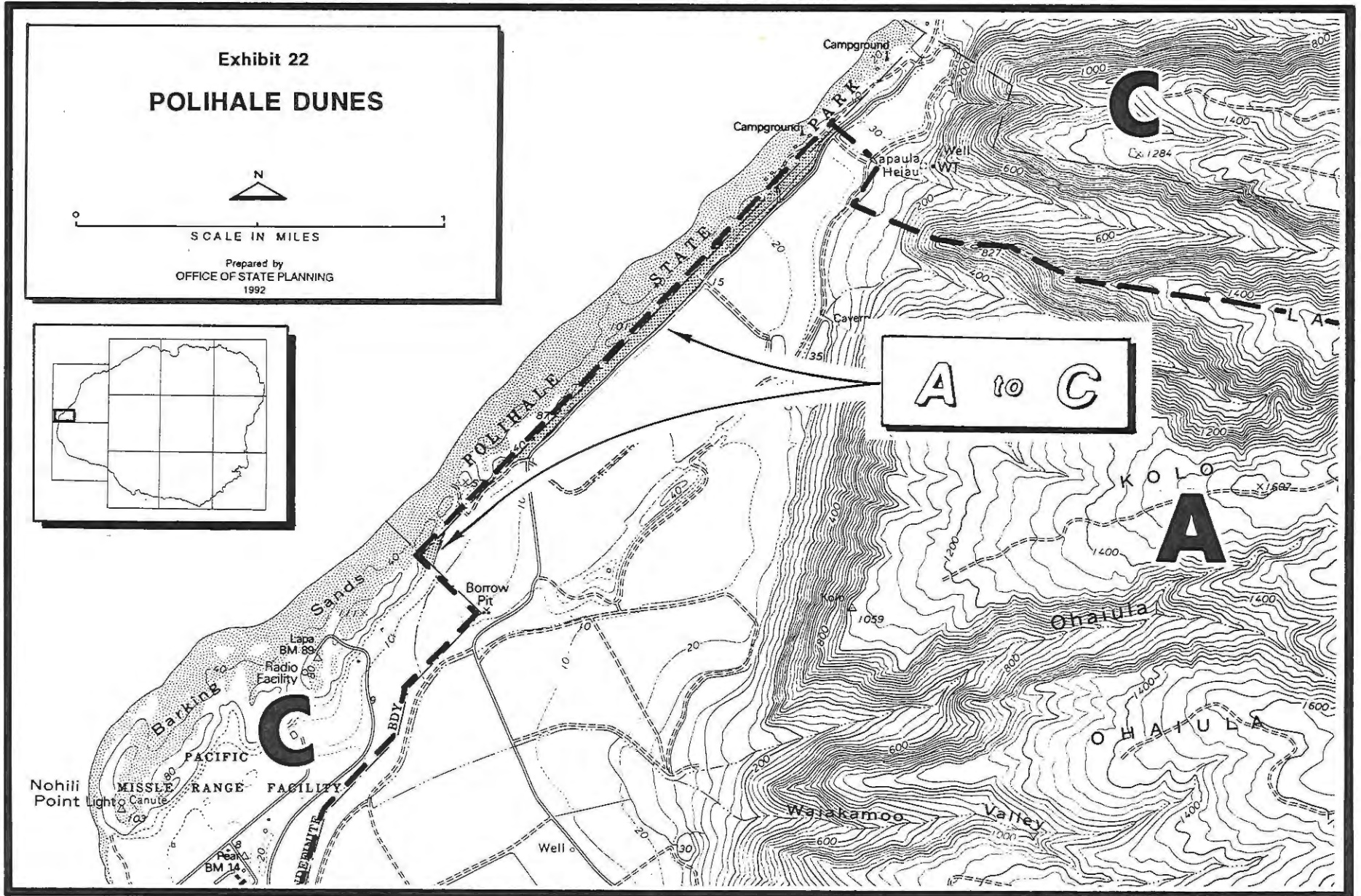
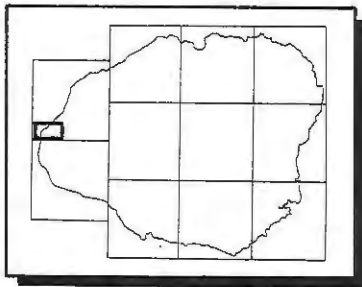
The County of Kauai has designated Polihale Dunes as "Open" on the General Plan Map for the Kekaha-Waimea area. The purpose of the "Open" designation is "to preserve, maintain or improve the essential characteristics of the lands and water areas that are of significant value to the public, important to the structure of areas, necessary to buffer undesirable environmental factors, maintain the essential functions of ecological systems, and define and regulate development within areas which may be potentially hazardous."



Exhibit 22  
**POLIHALE DUNES**



Prepared by  
OFFICE OF STATE PLANNING  
1992





## URBAN RECOMMENDATIONS

### Hanamaulu and Molokoa, 792 acres (A to U)

The proposed reclassification of Hanamaulu and Molokoa from the Agricultural District to the Urban District is intended to allow for the development of a planned community by Amfac/JMB Hawaii, Inc. The project is anticipated to be a mix of residential, commercial and industrial uses. The residential uses will likely include single- and multi-family units ranging from the affordable to market price. Because Lihue is the economic hub of the island and contains Kauai's principal airport and harbor, commercial and light industrial space will fill an anticipated need.

The proposed reclassification is consistent with Section 205-2, HRS, in that it includes in the Urban District a sufficient reserve area for foreseeable urban growth. According to the Urban Land Requirements Study (Wilson Okamoto and Associates, 1991), Kauai will have a deficit of approximately 1,100 acres of urban lands in the year 2000, with the Lihue region accounting for 318 acres of that total. The 1,100-acre figure also includes a 25 percent flexibility factor (681 acres) to account for lands which may be held out of use for various reasons. It is recommended that most of this acreage be allocated to Lihue because of its role as the economic hub of the island and the major urban center of the County.

Reclassification would also favorably impact the following Land Use Commission decision-making criteria set forth in Section 205-17, HRS:

- (1) The extent to which the proposed reclassification conforms to the applicable goals, objectives, and policies of the Hawaii State Plan . . .
- (3)(E) Provision for employment opportunities and economic development.
- (3)(F) Provision for housing opportunities for all income groups, particularly the low, low-moderate, and gap groups.

The proposed reclassification is in conformance with Section 226-19, HRS, the Hawaii State Plan, in that it provides greater opportunity for Hawaii's people to secure reasonably priced, livable homes in a manner sensitive to community needs and other land uses.

The project will include single- and multi-family units including market and affordable units. The project will be required to meet HFDC affordable housing requirements. Also, as previously mentioned, the project will contain commercial and industrial uses which will provide employment opportunities and economic development.

Sections 205-17 (3)(B) and (C), HRS, of the State Land Use Law, would also be affected as the proposed reclassification may impact the maintenance of valued cultural, historical, agricultural, or other natural resources relevant to Hawaii's economy. It is recommended that the petitioner be required to meet the requirements of DLNR's Historic Preservation Division prior to receiving any County rezoning. The Office of State Planning is not aware of any valued natural systems in the proposed area. However, it is recommended that the petitioner be required to conduct a flora and fauna survey prior to any County rezoning.

The proposed site is primarily in sugarcane cultivation, with only a small amount in other uses. The entire site has an overall productivity rating of "B" as determined by the Land Study Bureau classification system. Under the ALISH classification system, the majority of the site is considered to be Prime Agricultural Land. A reservoir near the center of the subject area and a section in the northeast corner of the subject area are unclassified. The Soil Conservation Service classifies the land as primarily Lihue silty clay, 0 to 8 percent slope (LhB). A narrow band stretching north of Vidinha Stadium is classified as Lihue gravelly silty clay, 0 to 8 percent slope (LIB). Although the project will impact prime agricultural lands and take land out of sugarcane production in phases, Lihue Plantation Company recognizes Lihue's role as the urban center of Kauai and has accounted for this loss of agricultural land in its long-range sugarcane reduction plans.<sup>47</sup>

Section 15-15-18, Hawaii Administrative Rules, defines the standards which the Land Use Commission uses in determining the boundaries for the Urban District. The reclassification of Hanamaulu and Molokoa to the Urban District satisfies the following standards, as discussed below:

- (2) It shall take into consideration the following specific factors:
  - (A) Proximity to centers of trading and employment . . .
  - (C) Proximity to basic services such as sewers, transportation systems, water, sanitation, schools, parks, and police and fire protection; and
  - (D) Sufficient reserve areas for urban growth in appropriate locations based on a ten year projection.
- (4) In determining urban growth for the next ten years or in amending the boundary, land contiguous with existing urban areas shall be given more consideration than non-contiguous land . . .
- (5) It shall include lands in appropriate locations for new urban concentrations . . .
- (7) It shall not include lands, the urbanization of which will contribute toward scattered spot urban development, necessitating unreasonable investment in public infrastructure or support services.

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<sup>47</sup> Letter from Lihue Plantation to OSP, February 1992.



The Hanamaulu and Molokoa area is in the Lihue urban area and is therefore in proximity to basic services such as water, transportation systems, schools, and parks. Kauai is presently experiencing sewerage capacity problems. However, portions of the proposed area are eligible for hookup to the Lihue Sewage Treatment Plant, namely the area close to the stadium and the triangular parcel north of Hanamaulu. The remainder of the proposed reclassification area will be eligible for hookup after the plant is expanded. State revolving funds of \$8 million are forecasted for use by Kauai County to improve the Lihue STP<sup>48</sup>. The developer will be required to meet Department of Health wastewater requirements.

The proposed project is anticipated to have impacts on the existing highway system. However, because of the project's proximity to a major employment center, to government buildings and to the airport and harbor, impacts should be localized and the impacts on the Lihue-Koloa-Kekaha corridor or Lihue-Kapaa corridor will not be as great as developments occurring outside of the Lihue area.

In addition, although there is ample water supply, the infrastructure for the Lihue water system will not be able to accommodate the amount of potential development in the reclassification area.<sup>49</sup> Water delivery is primarily a County rather than State area of concern. The County may require the developer to develop and build new water sources, storage tanks, and transmission lines as a condition of County rezoning. However, these costs should not be unreasonable given the proximity of the site to existing serviced areas.

The proposed project will have an enrollment impact on the presently overcrowded Kauai High and Intermediate School. The Department of Education is planning a new Kauai Intermediate School to relieve enrollment pressures at Kauai High and Intermediate and other feeder schools in the complex. King Kaumualii Elementary School will also require additional classrooms to accommodate the increased enrollment resulting from the proposed planned community.

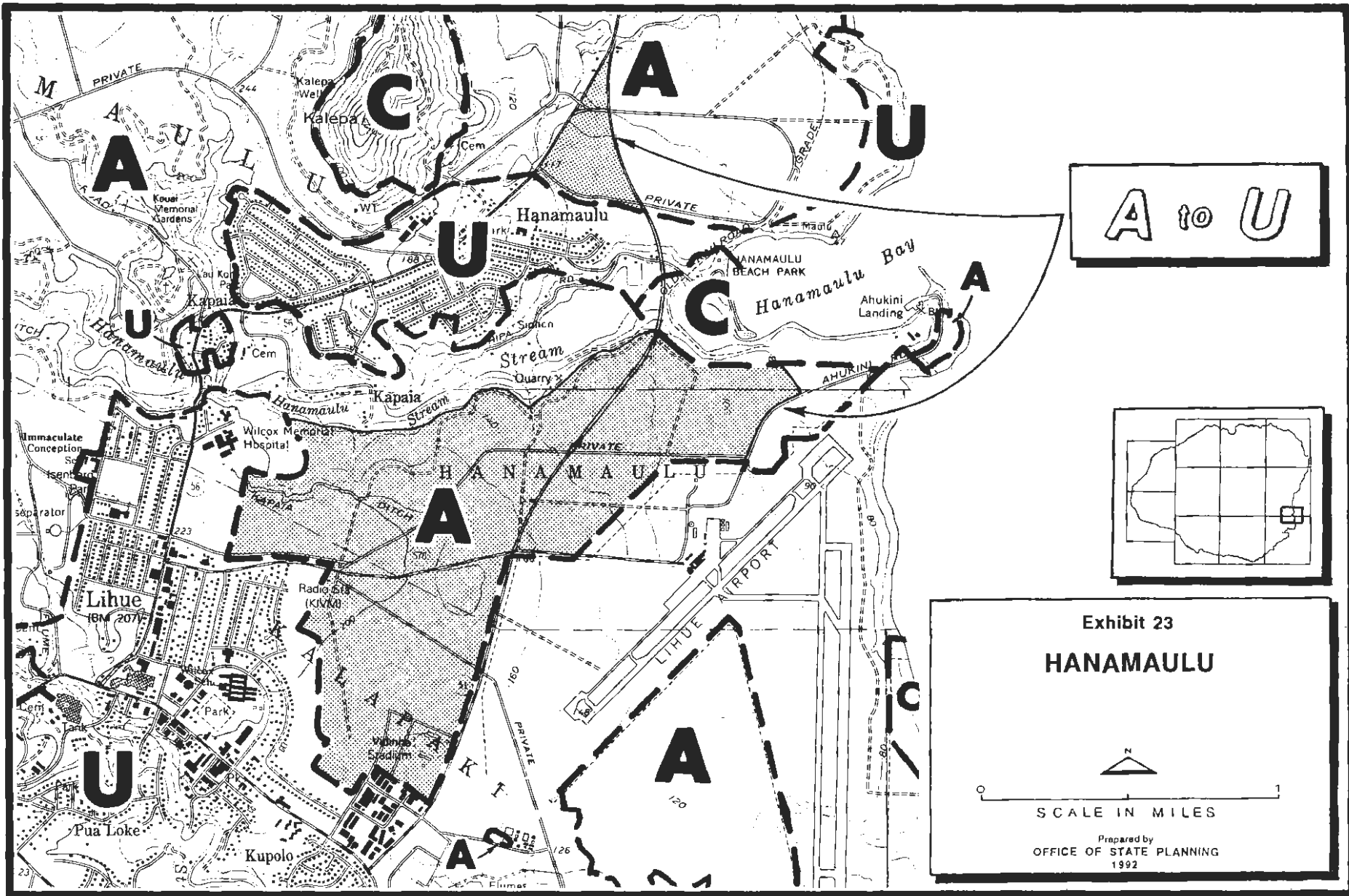
Because the Hanamaulu and Molokoa project area is located near the Lihue Airport, portions of the site will be exposed to noise levels in the 55 to 65 Ldn range. However, these areas are to be set aside for commercial and industrial use. The Department of Transportation has recommended in the Lihue Master Plan that no residential uses be permitted where noise levels<sup>43</sup> exceed 60 Ldn. Residential uses are, therefore, planned for areas exposed to 60 Ldn or less.

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<sup>48</sup> Phone conversations with County of Kauai, Department of Public Works, February 1992 and March 1993.

<sup>49</sup> Letter from County of Kauai, Department of Water, February 12, 1992.





A to U

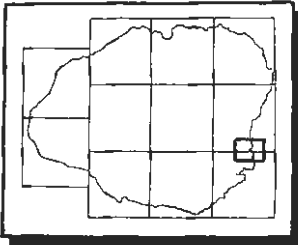


Exhibit 23  
**HANAMAULU**

0 1  
 SCALE IN MILES

Prepared by  
 OFFICE OF STATE PLANNING  
 1992



Kauai Lagoons Resort, 248 acres (A to U)

The proposed reclassification of a portion of the Kauai Lagoons Resort is intended to conform the State land use district classification to the existing use of the property. Approximately 200 acres of the area proposed for reclassification are already in golf course use. The remaining 48 acres are undeveloped.

The proposed reclassification is consistent with Section 205-2, HRS, in that it includes in the Urban District lands currently in urban use and a sufficient reserve area for foreseeable urban growth.

According to the Urban Land Requirements Study (Wilson Okamoto and Associates, 1991), Kauai will have a deficit of approximately 1,100 acres of urban lands in the year 2000, with the Lihue region accounting for 318 acres of that total. The 1,100-acre figure includes a 25 percent flexibility factor (681 acres) to account for lands which may be held out of use for various reasons. It is recommended that most of this acreage be allocated to Lihue, given its role as the economic hub of the island and the major urban center of the County.

Reclassification would also favorably impact the following Land Use Commission decision-making criterion set forth in Section 205-17, HRS:

- (2) The extent to which the proposed reclassification conforms to the applicable district standards . . .

Because the majority of the proposed site is already in golf course use, no valued cultural, historical, agricultural, or other natural resources are believed to be located on site. It is also not expected that any threatened or endangered species live in the area proposed for reclassification.

The Soil Conservation Service classifies the land as primarily Lihue gravelly silty clay (LIB) and Lihue silty clay (LhB). These soils are deep, nearly level to steep, and well-drained. ALISH maps indicate that major portions of the subject area are Prime. The Land Study Bureau gives the area an agricultural productivity rating of "B."

The undeveloped portion of the subject area is not well-suited for agricultural uses. Its location in the midst of urban activities is a physical and operational constraint on agricultural activity.

Section 15-15-18, Hawaii Administrative Rules, defines the standards which the Land Use Commission uses in determining the boundaries for the Urban District. The reclassification of a portion of Kauai Lagoons Resort to the Urban District satisfies the following standards:

- (1) It shall include lands characterized by "city-like" concentrations of people, structures, streets, urban level of services and other related uses;

- (2) It shall take into consideration the following specific factors:
- (A) Proximity to centers of trading and employment except where the development would generate new centers of trading and employment;
  - (C) Proximity to basic services such as sewers, transportation systems, water, sanitation, schools, parks, and police and fire protection;
  - (D) Sufficient reserve areas for urban growth in appropriate locations based on a ten-year projection;
- (3) It shall include lands with satisfactory topography and drainage and reasonably free from the danger of floods, tsunamis, unstable soil conditions, and other adverse environmental effects;
- (4) In determining urban growth for the next ten years, or in amending the boundary, land contiguous with existing urban areas shall be given more consideration than non-contiguous land . . .; and
- (7) It shall not include lands, the urbanization of which will contribute toward scattered spot urban development, necessitating unreasonable investment in public infrastructure or support services.

The proposed reclassification area is in the Lihue urban area and is surrounded by existing Urban District land. Surrounding land uses include the Kauai Lagoons Resort, an industrial subdivision, and Lihue Airport. The area proposed for the Urban District is located near several designated resort areas on Kauai.

Much of the subject area is within the 65 Ldn contour, although the northern and western portions of the area are within the 70 Ldn contour.<sup>50</sup>

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<sup>50</sup> Wilson Okamoto and Associates, Inc., et al, "Lihue Airport-FAR PART 150 Noise Compatibility Program Report, Volume II," August 1989.

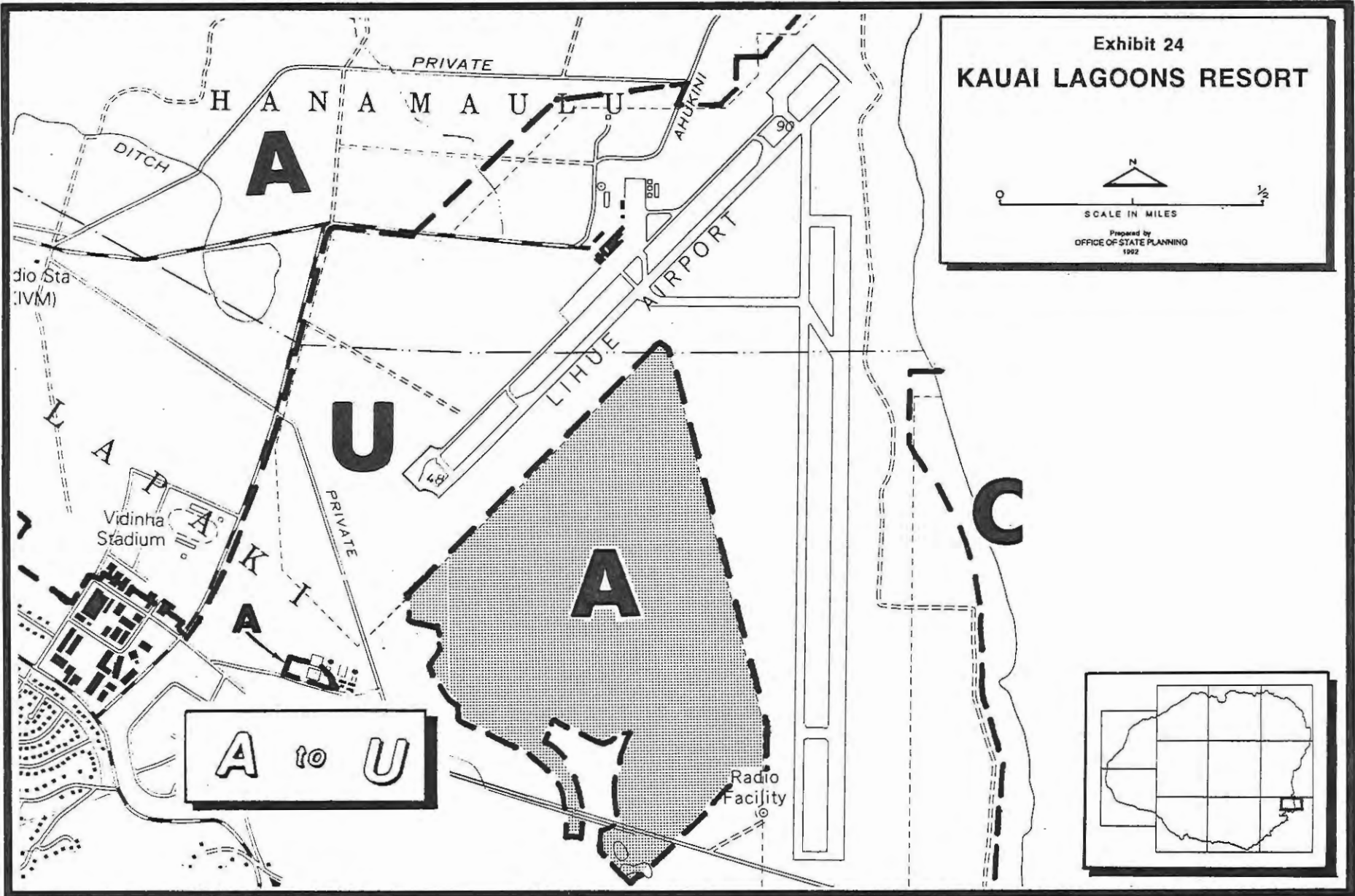


Exhibit 24  
**KAUAI LAGOONS RESORT**

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SCALE IN MILES

Prepared by  
 OFFICE OF STATE PLANNING  
 1962





Kukuiula Phase II, 800 acres (A to U)

The proposed reclassification of approximately 800 acres from the Agricultural District to the Urban District is intended to allow for development of the second phase of Alexander & Baldwin's Kukuiula master planned community. The project is planned to include single- and multi-family housing, parks, commercial space, a sewage treatment plant, lodging facilities, and a golf course and other recreational facilities.

The proposed reclassification is consistent with Section 205-2, HRS, in that it includes in the Urban District a sufficient reserve area for foreseeable urban growth. According to the Urban Land Requirements Study (Wilson Okamoto and Associates, 1991), Kauai will have a deficit of approximately 1,100 acres of urban lands in the year 2000. Based on this ten-year projection, reclassification will help establish a sufficient reserve area for urban growth. The first priority area to meet this need is the Hanamaulu and Molokoa area because of its proximity to Lihue, but the Kukuiula Phase II project is recommended to meet the remaining Urban land requirements.

Reclassification would also favorably impact the following Land Use Commission decision-making criteria set forth in Section 205-17, HRS:

- (1) The extent to which the proposed reclassification conforms to the applicable goals, objectives, and policies of the Hawaii State Plan . . .;
- (3)(E) Provision for employment opportunities and economic development;
- (3)(F) Provision for housing opportunities for all income groups, particularly the low, low-moderate, and gap groups.

The proposed reclassification is in conformance with Section 226-19, HRS, the Hawaii State Plan, in that it provides greater opportunity for Hawaii's people to secure reasonably priced, livable homes in a manner sensitive to community needs and other land uses.

It is recommended that A&B be required to meet HFDC's requirements for affordable housing.

Sections 205-17 (3)(B) and (C), HRS, the State Land Use Law, would also be affected as the proposed reclassification may impact the maintenance of valued cultural, historical, agricultural, or other natural resources relevant to Hawaii's economy. The presence of valued natural systems in the area has not been identified in the boundary review. However, it is recommended that the petitioner be required to conduct a flora and fauna survey prior to any County rezoning. While there are a number of archaeological and historic sites in the area, the developer is required to preserve these features in accordance with the General Plan Amendment for the project and subject to approval by the State Historic Preservation Division of DLNR.

It is recommended that a minimum buffer of 100 feet be maintained along rim edges of the Lawai Valley and other drainage basins designated County "Open."

The County of Kauai has designated as "Open" corridors along Lawai Stream Valley, the drainage basin down slope of Kumano Reservoir and the unnamed stream basin down slope of Aepoeha Reservoir which flows into Kukuiula Bay on the General Plan Map for the Koloa-Poipu area. The purpose of the "Open" designation is "to preserve, maintain or improve the essential characteristics of the lands and water areas that are of significant value to the public, important to the structure of areas, necessary to buffer undesirable environmental factors, maintain the essential functions of ecological systems, and define and regulate development within areas which may be potentially hazardous."

The existing land use at the site is primarily sugar cane cultivation with lesser amounts of pasture lands. The Land Study Bureau gives the area productivity ratings of primarily A and B. Approximately 20 percent is rated as class D and E. Under the ALISH classification, most of the land is either "Prime" or "Other," with a small portion in the eastern side of the area designated as "land of no agricultural importance." The Soil Conservation Service classifies the soils as generally silty clay, silty clay loam, and stony silty clay. A large section of Makaweli silty clay loam can also be found at the site.

Reclassification will remove approximately 580 acres from McBryde Sugar Company's operations and therefore will have an impact on lands in cultivation and potentially on agricultural jobs. However, the projected number of agricultural jobs lost will be more than made up for by newly created jobs in construction and diversified agriculture.<sup>51</sup>

Section 15-15-18, Hawaii Administrative Rules, defines the standards which the Land Use Commission uses in determining the boundaries for the Urban District. The reclassification of Kukuiula Phase II to the Urban District satisfies the following standards, as discussed below:

- (2) It shall take into consideration the following specific factors:
  - (A) Proximity to centers of trading and employment . . .
  - (C) Proximity to basic services such as sewers, transportation systems, water, sanitation, schools, parks, and police and fire protection; and
  - (D) Sufficient reserve areas for urban growth in appropriate locations based on a ten year projection.

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<sup>51</sup> Final EIS, Kukuiula Planned Community, R.M. Towill Corporation,  
April 1989, p. 3-42.

- (4) In determining urban growth for the next ten years, or in amending the boundary, land contiguous with existing urban areas shall be given more consideration than non-contiguous land, and particularly when indicated for future urban use on state or county general plans.
- (5) It shall include lands in appropriate locations for new urban concentrations and shall give consideration to areas of urban growth as shown on the state and county general plans.
- (7) It shall not include lands, the urbanization of which will contribute toward scattered spot urban development, necessitating unreasonable investment in public infrastructure or support services.

The proposed site for Kukuiula Phase II is located in proximity to the growing residential and resort communities of south Kauai. Some types of infrastructure are presently unavailable but may be required of the developer by the State or County. A public sewer system, for instance, is not available in the area. However, a private secondary treatment plant is being proposed for the area and is included in County plans for FY 1993-94.<sup>52</sup> The Poipu Water System would also need to be upgraded in order to accommodate domestic needs of the project. Water delivery is primarily a County rather than State area of concern, and the County may require the developer to meet County water requirements as a condition of County rezoning. The proposed project may also impact traffic on the Koloa to Lihue corridor and it is recommended that the developer meet requirements for provision of highway facilities.

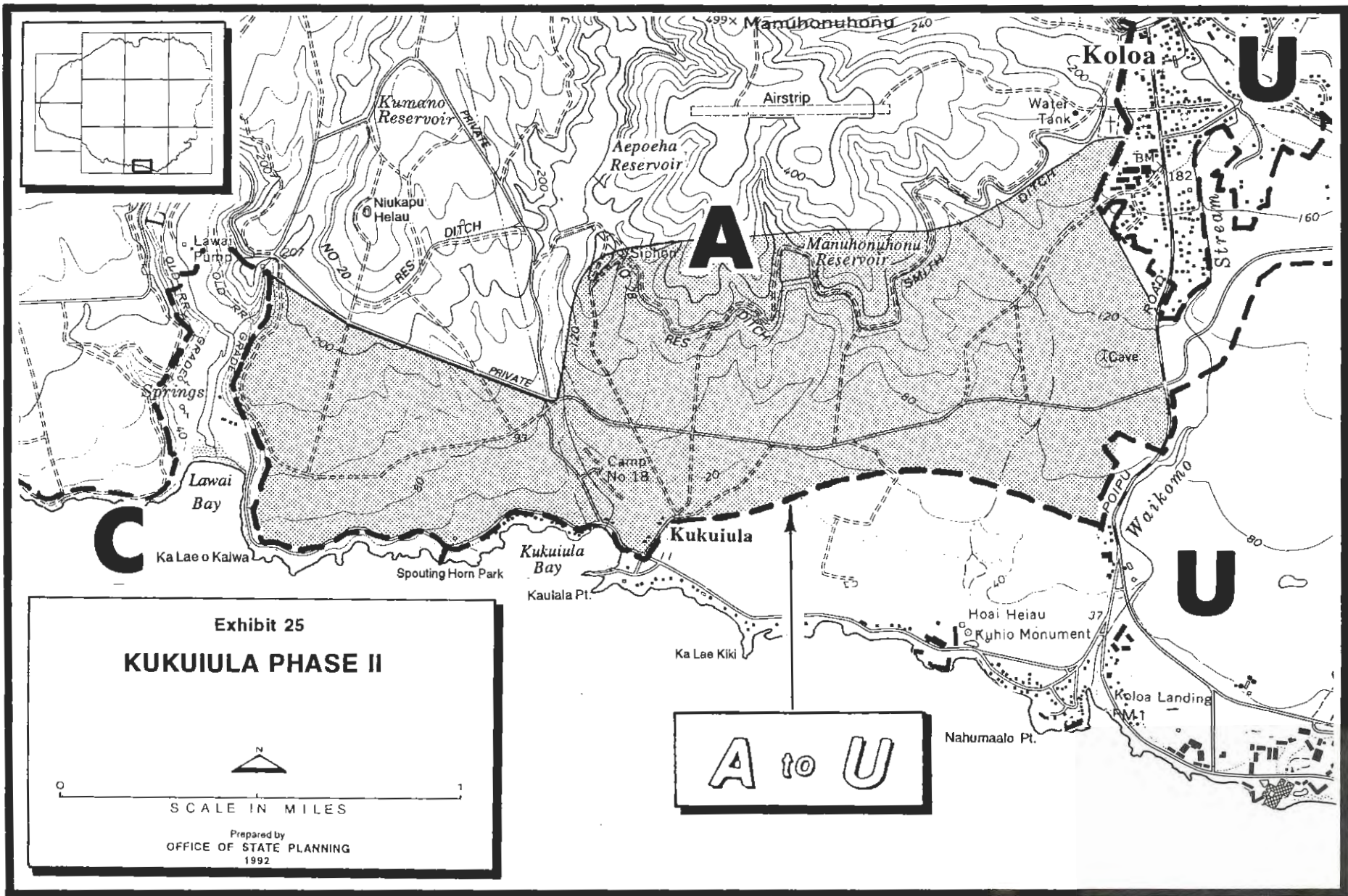
The proposed planned community will have an enrollment impact on Kauai High and Intermediate School and Koloa Elementary School. The Department of Education is planning a new Kauai Intermediate School to relieve enrollment pressures at Kauai High and Intermediate and other feeder schools in the complex. Likewise, Koloa Elementary will require additional classrooms to accommodate the increased enrollment.

Kukuiula Phase II has received General Plan approval with conditions from the County of Kauai.

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<sup>52</sup> Phone conversation with County of Kauai, Department of Public Works, February 1992.







**AREAS OF CRITICAL CONCERN  
IDENTIFIED DURING THE  
STATE LAND USE DISTRICT  
BOUNDARY REVIEW**





XV. AREAS OF CRITICAL CONCERN IDENTIFIED DURING THE STATE LAND USE BOUNDARY REVIEW

Hanalei Valley to Waikoko Valley, 1,871 acres

Resources of Significant Value

Although only the Hanalei River and Valley and Papalihala Marsh have been identified as Priority #1 areas for reclassification from the Agricultural District to the Conservation District, the entire area from Hanalei Valley to Waikoko Valley is of critical concern for the protection of environmental and cultural values. Hanalei River and Valley are a Priority #1 recommendation due to the river's outstanding aquatic habitat and the importance of the area's wetlands to the recovery of endangered waterbirds and the multiple resource values it contains. Waioli and Waipa Streams also possess important wetland resources but the aquatic resources are not of the quality of those in Hanalei. In addition, these streams have a much smaller flow.

The area from Hanalei Valley to Waikoko Valley contains a combination of important resources including endangered waterbird habitat, outstanding stream resources, scenic beauty, cultural significance and open space. The entire complex of wetlands in the Hanalei area supports the Hanalei Wildlife Refuge and other nearby waterbird recovery habitat. It also includes areas which are prone to flooding and soil erosion. Much of the area is designated "Open" on the Kauai General Plan which in part is designed to preserve, maintain and improve the essential characteristics of the land and water areas that are of significant value to the public. The streams drain into Hanalei Bay which is designated as Class AA water by the State Department of Health.

In addition to the areas shown on the Exhibit as Priority #1 and Areas of Critical Concern, the entire corridor along Special Streams should be protected. This includes the area around the Hanalei estuary (park, boat yard, old Club Med site). Although these areas are not depicted on the graphic, they are considered to be Priority #2 areas for inclusion into the Conservation District.

Conservation District Compatibility

Much of the area from Hanalei to Waipa is currently in wetland taro cultivation which is generally compatible with the protection of wetlands and the waterbird recovery habitat they provide. While there is general support to maintain the rural/agricultural/conservation character of this taro-growing area, there are varied opinions as to the method by which this should be done. Taro farmers have expressed reservations about Conservation District designation because of their perception that obtaining the required permits for activities within the Conservation District would be burdensome and make it difficult for them to continue their existing farming activities as well as any expansion thereof. In response, a Taro Subzone (see Appendix) was proposed for these lands and is still being discussed. If adopted, standard taro cultivation

activities would be permitted uses on lands classified under this Conservation District subzone. Other methods designed to protect these areas such as conservation easements may be considered as well.

#### Existing Land Uses

- ° The Hanalei National Wildlife Refuge is managed to enhance habitat for four endangered waterbirds, the coot, stilt, gallinule, and koloa duck using nesting ponds, cultivation of taro and loi.
- ° Two hundred head of buffalo are grazed on 100 acres of land along the Hanalei River.
- ° A controversial boat baseyard at the Hanalei Estuary is used to launch, fuel and maintain commercial boats that operate along the Na Pali Coast. The controversy centers around the environmental and social impacts of the operation as well as the necessary operating permits.
- ° Princeville Corporation leases lands for grazing and some taro production near the Hanalei River. A 1988 amendment to the Kauai County Comprehensive Zoning Ordinance states that Princeville "shall work with the County or its designee and discuss the feasibility of a long-term lease (with option to renew) of the 700+ acres of [the land] presently in pasture for the purpose of expanding the taro industry and bird and wildlife habitat."
- ° Waioli Mission leases land for the purpose of taro production in the Waioli Stream area.
- ° Bishop Estate leases land in Waipa to an association of taro farmers. These farmers are now discussing the construction of a mill in Waipa Valley to process the taro into poi and baby food.
- ° Landowners and lessees farm taro on Waikoko lands.
- ° A U.H. course in taro cultivation has been taught using Waikoko lands as a classroom.

#### Threats to Hanalei's Resources

Some question whether protective measures are necessary given the (as yet) longevity of taro cultivation in the Hanalei area. However, there are many potential threats to Hanalei's important resources as long as they are within the Agricultural District. Agricultural subdivisions are allowed on any lands within the district while golf courses are allowed on lands with a productivity rating of C, D, and E. There are former taro fields in Hanalei that have been filled in and converted to other uses. Other lands are believed to be considered for development. In some cases, these developments will not only replace existing taro loi/endangered waterbird habitat with a non-compatible use, but will affect the nearby streams and, ultimately, Hanalei Bay.

## Recommendations for the Future

While action is recommended on the Priority #1 area of Hanalei River and Valley and Papalihala Marsh because of the significance of the resources and physical constraints on development there, the entire area from Hanalei to Waikoko deserves further attention and potentially special treatment. There are several alternatives which may be considered to protect the historical taro sources, habitat important to the recovery of endangered waterbirds and stream-related resources in the area. These are listed below in hope that the dialogue that has begun through this State Land Use District Boundary Review will continue. Some options include:

1. Designation of a Taro or Traditional subzone within the Conservation District.
2. Designation of a new district, Taro or Traditional District, comparable to the Urban, Rural, Agricultural and Conservation Districts. (Would require a change to the State Land Use Law.)
3. Protection as unique agricultural lands under a more restrictive Agricultural District. (Would require change to the State Land Use Law--adoption of the State administration's version of the Land Evaluation and Site Assessment (LESA) bill.)
4. County designation of the area as a Special Treatment District-Cultural/Resource (could be considered during the upcoming County Community Plan update).
5. Conservation easements between the landowners and the State. (These could be negotiated at anytime without any change to existing laws.)
6. Voluntary participation in government programs designed to conserve, protect and enhance the natural and cultural resources of the Hanalei area.

Housing is a critical problem in Hanalei but its resolution need not conflict with cultural and natural resource protection goals. Perhaps Kauai's newly formed Community Housing Development Corporation could play a lead role in developing innovative solutions to Hanalei's housing situation that would not encroach on taro lands or harm the area's abundant natural resources. If the housing situation can be resolved and the land remains in taro, the balance between agricultural use and environmental protection can be maintained.

The County's General Plan/Community Plan update may provide a forum for discussion of designation of the area as a Special Treatment District-Cultural/Resource which would also serve to protect its unique qualities.

## The Conservation Values of the Hanalei to Waikoko Area of Critical Concern

### Stream Resources and Constraints

Hanalei River, Waipa and Waioli Streams have been identified as Special Streams using the Hawaii Stream Assessment and input from stream experts. Hanalei has been identified for its aquatic and riparian values; Waipa and Waioli Streams for their riparian values. Hanalei was considered to have "Outstanding" aquatic habitat due to the abundance and spawning of native aquatic species. The riparian values are for the most part related to the associated wetlands and waterbird recovery habitat. In addition, the Hawaii Stream Assessment recognized Hanalei as a Blue Ribbon stream resource due to its diversity and high quality aquatic, riparian, cultural, and recreational resources.

The State's Na Ala Hele, Hawaii Trail and Access System Program Plan, 1991, has designated the Waioli Stream area as a demonstration trail. The Waioli Valley Access and Waioli Falls Trail would be 3.25 miles long, beginning mauka of the main highway and running into the back of Waioli Valley. The trail would be used for picnics, nature study, scenic forest reserve enjoyment, hunting and hiking.

All of the streams have associated floodplains that serve as a constraint to development. Hanalei's valley floor lies within the 100-year floodplain and the stream floodway as established in the Flood Insurance Rate Maps (FIRM). Areas adjacent to Waipa and Waioli Streams are also in the 100-year floodplain area.

### Wetlands

Wetlands in the Hanalei/Waioli/Waipa area have been identified as important to the recovery of endangered Hawaiian waterbirds in the Hawaiian Waterbirds Recovery Plan, U.S. Fish and Wildlife Service and Department of Land and Natural Resources (1985) and Regional Wetlands Concept Plan (1990), by the U.S. Fish and Wildlife Service. In addition, the existence of the entire complex of wetlands in the area serve to support management activities at the Hanalei National Wildlife Refuge according to the U.S. Fish and Wildlife Service. Papalihala Marsh, also known as Waioli Marsh, has been identified as important wetland waterbird habitat in the State Conservation Lands Functional Plan.

### Forest Lands

The Hanalei to Waikoko area includes a portion of the recent Halelea Forest Reserve addition. Most of the 690 acres recently added to the Forest Reserve are in the Conservation District. However, a small portion is not. The identification and ultimate reclassification of this area is recommended for the purpose of watershed protection benefits; reforestation; water enhancement; aesthetics; limited timber forest production; provision of an additional area for public wildlands recreation and nature study; and stream and associated aquatic and wildlife habitat enhancement.

### Consistency with other plans

This identification of Hanalei-Waikoko as an Area of Critical Concern is consistent with State and County plans for natural resource protection. Identification of this area supports the State Conservation Lands Functional Plan which contains actions to protect top priority wetlands and expand the Forest Reserve System; and the State Recreation Functional Plan which contains policies to identify and develop top priority trails for demonstration purposes and policies to identify and assess streams for preservation.

The County of Kauai has designated the area along the Hanalei River, Waipa Stream and Waioli Stream as "Open" on the General Plan Map for the North Shore area. The purpose of the County "Open" designation is "to preserve, maintain or improve the essential characteristics of the lands and water areas that are of significant value to the public, important to the structure of areas, necessary to buffer undesirable environmental factors, maintain the essential functions of ecological systems, and define and regulate development within areas which may be potentially hazardous."

The identification is also consistent with goals and objectives in the North Shore Development Plan, specifically, "to preserve the wildlife and flora of the North Shore, recognizing man's dependence upon this preservation for his own health and welfare." The North Shore Development Plan states, "Coastal area from Waioli Stream to Wainiha Valley, including all of Waipa and Lumahai Valleys . . . present function is to provide open space, scenic beauty along the coast and in the valleys, and for agriculture. This function should continue and development of residential or other uses be prohibited." The North Shore Development Plan also indicates that frequent flooding occurs in areas adjacent to the Hanalei River and development should be restricted, except those agricultural uses which are compatible.

### Summary

The identification of the Hanalei-Waikoko area as an Area of Critical Concern will help to protect the indigenous or endemic plants, fish and wildlife; watersheds, water sources, and water supplies; important natural systems, habitats and sites of unique ecological significance; and those prone to flooding or erosion damage. This identification is recommended for the purpose of watershed protection; reforestation; water enhancement; aesthetics; limited timber forest production; provision of an additional area for public wildlands recreation and nature study; and stream and associated aquatic and wildlife habitat enhancement. This identification will emphasize the need for proper and thorough regulation of uses in or near wetlands and adjacent to streams and on steep slopes.

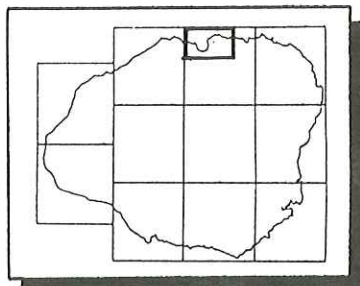
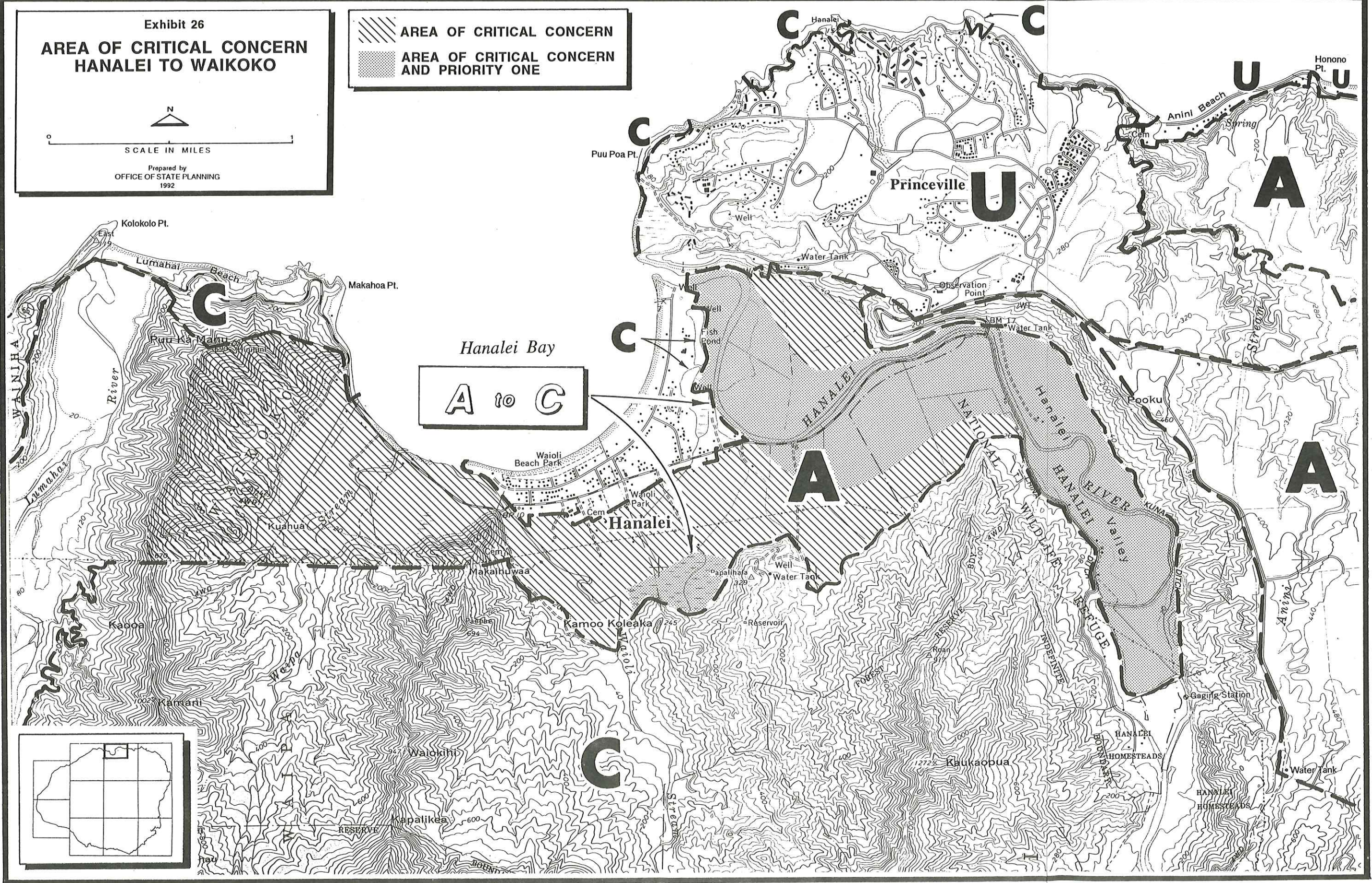


Exhibit 26  
**AREA OF CRITICAL CONCERN  
 HANAIEI TO WAIKOKO**



Prepared by  
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 1992

AREA OF CRITICAL CONCERN  
 AREA OF CRITICAL CONCERN AND PRIORITY ONE







Mahaulepu Coastline, 1,517 acres (A to C)

The Mahaulepu Coastline contains a combination of outstanding coastal recreational areas, native coastal strand vegetation and significant physiographic, archaeological and scenic resources.

The area is currently in agricultural use, under sugarcane cultivation, which is compatible with the scenic and open space resources of the area and does not detract from the recreational use of the area.

There have been past development proposals for the area. The 1969 State of Hawaii Land Use Districts and Regulation Review report makes reference to the existence of development plans for the Koloa-Poipu area by all three of the major landowners. The 1977 Koloa-Poipu Development Plan details development plans proposed by Grove Farm that include four hotels and a fifth optional hotel/condominium for the coastal plain between Weliweli subdivision and Kawelikoia Point. The proposal encompasses 705+ acres for hotel, condominium, park, golf course, and industrial/sewage treatment use. The Development Plan did not endorse these proposals but merely identified their existence.

However, the landowner has provided assurance that the land will be used only for agricultural uses (not including agricultural subdivisions or golf courses) and that a petition for reclassification shall not be initiated for the next five years unless a General Plan amendment or amendment to the regional development plan is obtained.

The Office of State Planning (OSP) further found that reclassification of this area to the Conservation District would have been based largely on its scenic, open space and recreational resources. OSP did not conduct scenic and open space studies. In addition, the current designation of Agricultural is compatible with open space and scenic resources. Therefore, there was not sufficient justification or data to take a petition to reclassify this area from the Agricultural to the Conservation District under contested case proceedings before the State Land Use Commission.

Therefore, this area is not recommended for reclassification to Conservation during the 1991-1992 boundary review. However, on the other hand, urban and urban-type uses for this area are not endorsed in the boundary review report.

Over the long term, it may be anticipated that this area will be subject to development pressures. Measures will need to be taken to assure that the sensitive resources here will be protected. Alternatives include but are not limited to the following:

1. Allowing some development in exchange for open space concessions or a larger Conservation District area;
2. Devising a mechanism for transfer of development rights to provide for development of another area in exchange for non-development at Mahaulepu.
3. Keeping existing State and County land use regulations in place and, thus, maintaining an agricultural designation for the area; and

#### 4. Purchasing easements over the area.

The following discussion identifies the natural, archaeological, scenic and recreational resources of Mahaulepu.

Seabirds use the coastal sea cliffs and foothills for nesting and loafing. Other birds like the Nene are known to frequent the area, and waterbirds make use of several natural ponds and man-made siltation basins. The Newell's Shearwater is listed as a threatened species by the U.S. Fish and Wildlife Service and the State of Hawaii. A known nesting site recognized in the USFWS Recovery Plan for the Newell's Shearwater is at Kaluahonu, an area just northeast of Waita Reservoir.

The sand dunes support a variety of native strand vegetation such as naupaka, ilima, pohuehue, pua pilo and pau o Hiiaka. In addition, introduced species are also present including ironwoods and koa haole.<sup>53</sup>

According to the National Marine Fisheries Service, the Mahaulepu coast is frequented by green sea turtles and monk seals both listed by Federal and State agencies as endangered species. The offshore reef ecosystem supports abundant sea life and a coherent reef system of Porites compressa can be found at Kawailoa Bay. The coastal area from Palama Point to Mahaulepu was recommended for consideration as a State Marine Life Conservation District (MLCD) during public hearings for the State Recreation Functional Plan.

Lava tubes in the vicinity of Mahaulepu are large enough and deep enough to still support an endemic biota. Due to the extremely restricted distribution, at least two of these animals are considered rare and endangered. The blind wolf spider (Adelocosa anops) is known from a single lava tube, while a blind terrestrial amphipod is known from the same cave system and a limestone cave.<sup>54</sup>

Fossilized bird bones from a number of ancient native bird species (three species of goose, a long-legged owl, and a flightless rail) have been uncovered in the coastal sand dunes.<sup>55, 56, 57</sup>

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<sup>53</sup> Clark, John R.K., Beaches of Kauai and Niihau, University of Hawaii Press, Honolulu, 1990.

<sup>54</sup> Howarth, Frank G., Limestone Cave Fauna, In: Environmental Research Associates' Draft Environmental Impact Statement for Poipu Plantation. No date. And: personal communication, 1991.

<sup>55</sup> op. cit.

<sup>56</sup> Department of Land and Natural Resources, Recreation Program Handbook, State of Hawaii, March 1978.

<sup>57</sup> Abbott, Agatin, et al. Natural Landmarks Survey of the Hawaiian Islands, prepared for the National Park Service Natural Landmarks Program, Department of the Interior, July 1981.

The lithified dunes contain a site listed on the Hawaii Register of Historic Places. The Waiopili Heiau is located within the existing quarry operation, sitting directly underneath the rock crusher. Several other archaeological remains are known to exist in the area but are unranked as of 1977.

During excavation and grading work for the Hyatt hotel, Hawaiian remains were identified and recovered along the coastal sand dune area (Makawehi dunes). Recent Hawaiian remains have been discovered in caves near the existing golf course. This raises the possibility that other bones may be found in the general area if development were to disturb remaining sand dunes.<sup>58</sup>

The proposed area for reclassification includes lands suitable for outdoor recreational uses such as hunting, fishing, hiking, camping, and picnicking.

Along this coast are beaches used for both passive and active recreation at Keoniloa Bay (Shipwrecks), Mahaulepu (Gillin's Beach), Kamala Point, Kawaiiloa Bay, and Haula Beach. On a daily basis, the area is used for fishing, day and night camping, horse riding tours (commercial), swimming, sunbathing, surfing, and windsurfing.

The Statewide Recreation Resources Inventory, Principal Swimming Areas (Department of Land and Natural Resources, 1987) identifies Haula Beach and Kawaiiloa Bay as having regional significance, Keoniloa (Shipwrecks) as high islandwide significance, and Kamala Point Beach as high statewide significance.

Access has been allowed to occur loosely and by permit in the past. However, due to vandalism, littering, and damage from off-road vehicles, access is now more strictly controlled. Grove Farm continues to allow access by permit for local Kauai residents and by signing a waiver at a roadside check point for tourists and off-island residents.

The Land Study Bureau maps indicate that portions of the areas proposed for reclassification contain steep slopes, particularly the coastal lithified sand dunes, portions of the cinder and spatter cones, and the area northeast of Waita Reservoir.

The Land Study Bureau's Detailed Land Classification-Island of Kauai classifies most of the Mahaulepu plain including the upland valleys of Paa and Mahaulepu with a Master Productivity Rating of B. The coastal strip, the lithified sand dunes and puu generally are given a Master Productivity Rating of E. A few areas encompassed by the recommendation have a Master Productivity Rating of C--the upland portion east of Waita Reservoir and the flanks of the Puuhi Reservoir.

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<sup>58</sup> Personal communication with Nancy McMahon, State Historic Preservation Division, Department of Land and Natural Resources, 1992.

The Mahaulepu area has historically been cultivated for sugarcane. The coastal strip and the sand dunes are an exception, as these areas are generally steep and are not irrigated.

Two reports indicate the area has significant scenic, ecologic or unique physiographic value. These are the Natural Landmarks Survey of the Hawaiian Islands done for the National Park Service (1981) and Preliminary Report to Assist in the Subzoning and Protection of Natural Areas by the State of Hawaii by the Bishop Museum (1973).

Mahaulepu displays an array of geologic features which vary in age and degree of weathering. The area is girdled on the north and east by the Haupu Range of the older Waimea Canyon Volcanic Series, which is a deeply eroded remnant of a caldera on the flank of the main Kauai shield volcano. The younger Koloa Volcanic Series is represented by a concentration of cinder and spatter cones primarily on the western portion of the Mahaulepu area. The interaction of land and water has formed the recognizable littoral features that include the lithified sand dunes, limestone hills, sinks, and caves which are remnants of raised coral reefs, wave-cut cliffs, benches, and a small sea stack. The cave located just east of the quarry is the largest true limestone cave and the only solution limestone cave in the State. The cave also may contain subterranean anchialine ponds fed underground by Kapunakea Spring.

The State Recreation Program Handbook (Department of Land and Natural Resources, 1978) identifies Mahaulepu as "Kauai's last remaining wild shoreline with easy physical access and an exceptional concentration and variety of geologic and physiographic landmarks."

A report done in 1981 for the National Park Service entitled Natural Landmarks Survey of the Hawaiian Islands, had this to say: "the lands of Mahaulepu are among the most interesting areas in the State both geologically and biologically." The survey gave the lands of Mahaulepu a priority ranking of "1" which describes areas that "include outstanding and/or unique examples of geological and ecosystem features characteristic of the Hawaiian Islands and which encompass several such features."

The State Tourism Functional Plan contains policies to maintain the area for recreational use by the public and the State Recreation Functional Plan contains policies to plan and develop areas that feature historic/cultural resources like the lithified sand dunes found at Mahaulepu.

The Na Ala Hele Program Plan (May 1991) prepared by the Department of Land and Natural Resources, has identified priority trails on the island of Kauai. A Poipu-Mahaulepu-Kipu Kai Coastal Trail is proposed to begin at the Sheraton Hotel (where public parking exists), traverse sand dunes and several scenic bays, and ultimately end in Kipu Kai, a total distance of nearly six miles. The Program Plan has this to say about the area's resources: "abounding in fantastic geologic formations and native flora and avifauna, trail users could enjoy a wide range of recreational and educational activities." And further, that the resources "make management and protection of marine and terrestrial features especially important with increased public use of the area."

The Kauai County General Plan outlines broad goals and objectives for the island. Goals which support the recommendation are:

- (1) "to maintain the concept of Kauai as 'The Garden Isle'; thus insisting any growth be in consonance with the unique landscape and environmental character of the island,"
- (2) "to insure that all physical growth is consistent with the overall ecology of the island,"
- (3) "to provide for a maximum variety of outdoor recreational activity,"
- (4) "to recognize those aspects of the island and its people which are historically and culturally significant, and to maintain and enhance such aspects as a continuing expression of the island's physical and social structure," and
- (5) "to guide and control development to take full advantage of the island's form, beauty and climate and preserve the opportunity for an improved quality of life."

The County Development Plan maps have designated the coastal area along Mahaulepu within the "Open" land use classification. The Koloa-Poipu Development Plan states that "(C)ounty open land use designations have been revised to conform to existing State Conservation District boundaries and additions to State Conservation District boundaries proposed by this plan." The purpose of the "Open" designation is "to preserve, maintain or improve the essential characteristics of the lands and water areas that are of significant value to the public, important to the structure of areas, necessary to buffer undesirable environmental factors, maintain the essential functions of ecological systems, and define and regulate development within areas which may be potentially hazardous."

The Koloa-Poipu Development Plan, Phase I: Existing Conditions (1977) identifies the area's scenic resources and future uses of Agricultural District lands. Regarding scenic resources, the Koloa-Poipu Development Plan states "(T)he major scenic resources are concentrated in the lush uplands and along geologically named shorelines. Major shoreline features include . . . Keoniloa Bay (Shipwreck Beach), Makawehi (bluffs), Haupu and Mahaulepu beaches, and Paoo Point." The Development Plan also discusses the agricultural lands in the Koloa-Poipu area: "(A)gricultural Districts include scenic areas, hunting locations, and the sugar area dissected by valleys and canyons, some of which are grazed, delineated on the general premise of potential feasible agricultural use. If in the future recreational use becomes dominant, these lands can be reclassified to Conservation District."

More specific language regarding Mahaulepu is present in the second phase of the Koloa-Poipu-Kalaheo Development Plan, Phase II: Development Plan (1977). The section entitled "Growth" indicates that the County should "(L)imit growth and development within existing urban areas and adjacent vacant or underutilized areas . . . and maintain significant visual characteristics of the area." The section goes on further to say:

"(D)evelopment toward Mahaulepu beyond the existing State Urban District should not occur and coastal lands particularly should remain undeveloped and restricted to compatible uses that will maintain the unique environment character in perpetuity."

The Kauai County Zoning Ordinance (CZO) in Article 10 outlines Constraint Districts whose purpose(s) include: "to identify those areas where particular physical, biologic and ecologic characteristics of the land, water and atmosphere indicate that standard requirements for development, modification or use may be inadequate to insure the general health, safety and welfare of the public or the maintenance of established physical, geologic and ecologic forms and systems"; "to insure that development, modification or use will not create substantial threats to health, safety and welfare of people, or to the maintenance of established physical, biologic, and ecologic forms and systems"; and "to permit development, modification or use when it can be shown, within the limits of available knowledge, that ecologic interrelationship will be improved or not significantly depreciated."

There are six (6) Constraint Districts: Drainage, Flood, Shore, Slope, Soils, and Tsunami. The CZO includes language describing the types of areas to be included in each of the Constraint Districts and the restrictions on and requirements for development within them.

Mahaulepu is identified on the Kauai County Constraint Maps to include the following constraints: slope (at Kaluahonu, Puuhi, Puu Wanawana, and on south near quarry), soils (at Kaluahonu, Puuhi, Puu Hunihuni, Puu Wanawana, and the low-lying area between existing Conservation District, the quarry and Puu Keke), and tsunami (shoreline extending inland between existing Conservation District, the quarry and Puu Keke).

Flood Prone and Potential Tsunami Inundation area maps have been done for the area by the Hawaii Institute of Geophysics, Tsunami Research Program, in 1973. These maps indicate no flood prone areas along the coast or inland between Makahuena Point and Kawelikoa Point. Potential areas of tsunami inundation do occur along the entire coastline in this area. In particular, these include the low-lying areas presently in sugar cultivation behind Kawaihoa Bay from the foot of Puu Keke to the quarry area, and between the quarry and the coastal Conservation District boundary on the west. The area of potential inundation approximately parallels the 40-foot contour interval between Puu Keke and the quarry.

Statewide soil surveys were cooperatively conducted between the U.S. Department of Agriculture Soil Conservation Service (SCS) and the University of Hawaii Agricultural Experiment Station in 1965. These maps showing soil types can be used to indicate areas of steep slopes, soil instabilities, and soils subject to periodic or frequent saturation (hydric).

Soils having slopes of 25-70 percent are indicated on the northwestern side of Puu Keke, at Kaluahonu, the entire cinder cone at Puu Wanawana, and on the northern portions of Puu Hunihuni and Puuhi.

Soils classified as highly erodible or potentially highly erodible according to SCS exist throughout the identified areas. Soils having moderate or high shrink-swell potential are found throughout the identified areas, particularly along the southern and eastern base of Puu Keke.

#### Core Area

The core area recognizes the existing County of Kauai areas designated in the County Open district, and the Koloa series rift zone cinder and spatter cones (Puu Wanawana, Puu Hunihuni, Puuhi, and Kaluahonu). The core area(s) are identified on the attached map by the shaded areas with widely spaced dots.

The Kaluahonu cone has been mentioned as a nesting site for the threatened Newell's Shearwater and the area contains slopes of greater than 20 percent.

The Koloa series cones are considered outstanding geologic and physiographic features which contribute to the scenic and open space character of the entire area.

The eastern portion from the existing quarry to the sand dune cliffs of Aweowonui falls within the County Open district and is recommended in the Koloa-Poipu Development Plan for inclusion in the State Conservation District. This portion of the recommended area includes native coastal strand vegetation, limestone and lava tube caves, fossil bird bones, potential burial sites, a heiau and other archaeological sites. In addition, the area represents a largely undeveloped coastline near existing population centers which is actively used for recreation by locals and visitors. Continued quarrying of limestone may pose a threat to the integrity of the lava and limestone cave ecosystems and to the integrity of the Waiopili Heiau.

The core area would protect the most important assemblage of the geological areas of interest and the important biological and archaeological resources. One section designated in the County Open district which is not being recommended for inclusion is the existing golf course adjacent to the hotel. The intent is to discourage golf courses in the Conservation District except under certain specific conditions.

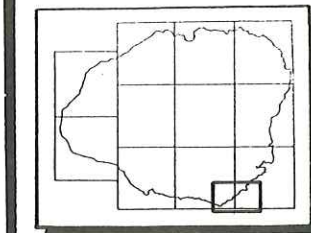
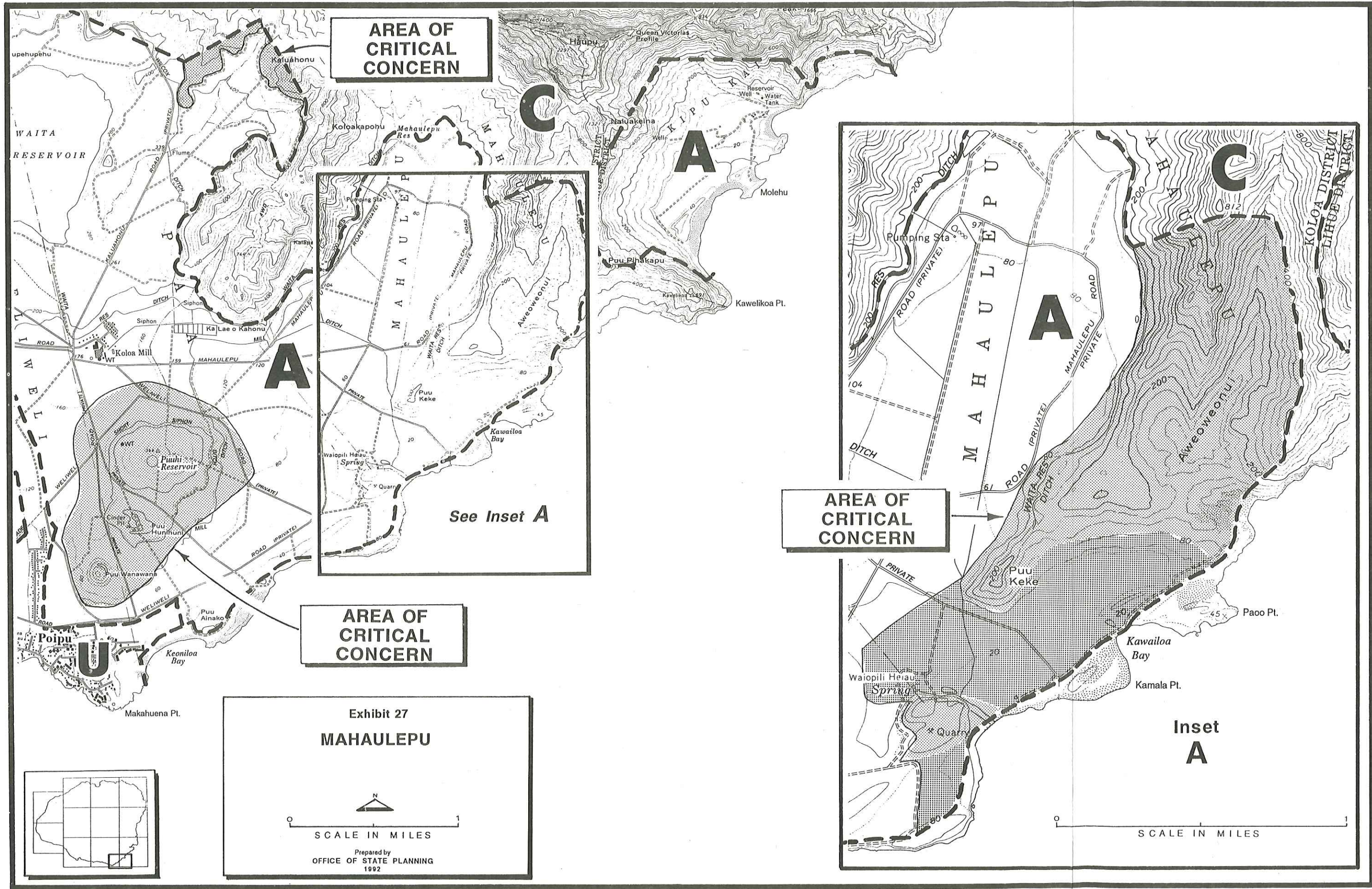
#### Secondary Area

The secondary area includes the large low-lying area in cultivation between the shoreline, Puu Keke and the quarry, and an unused area of largely shrub lands makai of the quarry. The secondary area(s) are identified by the darker shaded areas with closely spaced dots.

The large low-lying area is currently being cultivated in sugarcane. Presently, this low intensity use contributes to the open space character of the area and is consistent with protection of the natural resources in the area.

In their present use these areas may not substantially detract or degrade from the area's geologic, archaeological or natural resources. However, if higher intensity uses are proposed for these low-lying areas, then careful consideration needs to be given to the impact on the integrity and wholeness of geologic, archaeological and scenic open space characteristics. In addition, the tsunami inundation potential would require special design and construction considerations which also could affect scenic open space characteristics.





**Exhibit 27  
MAHAULEPU**

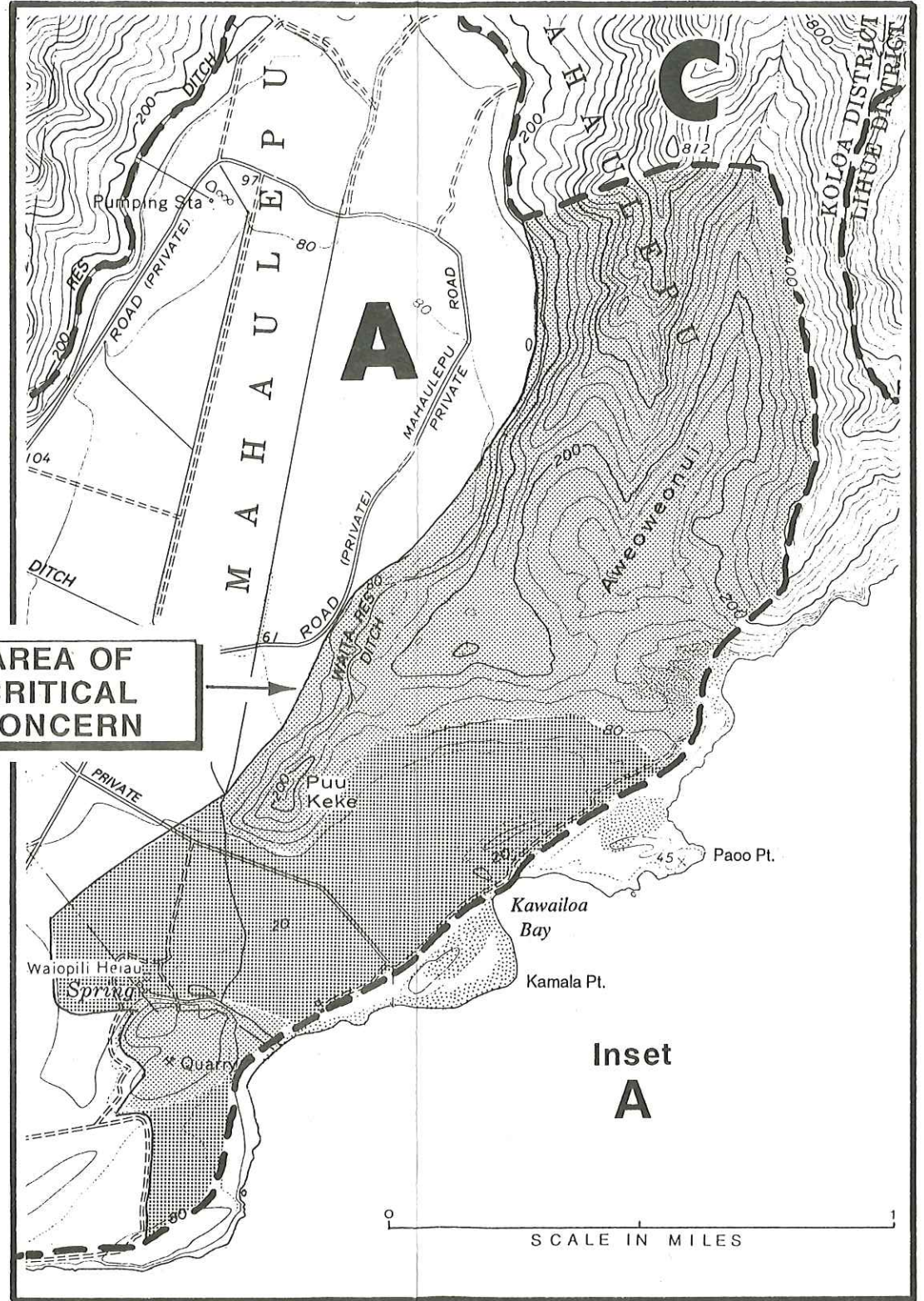
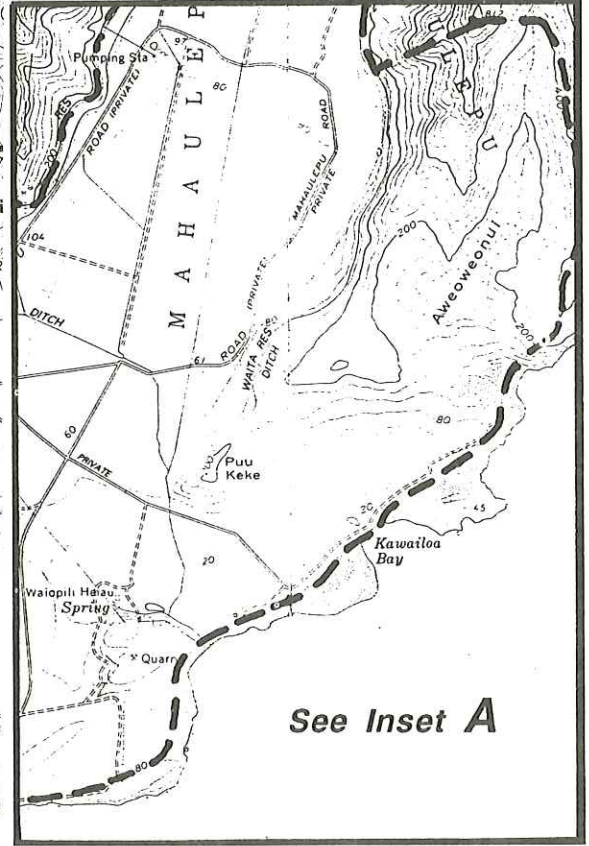
SCALE IN MILES

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1992

**AREA OF CRITICAL CONCERN**

**AREA OF CRITICAL CONCERN**

**AREA OF CRITICAL CONCERN**





XVI. RECOMMENDATIONS FOR DEPARTMENT OF HAWAIIAN HOME LANDS REVIEWED DURING STATE LAND USE BOUNDARY REVIEW

Anahola Stream, 115 acres (A to C)

The proposed reclassification of Anahola Stream from the Agricultural District to the Conservation District meets the following standards and criteria for the Conservation District contained in Section 205-2(e), HRS: Conservation districts shall include areas necessary for conserving indigenous or endemic plants, fish, and wildlife, including those which are threatened or endangered; and preventing floods and soil erosion.

The proposed reclassification will impact favorably the following area of statewide concern set forth under Section 205-17, HRS, preservation or maintenance of important natural systems or habitats; and maintenance of valued . . . natural resources.

The proposed land use district boundary amendment meets the following standards for determining Conservation District boundaries contained in the Hawaii Administrative Rules:

Section 15-15-20(2) The area includes lands susceptible to floods, and soil erosion, lands undergoing major erosion damage and requiring corrective attention by the state and federal government, and lands necessary for the protection of the health and welfare of the public by reason of the land's susceptibility to inundation by . . . flooding . . .

Section 15-15-20(5) The area includes lands necessary for . . . conserving natural ecosystems of endemic plants, fish and wildlife . . .

Anahola Stream has been identified as a Special Stream using the Hawaii Stream Assessment and input from stream experts. Anahola Stream has an abundance of native aquatic species including all four native species that are indicators of a high quality aquatic environment.

The proposed area for reclassification includes lands necessary for preserving natural ecosystems of native plants, fish, and wildlife, particularly those which are endangered.

The proposed reclassification also conforms to the objectives and policies of the Hawaii State Plan for the physical environment, Section 226-11, 12 and 13, HRS, including but not limited to, seeking effective protection of Hawaii's unique and fragile environmental resources, reducing the threat to life and property from erosion and flooding. Additionally, the proposed reclassification conforms to the Priority Guidelines for population growth and land resources, Section 226-104, HRS, including but not limited to, utilizing Hawaii's limited land resources wisely, providing adequate land to accommodate projected population and economic growth needs while ensuring protection of the environment and the availability of the shoreline, conservation lands and other limited resources for future generations.

The proposed reclassification also addresses the Statewide Recreation Resources Inventory (DLNR, 1987) which rates Anahola Beach as having "high regional significance."

The proposed reclassification is consistent with the Department of Hawaiian Home Lands' Anahola-Kamalomalo-Moloaa Development Plan (1987) which places much of the stream corridor into a "resource management area." These areas are environmentally sensitive and thus constrained from development. The plan leaves these areas in open space or for activities which respect or enhance their sensitive qualities. The plan also recognizes the estuary and stream mouth as providing "unique habitat that should be protected." The wetlands are known to be habitat for migratory waterbirds, including the endangered native koloa.

The Na Ala Hele Program Plan (May 1991) prepared by DLNR has identified priority trails on the island of Kauai. A Lihue-Anahola Coastal Trail is proposed as a coastal scenic path which passes numerous beaches and would accommodate pedestrians, bicycles and horseback riders.

The County of Kauai has designated the area along the Anahola Stream mauka of the highway as "Open" on the General Plan Map for the North Shore area. The purpose of the "Open" designation is "to preserve, maintain or improve the essential characteristics of the lands and water areas that are of significant value to the public, important to the structure of areas, necessary to buffer undesirable environmental factors, maintain the essential functions of ecological systems, and define and regulate development within areas which may be potentially hazardous." Additionally, the Anahola Stream makai of the highway lies within the County of Kauai Special Management Area.

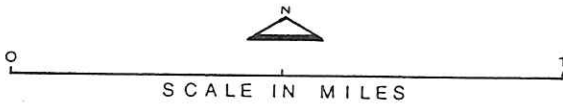
As stated earlier in this report, Conservation District stream protection corridors have only been recommended for lengths of streams that pass through the State Agricultural District. However, because protection of the entire stream course is very important to the continued health of the stream, we are also recommending that stream corridors within the Urban and Rural Districts of these streams be considered Priority #2 areas.

A maximum 100-foot wide corridor would apply where practicable; otherwise a corridor would be narrowed to avoid existing structures or fences. For the Anahola Stream, this area would be Urban lands from the makai border of the Agricultural District to Anahola Bay, 100 feet wide on both sides of the stream.

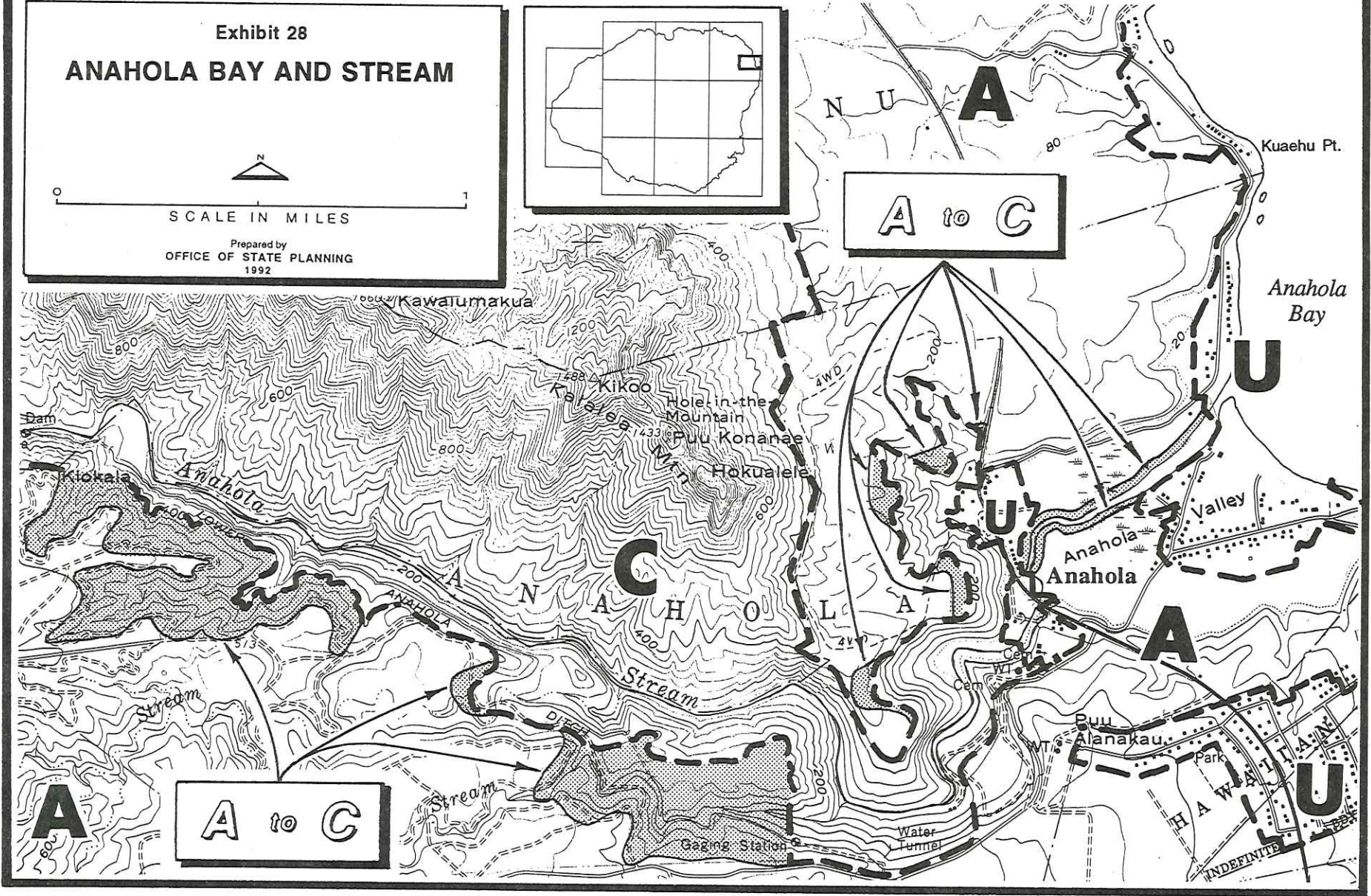
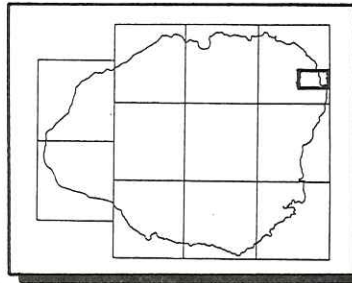
Although the initiation of petitions to reclassify these corridors to the Conservation District is not recommended at this time, any development in these areas that might negatively impact on a stream's aquatic resources should be thoroughly and critically reviewed.

Exhibit 28

# ANAHOLA BAY AND STREAM



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Department of Hawaiian Home Lands Anahola Houselots, 244 acres (A to U)

The proposed reclassification of DHHL lands at Anahola from the Agricultural District to the Urban District meets the following standards and criteria for the Urban District contained in Section 205-2(b), HRS: Urban districts shall include lands that are now in urban use and a sufficient reserve area for foreseeable urban growth.

The proposed reclassification will impact favorably the following area of statewide concern set forth under Section 205-17, HRS: provision for employment opportunities and economic development; and provision of housing opportunities for all income groups, particularly the low, low-moderate, and gap groups.

The proposed land use district boundary amendment meets the following standards for determining Urban District boundaries contained in the Hawaii Administrative Rules:

Section 15-15-18(2) Proximity to basic services such as transportation systems, water, sanitation, schools and police and fire protection. The area is in close proximity to these basic services.

Section 15-15-18(4) In determining urban growth for the next ten years, or in amending the boundary, lands contiguous with existing urban areas shall be given more consideration than non-contiguous land . . . The area is adjacent to the existing Urban District.

The proposed reclassification is primarily housekeeping in nature. DHHL has begun a housing project on these lands. A number of homes have already been constructed and construction of the remaining homes is underway. DHHL lands are not subject to the State Land Use Law. Reclassification would put an area in urban use into the Urban District.

Development of the Anahola makai and mauka houselots will provide residential houselots for native Hawaiians in proximity to an existing urban area. There are presently 990 applicants on a waiting list for residential home sites on the island of Kauai.

However, Kapaa High and Intermediate and Kapaa Elementary are operating with a large shortage of classrooms, and this housing project will have an enrollment impact on these Kapaa schools.

The proposed reclassification also conforms to the objectives and policies of the Hawaii State Plan for the physical environment, Section 226-5, 6 and 13, HRS, including but not limited to: planning for the development and availability of land and water resources in a coordinated manner so as to provide for the desired levels of growth in each geographic area; and, encourage urban developments in close proximity to existing services and facilities. Additionally, the proposed reclassification conforms to the Priority Guidelines for population growth and land resources, Section 226-104, HRS, including but not limited to,

encouraging urban growth primarily to existing urban areas where adequate public facilities are already available or can be provided with reasonable public expenditures, and away from areas where other important benefits are present, such as protection of important agricultural land or preservation of lifestyles.



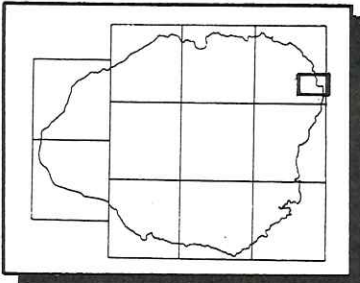
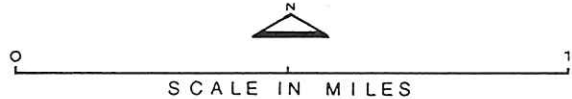
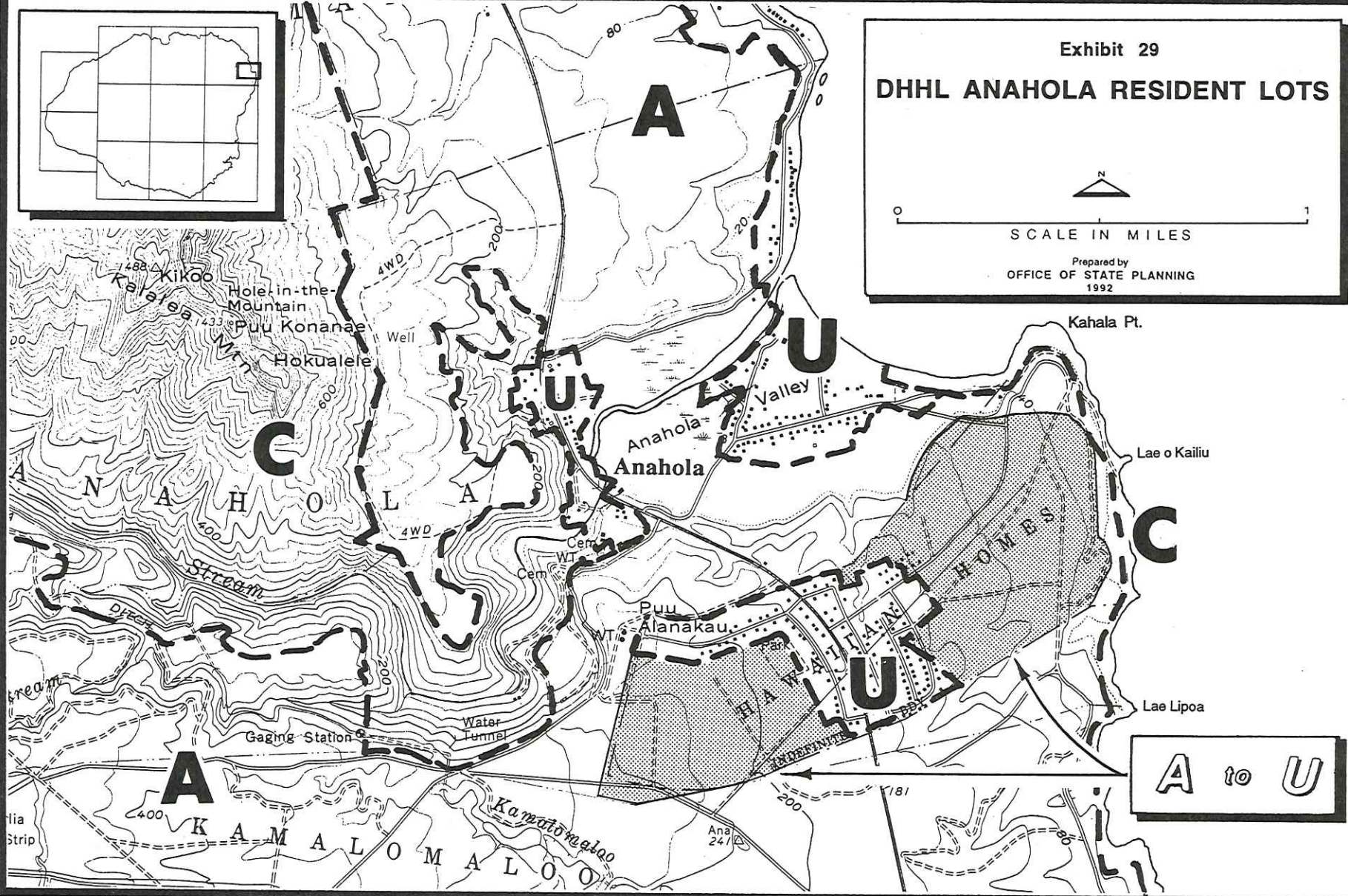


Exhibit 29  
**DHHL ANAHOLA RESIDENT LOTS**



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**A to U**



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# APPENDICES





APPENDIX A

Detailed Tables on Urban Land Requirements



**Table A-1**  
**POPULATION PROJECTIONS**  
**COUNTY OF KAUAI**  
**1988-2010**

	1988		1990		1995		2000		2005		2010	
	1/ PERCENT		2/ PERCENT		2/ PERCENT		2/ PERCENT		2/ PERCENT		1/ PERCENT	
NORTH SHORE	5,320	10.8%	5,787	10.7%	6,375	10.4%	6,936	10.2%	7,480	9.9%	8,158	9.6%
KAPAA-WAILUA	13,923	28.3%	15,253	28.2%	17,109	28.0%	18,965	27.8%	20,848	27.6%	23,198	27.4%
LIHUE	10,245	20.8%	11,649	21.5%	14,270	23.4%	17,171	25.2%	20,385	27.0%	24,384	28.8%
KOLOA-POIPU	12,585	25.6%	13,690	25.3%	15,081	24.7%	16,409	24.1%	17,695	23.4%	19,300	22.8%
WAIMEA	7,174	14.6%	7,720	14.3%	8,265	13.5%	8,719	12.8%	9,092	12.0%	9,559	11.3%
<b>TOTAL</b>	<b>49,247</b>	<b>100.0%</b>	<b>54,100</b>	<b>100.0%</b>	<b>61,100</b>	<b>100.0%</b>	<b>68,200</b>	<b>100.0%</b>	<b>75,500</b>	<b>100.0%</b>	<b>84,600</b>	<b>100.0%</b>

1/ Kaku Associates, Kauai County Highway Planning Study.

2/ M-K projections using distributions derived from 2010 projections.

Source: Urban Land Requirements Study, Wilson Okamoto and Associates, 1991.

**Table A-2**  
**AVAILABLE URBAN LANDS TO MEET FUTURE DEMANDS**  
**COUNTY OF KAUAI**  
**1995**  
**(in acres)**

	RESIDENTIAL ZONED			COMMERCIAL ZONED			INDUSTRIAL ZONED			RESORT ZONED			COUNTY- ZONED	OTHER	TOTAL	PUBLIC AREA	TOTAL	SURPLUS/ (DEFICIT)
	DEV. URBAN	1995 DEMAND	SURPLUS/ (DEFICIT)	DEV. URBAN	1995 DEMAND	SURPLUS/ (DEFICIT)	DEV. URBAN	1995 DEMAND	SURPLUS/ (DEFICIT)	DEV. URBAN	1995 DEMAND	SURPLUS/ (DEFICIT)	DEV. URBAN LANDS	DEV. URBAN	DEV. URBAN	1995 DEMAND	1995 DEMAND	OF URBAN LANDS
NORTH SHORE	325	118	207	8	6	2	0	11	(11)	6	60	(54)	339	0	339	1	196	143
KAPAA	335	299	36	0	11	(11)	14	20	(6)	13	39	(26)	362	27	389	4	373	16
LIHUE	409	430	(21)	81	17	64	74	72	2	38	25	13	602	3	605	12	556	49
KOLOA	572	342	230	28	12	16	0	3	(3)	0	75	(75)	600	39	639	3	435	204
WAIMEA	317	126	191	0	2	(2)	7	11	(4)	0	2	(2)	324	7	331	1	142	189
<b>SUBTOTAL</b>	<b>1,958</b>	<b>1,315</b>	<b>643</b>	<b>117</b>	<b>48</b>	<b>69</b>	<b>95</b>	<b>117</b>	<b>(22)</b>	<b>57</b>	<b>201</b>	<b>(144)</b>	<b>2,227</b>	<b>76</b>	<b>2,302</b>	<b>21</b>	<b>1,702</b>	<b>600</b>
<b>25% FLEXIBILITY FACTOR</b>		<b>329</b>			<b>12</b>			<b>29</b>			<b>50</b>					<b>5</b>	<b>426</b>	<b>(426)</b>
<b>TOTAL</b>	<b>1,958</b>	<b>1,644</b>	<b>643</b>	<b>117</b>	<b>60</b>	<b>69</b>	<b>95</b>	<b>146</b>	<b>(22)</b>	<b>57</b>	<b>251</b>	<b>(144)</b>	<b>2,227</b>	<b>76</b>	<b>2,302</b>	<b>26</b>	<b>2,128</b>	<b>175</b>

1/Includes County-zoned agricultural and rural districts, but excludes conservation districts.

Source: Urban Land Requirements Study, Wilson Okamoto and Associates, 1991.

**Table A-3**  
**AVAILABLE URBAN LANDS TO MEET FUTURE DEMANDS**  
**COUNTY OF KAUAI**  
**2010**  
**(in acres)**

	RESIDENTIAL			COMMERCIAL			INDUSTRIAL			RESORT			COUNTY-	OTHER	TOTAL	PUBLIC AREA	TOTAL	SURPLUS/ (DEFICIT)
	ZONED			ZONED			ZONED			ZONED			ZONED					
	DEV.	2010	SURPLUS/ (DEFICIT)	DEV.	2010	SURPLUS/ (DEFICIT)	DEV.	2010	SURPLUS/ (DEFICIT)	DEV.	2010	SURPLUS/ (DEFICIT)	DEV.					
URBAN	DEMAND		URBAN	DEMAND		URBAN	DEMAND		URBAN	DEMAND		URBAN LANDS	URBAN	URBAN	DEMAND	DEMAND	LANDS	
														1/				
NORTH SHORE	325	269	56	8	17	(9)	0	35	(35)	6	255	(249)	339	0	339	12	588	(249)
KAPAA	335	738	(403)	0	36	(36)	14	63	(49)	13	169	(156)	362	27	389	55	1,061	(672)
LIHUE	409	1,349	(940)	81	53	28	74	228	(154)	38	102	(64)	602	3	605	71	1,803	(1,198)
KOLOA	572	777	(205)	28	36	(8)	0	10	(10)	0	297	(297)	600	39	639	18	1,138	(499)
WAIMEA	317	240	77	0	5	(5)	7	35	(28)	0	9	(9)	324	7	331	11	300	31
<b>SUBTOTAL</b>	<b>1,958</b>	<b>3,373</b>	<b>(1,415)</b>	<b>117</b>	<b>147</b>	<b>(30)</b>	<b>95</b>	<b>371</b>	<b>(276)</b>	<b>57</b>	<b>832</b>	<b>(775)</b>	<b>2,227</b>	<b>76</b>	<b>2,302</b>	<b>167</b>	<b>4,890</b>	<b>(2,588)</b>
<b>25% FLEXIBILITY FACTOR</b>		<b>843</b>			<b>37</b>			<b>93</b>			<b>208</b>					<b>42</b>	<b>1,223</b>	<b>(1,223)</b>
<b>TOTAL</b>	<b>1,958</b>	<b>4,216</b>	<b>(1,415)</b>	<b>117</b>	<b>184</b>	<b>(30)</b>	<b>95</b>	<b>464</b>	<b>(276)</b>	<b>57</b>	<b>1,040</b>	<b>(775)</b>	<b>2,227</b>	<b>76</b>	<b>2,302</b>	<b>209</b>	<b>6,113</b>	<b>(3,810)</b>

1/Includes County-zoned agricultural and rural districts, but excludes conservation districts.

Source: Urban Land Requirements Study, Wilson Okamoto and Associates, 1991.

**Table A-4**  
**RESIDENTIAL UNIT DEMAND**  
**COUNTY OF KAUAI**  
**(1990-2010)**

	1988	HOUSING	1990	HOUSE-		1995	HOUSE-		2000	HOUSE-		2005	HOUSE-		2010	HOUSE-	
	POP.	UNITS	POP.	HOLDS	TOTAL	POP.	HOLDS	TOTAL	POP.	HOLDS	TOTAL	POP.	HOLDS	TOTAL	POP.	HOLDS	TOTAL
	1/	1/		@2.81 PPH	3/	1/	@2.75 PPH	3/		@2.68 PPH	3/	POP.	@2.64 PPH	3/	POP.	@2.61 PPH	3/
NORTH SHORE	5,320	1,750	5,787	2,038	2,140	6,375	2,294	2,409	6,936	2,561	2,690	7,480	2,804	2,944	8,158	3,094	3,248
KAPAA-WAILUA	13,923	4,580	15,253	5,372	5,641	17,109	6,157	6,465	18,965	7,003	7,354	20,848	7,816	8,207	23,198	8,796	9,236
LIHUE	10,245	3,370	11,649	4,103	4,308	14,270	5,136	5,392	17,171	6,341	6,658	20,385	7,642	8,024	24,384	9,246	9,709
KOLOA-POIPU	12,585	4,140	13,690	4,822	5,063	15,081	5,428	5,699	16,409	6,060	6,363	17,695	6,633	6,965	19,300	7,319	7,684
WAIMEA	7,174	2,362	7,720	2,719	2,855	8,265	2,975	3,123	8,719	3,220	3,381	9,092	3,408	3,579	9,559	3,625	3,806
<b>TOTAL</b>	<b>49,247</b>	<b>16,202</b>	<b>54,100</b>	<b>19,054</b>	<b>20,007</b>	<b>61,100</b>	<b>21,989</b>	<b>23,089</b>	<b>68,200</b>	<b>25,186</b>	<b>26,445</b>	<b>75,500</b>	<b>28,304</b>	<b>29,719</b>	<b>84,600</b>	<b>32,080</b>	<b>33,684</b>

1/ Kaku Associates, Kauai County Highway Planning Study. Projections adjusted to conform to M-K projections.

2/ 99% of population in households; declining persons per household factors.

3/ Includes units to satisfy 5% desired vacancy rate.

4/ The projections of housing need in this report reflect the high end of a range of projections. These projections are based on DBED Series M-K population projections and assume declining household sizes ranging from 2.81 persons per household in 1990 to 2.61 persons per household in 2010. These household sizes are much lower than those reported by the 1990 census and decrease at a faster rate than extrapolations made using census data. Additionally, estimations of land required to accommodate housing need are based on single family densities ranging from 3.5 to 5.5 dwelling units per acre.

Source: Urban Land Requirements Study, Wilson Okamoto and Associates, 1991.

**Table A-5  
RESIDENTIAL AREA REQUIREMENTS  
COUNTY OF KAUAI  
2010**

	1988 UNITS 1/	2010 DEMAND (UNITS) 2/	ADDITIONAL UNITS NEEDED	PERCENT SINGLE FAMILY 3/	SF- DENSITY UNITS/AC 4/	MF- DENSITY UNITS/AC 4/	SF- ACRES NEEDED 5/	MF- ACRES NEEDED 5/	TOTAL ACRES NEEDED
NORTH SHORE	1,750	3,248	1,498	86%	5.2	10.0	248	21	269
KAPAA-WAILUA	4,580	9,236	4,656	76%	5.3	15.9	668	70	738
LIHUE	3,370	9,709	6,339	70%	3.5	23.5	1,268	81	1,349
KOLOA-POIPU	4,140	7,684	3,544	90%	4.3	10.0	742	35	777
WAIMEA	2,362	3,806	1,444	87%	5.5	16.8	228	11	240
<b>TOTAL</b>	<b>16,202</b>	<b>33,684</b>	<b>17,482</b>				<b>3,154</b>	<b>219</b>	<b>3,372</b>

1/ Kaku Associates, Kauai County Highway Planning Study

2/ See Residential Demand table.

3/ From 1980 Census of Housing

4/ Densities based on residential acreage in 1981, Kauai Housing Master Plan Study, and single and multi-family unit counts in 1980 Census of Housing.

5/ Increase in units divided by density factor.

Source: Urban Land Requirements Study, Wilson Okamoto and Associates, 1991.

Table A-6  
**RESIDENTIAL AREA REQUIREMENTS**  
**COUNTY OF KAUAI**  
**1995-2010**  
**(summary)**

	1988 UNITS	1995 DEMAND	ACRES NEEDED	2000 DEMAND	ACRES NEEDED	2005 DEMAND	ACRES NEEDED	2010 DEMAND	ACRES NEEDED
NORTH SHORE	1,750	2,409	118	2,690	169	2,944	214	3,248	269
KAPAA-WAILUA	4,580	6,465	299	7,354	440	8,207	575	9,236	738
LIHUE	3,370	5,392	430	6,658	700	8,024	990	9,709	1,349
KOLOA-POIPU	4,140	5,699	342	6,363	487	6,965	620	7,684	777
WAIMEA	2,362	3,123	126	3,381	169	3,579	202	3,806	240
<b>TOTAL</b>	<b>16,202</b>	<b>23,089</b>	<b>1,315</b>	<b>26,445</b>	<b>1,965</b>	<b>29,719</b>	<b>2,601</b>	<b>33,684</b>	<b>3,372</b>

Source: Urban Land Requirements Study, Wilson Okamoto and Associates, 1991.



**Table A-7  
COMMERCIAL AREA REQUIREMENTS  
COUNTY OF KAUAI  
1995-2010**

	1988 COMMERCIAL SQ-FT 1/	1988 EMPLOYMENT 2/	1995 EMPLOYMENT INCREASE 2/	1995 SQ-FT INCREASE 3/	ACRES NEEDED 4/	2000 SQ-FT INCREASE	ACRES NEEDED 5/	2005 SQ-FT INCREASE	ACRES NEEDED 5/	2010 SQ-FT INCREASE 1/	ACRES NEEDED 5/
NORTH SHORE	149,000	377	226	80,500	6	138,000	10	195,501	13	253,000	17
KAPAA	332,000	999	550	166,727	11	285,818	20	404,910	28	524,000	36
LIHUE	1,443,000	4,027	1046	364,636	17	625,091	29	885,545	41	1,146,000	53
KOLOA	362,000	921	489	167,364	12	286,908	20	406,455	28	526,000	36
WAIMEA	153,000	457	61	21,954	2	37,637	3	53,318	4	69,000	5
<b>TOTAL</b>	<b>2,439,000</b>	<b>6,781</b>	<b>2,372</b>	<b>801,181</b>	<b>48</b>	<b>1,373,454</b>	<b>82</b>	<b>1,945,729</b>	<b>114</b>	<b>2,518,000</b>	<b>147</b>

1/ Kaku Associates, Kauai County Highway Planning Study.

2/ Calculated from absorption rate and commercial floor area in above reference.

3/ 1995, 2000, and 2005 floor area interpolated from 2010 projections.

4/ Based on floor area ratios of 0.5 for Lihue and 0.3 for other areas.

5/ Floor area and acreage needs cumulative from 1995.

Source: Urban Land Requirements Study, Wilson Okamoto and Associates, 1991.

**Table A-8  
INDUSTRIAL AREA REQUIREMENTS  
COUNTY OF KAUAI  
1995-2010**

	1988		1995		2000		2005		2010	
	INDUSTRIAL EMPLOYMENT 1/	INDUSTRIAL ACRES 2/	INDUSTRIAL EMPLOYMENT 3/	ACRES NEEDED 4/	INDUSTRIAL EMPLOYMENT	ACRES NEEDED 5/	INDUSTRIAL EMPLOYMENT	ACRES NEEDED 5/	INDUSTRIAL EMPLOYMENT 1/	ACRES NEEDED 5/
NORTH SHORE	400	41	508	11	585	19	663	27	740	35
KAPAA	740	76	937	20	1,078	34	1,219	48	1,360	63
LIHUE	2650	271	3,363	72	3,872	124	4,381	176	4,890	228
KOLOA	110	11	142	3	165	6	187	8	210	10
WAIMEA	400	41	508	11	585	19	663	27	740	35
<b>TOTAL</b>	<b>4300</b>	<b>440</b>	<b>5,458</b>	<b>117</b>	<b>6,285</b>	<b>201</b>	<b>7,113</b>	<b>286</b>	<b>7,940</b>	<b>370</b>

1/ Kaku Associates, Kauai County Highway Planning Study, Working Paper.

2/ 9.8 employees per acre, based on 4,300 employees and 440 acres in industrial use.

3/ 1995, 2000, & 2005 employment derived from 2010 projections.

4/ Additional acres needed, using density factor.

5/ Acreage needs cumulative from 1995.

Source: Urban Land Requirements Study, Wilson Okamoto and Associates, 1991.

**Table A-9**  
**RESORT AREA REQUIREMENTS**  
**COUNTY OF KAUAI**  
**1995-2010**

	1988 VISITOR UNITS 1/	DENSITY UNITS/ACRE 2/	1995 VISITOR UNITS 3/	ACRES NEEDED 4/	2000 VISITOR UNITS	ACRES NEEDED	2005 VISITOR UNITS	ACRES NEEDED	2010 VISITOR UNITS	ACRES NEEDED
NORTH SHORE	1,260	7	1,683	60	2,156	128	2,455	171	3,046	255
KAPAA	1,940	18	2,643	39	3,432	83	3,961	112	4,978	169
LIHUE	1,760	23	2,325	25	2,955	52	3,339	69	4,110	102
KOLOA	2,180	8	2,784	75	3,450	159	3,798	202	4,553	297
WAIMEA	30	20	65	2	106	4	146	6	213	9
<b>TOTAL</b>	<b>7,170</b>		<b>9,500</b>	<b>201</b>	<b>12,100</b>	<b>425</b>	<b>13,700</b>	<b>560</b>	<b>16,900</b>	<b>832</b>

1/ Kaku Associates, Kauai County Highway Planning Study.

2/ Based on existing densities calculated for each area from 1989 Visitor Plant Inventory. For Waimea, minimum density assumed based on RR-10 allowances.

3/ Based on M-K visitor unit projections for County, distributed per highway study projections.

4/ Additional units divided by density factor for area; cumulative totals from 1995.

Source: Urban Land Requirements Study, Wilson Okamoto and Associates, 1991.

**Table A-10**  
**PUBLIC AREA NEEDS**  
**SCHOOL SPACE REQUIREMENTS**  
**COUNTY OF KAUAI**  
**1995-2010**

	1990	1995	STUDENT		2000				2005				2010				ACRES NEEDED
	HOUSE-	HOUSEHOLD	INCREASE		ACRES	HOUSEHOLD	STUDENT	ACRES	HOUSEHOLD	STUDENT	ACRES	HOUSEHOLD	STUDENT	ACRES			
	HOLDS	INCREASE	K-8 1/	HS 1/	NEEDED	INCREASE	INCREASE	NEEDED	INCREASE	INCREASE	NEEDED	INCREASE	INCREASE	NEEDED			
				2/	3/	K-8	HS	3/	K-8	HS	K-8	HS					
NORTH SHORE	2,038	256	120	59	0	523	246	120	0	766	360	176	0	1,056	496	243	7
KAPAA-WAILUA	5,372	785	369	181	0	1,631	767	375	7	2,444	1,149	562	7	3,424	1,609	788	39
LIHUE	4,103	1,033	486	238	7	2,238	1,052	515	7	3,539	1,663	814	39	5,143	2,417	1,183	46
KOLOA-POIPU	4,822	606	285	139	0	1,238	582	285	7	1,811	851	417	7	2,497	1,174	574	7
WAIMEA	2,719	256	120	59	0	501	235	115	0	689	324	158	0	906	426	208	7
<b>TOTAL</b>	<b>19,054</b>	<b>2,936</b>	<b>1,380</b>	<b>675</b>	<b>7</b>	<b>6,131</b>	<b>2,882</b>	<b>1,410</b>	<b>21</b>	<b>9,249</b>	<b>4,347</b>	<b>2,127</b>	<b>53</b>	<b>13,026</b>	<b>6,122</b>	<b>2,996</b>	<b>106</b>

1/ Kindergarten to eight grade, and high school. Based on County ratios of student enrollment to total households, 1980 Census.

2/ Based on DOE standards for new schools, 7 acres for elementary schools, and 25 acres for high schools.

3/ Cumulative household increase, projected enrollment, and acreage totals through 2010.

Source: Urban Land Requirements Study, Wilson Okamoto and Associates, 1991.

**Table A-11**  
**PUBLIC AREA NEEDS**  
**PARKS SPACE REQUIREMENTS**  
**COUNTY OF KAUAI**  
**1995-2010**

	1990 POPULATION 1/	1995 POPULATION INCREASE 1/	ACRES NEEDED 2/	2000 POPULATION INCREASE	ACRES NEEDED	2005 POPULATION INCREASE	ACRES NEEDED	2010 POPULATION INCREASE	ACRES NEEDED
NORTH SHORE	5,787	588	1	1,149	2	1,693	3	2,371	5
KAPAA-WAILUA	15,253	1,856	4	3,712	7	5,595	11	7,945	16
LIHUE	11,649	2,621	5	5,522	11	8,736	17	12,735	25
KOLOA-POIPU	13,690	1,391	3	2,719	5	4,005	8	5,610	11
WAIMEA	7,720	545	1	999	2	1,372	3	1,839	4
<b>TOTAL</b>	<b>54,099</b>	<b>7,001</b>	<b>14</b>	<b>14,101</b>	<b>27</b>	<b>21,401</b>	<b>42</b>	<b>30,500</b>	<b>61</b>

1/ See Population Projections table.

2/ Based on 2 acres per 1,000 population.

Source: Urban Land Requirements Study, Wilson Okamoto and Associates, 1991.



APPENDIX B  
PRELIMINARY LISTING  
TAX MAP KEYS BY AREA





Lumahai Stream  
and Valley

4-5-7-02:01(por)

4-5-7-03:01(por)

4-5-7-03:02(por)

4-5-7-03:03(por)

4-5-7-03:10(por)

4-5-7-03:11(por)

Hanalei River and  
Papalihala Marsh

4-5-3-01:07

4-5-4-03:01(por)

4-5-4-03:05

4-5-4-03:06

4-5-4-03:07

4-5-4-04:01(por)

4-5-4-04:08

4-5-4-04:09

4-5-4-04:10

4-5-4-04:30

4-5-4-04:31

4-5-4-04:34

4-5-5-01:02(por)

4-5-5-08:18

4-5-5-08:28

4-5-5-08:29

4-5-5-08:31

4-5-5-08:32(por)

4-5-5-08:33

4-5-5-08:34

4-5-5-08:35(por)

4-5-5-08:36(por)

4-5-5-08:37

4-5-5-08:52

4-5-5-09:01

4-5-5-09:02

4-5-5-09:03(por)

4-5-5-09:06(por)

Puu Poa Marsh

4-5-4-04:01(por)

Kalihiwai Stream

4-5-3-01:10(por)  
4-5-3-01:15(por)

4-5-3-02:03  
4-5-3-02:04  
4-5-3-02:06(por)  
4-5-3-02:07  
4-5-3-02:08  
4-5-3-02:09  
4-5-3-02:10(por)  
4-5-3-02:19

4-5-3-03:58(por)  
4-5-3-03:64  
4-5-3-03:65(por)  
4-5-3-03:66(por)

Moloaa Forest Reserve  
Addition

4-5-1-02:04(por)

Upper Wailua River

4-3-8-02:02(por)  
4-3-9-02:01(por)  
4-3-9-02:20(por)  
4-3-9-02:31

Huleia Stream  
and Wetlands

4-3-1-01:04  
4-3-1-01:05  
4-3-1-01:06  
4-3-1-01:11(por)  
4-3-1-02:02(por)  
4-3-1-02:04  
4-3-1-02:05  
4-3-1-02:06  
4-3-1-02:07  
4-3-1-02:09

4-3-1-03:01(por)

4-3-3-01:01(por)  
4-3-3-01:02  
4-3-3-01:04  
4-3-3-01:06(por)  
4-3-3-01:14(por)

4-3-3-02:01(por)  
4-3-3-02:20(por)

4-3-3-03:01(por)

4-3-4-06:01(por)  
4-3-4-06:02(por)  
4-3-4-06:03  
4-3-4-06:04  
4-3-4-06:05  
4-3-4-06:06  
4-3-4-06:07  
4-3-4-06:08  
4-3-4-06:09  
4-3-4-06:10  
4-3-4-06:11  
4-3-4-06:12(por)

Waita Reservoir

4-2-8-01:01(por)

4-2-8-02:01(por)

4-2-9-02:01(por)

Kilauea Point National  
Wildlife Refuge

4-5-2-04:43

4-5-2-04:103

Donkey Beach

4-4-7-04:03

4-4-7-04:04

4-4-7-04:06(por)

4-4-8-03:02

4-4-8-03:03(por)

Kapaa Stream

4-4-6-04:01(por)	4-4-6-08:32(por)	4-4-7-02:14(por)
4-4-6-04:03(por)	4-4-6-08:35(por)	4-4-7-02:15(por)
4-4-6-04:04(por)	4-4-6-08:36(por)	
4-4-6-04:06(por)	4-4-6-08:37(por)	
4-4-6-04:08(por)	4-4-6-08:40(por)	
4-4-6-04:10(por)	4-4-6-08:56(por)	
4-4-6-04:13(por)	4-4-6-08:59(por)	
4-4-6-04:14(por)	4-4-6-08:64(por)	
4-4-6-04:15(por)	4-4-6-08:67(por)	
4-4-6-04:17(por)	4-4-6-08:68(por)	
4-4-6-04:18(por)	4-4-6-08:73(por)	
4-4-6-04:19(por)	4-4-6-08:74(por)	
4-4-6-04:24(por)		
4-4-6-04:25(por)	4-4-6-09:14(por)	
4-4-6-04:26(por)	4-4-6-09:15(por)	
4-4-6-04:29(por)	4-4-6-09:17(por)	
4-4-6-04:31(por)	4-4-6-09:28(por)	
4-4-6-04:32(por)	4-4-6-09:32(por)	
4-4-6-04:33(por)	4-4-6-09:44(por)	
4-4-6-04:39(por)	4-4-6-09:46(por)	
4-4-6-04:40(por)	4-4-6-09:49(por)	
4-4-6-04:41(por)	4-4-6-09:50(por)	
4-4-6-04:45(por)	4-4-6-09:60(por)	
	4-4-6-09:61(por)	
	4-4-6-09:62(por)	
	4-4-6-09:85(por)	
4-4-6-05:01(por)		
4-4-6-05:02(por)	4-4-6-14:11(por)	
4-4-6-05:05(por)	4-4-6-14:16(por)	
4-4-6-05:06(por)	4-4-6-14:21(por)	
4-4-6-05:07(por)	4-4-6-14:22(por)	
4-4-6-05:08(por)	4-4-6-14:23(por)	
4-4-6-05:10(por)	4-4-6-14:24(por)	
4-4-6-05:11(por)	4-4-6-14:25(por)	
4-4-6-05:13(por)	4-4-6-14:39(por)	
	4-4-6-14:56(por)	
4-4-6-06:25(por)	4-4-6-14:58(por)	
4-4-6-06:26(por)	4-4-6-14:60(por)	
4-4-6-06:27(por)	4-4-6-14:61(por)	
4-4-6-06:28(por)	4-4-6-14:74(por)	
4-4-6-06:29(por)	4-4-6-14:79(por)	
4-4-6-06:30(por)	4-4-6-14:80(por)	
4-4-6-06:32(por)	4-4-6-14:83(por)	
4-4-6-06:37(por)	4-4-6-14:84(por)	
4-4-6-06:75(por)	4-4-6-14:87(por)	
4-4-6-06:76(por)	4-4-6-14:92(por)	
	4-4-6-14:106(por)	
4-4-6-08:01(por)	4-4-6-14:107(por)	
4-4-6-08:03(por)	4-4-6-14:109(por)	
4-4-6-08:23(por)		
4-4-6-08:26(por)	4-4-7-02:01(por)	
4-4-6-08:27(por)	4-4-7-02:02(por)	
4-4-6-08:28(por)	4-4-7-02:03(por)	
4-4-6-08:31(por)	4-4-7-02:06(por)	

Sleeping Giant Mountain

4-4-3-03:02(por)

Wailua River State Park

4-3-9-02:13  
4-3-9-02:30(por)  
4-3-9-06:01(por)

Aahoaka

4-3-9-02:01(por)

Kalepa Ridge

4-3-8-02:01(por)  
4-3-8-02:08

4-3-9-02:20(por)

Hanamaulu Coastline

4-3-7-03:01(por)

Kipu Kai Shoreline

4-3-1-01:03(por)

Area Surrounding Nomilu  
Fishpond and Palama Beach

4-2-3-10:02  
4-2-3-10:03  
4-2-3-10:04  
4-2-3-10:07  
4-2-3-10:08  
4-2-3-10:09

Salt Pond Park

4-1-8-08:04(por)  
4-1-8-08:16(por)  
4-1-8-08:20(por)  
4-1-8-08:21  
4-1-8-08:36  
4-1-8-08:43  
4-1-8-08:44  
4-1-8-08:76

Russian Fort Elizabeth

4-1-7-05:03

Kekaha Beach

4-1-2-02:01(por)  
4-1-2-02:07(por)  
4-1-2-02:22  
4-1-2-02:35(por)  
4-1-2-02:36(por)

Polihale Dunes

4-1-2-02:01(por)

Hanalei to Waikoko

4-5-6-03:01(por)  
4-5-6-03:02(por)

4-5-6-04:01  
4-5-6-04:02  
4-5-6-04:03  
4-5-6-04:04  
4-5-6-04:05  
4-5-6-04:06  
4-5-6-04:07  
4-5-6-04:08  
4-5-6-04:09  
4-5-6-04:10  
4-5-6-04:11  
4-5-6-04:12  
4-5-6-04:13  
4-5-6-04:14  
4-5-6-04:15  
4-5-6-04:16  
4-5-6-04:17  
4-5-6-04:18  
4-5-6-04:19  
4-5-6-04:22  
4-5-6-04:23  
4-5-6-04:24  
4-5-6-04:25  
4-5-6-04:26

4-5-6-02:01(por)  
4-5-6-02:02(por)  
4-5-6-02:03  
4-5-6-02:04

4-5-5-01:02(por)  
4-5-5-01:33(por)

4-5-5-06:01  
4-5-5-06:02  
4-5-5-06:03  
4-5-5-06:05  
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4-5-5-06:22

4-5-5-07:01  
4-5-5-07:02  
4-5-5-07:03  
4-5-5-07:04



4-5-5-07:05  
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4-5-5-07:26  
4-5-5-07:27  
4-5-5-07:28  
4-5-5-07:29  
4-5-5-07:30  
4-5-5-07:32  
4-5-5-07:33  
  
4-5-5-08:02(por)  
4-5-5-08:07  
4-5-5-08:08  
4-5-5-08:09  
4-5-5-08:11  
4-5-5-08:12  
4-5-5-08:13  
4-5-5-08:14  
4-5-5-08:15  
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4-5-5-09:02  
4-5-5-09:03  
4-5-5-09:06  
4-5-5-09:08  
4-5-5-09:09  
4-5-5-09:10  
4-5-5-09:11  
4-5-5-09:12  
4-5-5-09:13  
  
4-5-3-01:07(por)  
  
4-5-4-03:01(por)  
4-5-4-03:03  
4-5-4-03:04  
4-5-4-03:07  
4-5-4-03:10  
  
4-5-4-04:01(por)  
4-5-4-04:02(por)  
4-5-4-04:03(por)  
4-5-4-04:04(por)  
4-5-4-04:05(por)  
4-5-4-04:06(por)  
4-5-4-04:08(por)  
4-5-4-04:09  
4-5-4-04:10(por)  
4-5-4-04:25  
4-5-4-04:30  
4-5-4-04:31  
4-5-4-04:34

Mahaulepu

4-2-8-22:01(por)  
4-2-8-22:02(por)  
4-2-8-22:04(por)  
  
4-2-9-01:01(por)  
  
4-2-9-02:01(por)  
  
4-2-9-03:01(por)  
4-2-9-03:03(por)  
4-2-9-03:04(por)  
4-2-9-03:05(por)

Hanamaulu and Molokoa

4-3-6-02:01(por)  
4-3-6-02:04  
4-3-6-02:16  
4-3-6-02:17  
4-3-6-02:18  
4-3-6-02:19(por)  
  
4-3-7-01:01(por)  
  
4-3-7-02:01  
4-3-7-02:12(por)  
  
4-3-7-03:20(por)

Kauai Lagoons Resort

4-3-5-01:06  
4-3-5-01:82

Kukuiulu Phase II

4-2-6-03:01(por)  
4-2-6-03:21  
4-2-6-03:31(por)  
4-2-6-03:32  
4-2-6-03:58  
  
4-2-6-04:16(por)  
4-2-6-04:38(por)  
4-2-6-04:40(por)  
4-2-6-04:46(por)

Anahola Stream

4-4-8-02:01(por)

4-4-8-03:06(por)

4-4-8-03:07(por)

4-4-8-05:06(por)

4-4-8-05:09(por)

4-4-8-05:12(por)

4-4-8-05:33(por)

4-4-8-05:34(por)

4-4-8-05:35(por)

4-4-8-05:38(por)

4-4-8-05:40(por)

4-4-8-06:21(por)

4-4-8-06:25(por)

4-4-8-06:32(por)

4-4-8-06:36(por)

4-4-8-06:37(por)

4-4-8-06:43(por)

4-4-8-06:45(por)

4-4-8-06:46(por)

4-4-8-06:62(por)

4-4-8-06:63(por)

4-4-8-11:03(por)

4-4-8-11:04(por)

4-4-8-11:05(por)

4-4-8-11:12(por)

4-4-8-11:13(por)

4-4-8-11:14(por)

4-4-8-11:33(por)

4-4-8-11:36(por)

4-4-8-11:37(por)

4-4-8-11:38(por)

4-4-8-11:39(por)

4-4-8-12:02(por)

4-4-8-12:03(por)

DHHL Anahola Houselots

4-4-8-03:03(por)

4-4-8-03:13(por)

4-4-8-03:19(por)

4-4-8-03:20(por)

4-4-8-03:21(por)

4-4-8-03:25(por)

4-4-8-19:01

4-4-8-19:02

4-4-8-19:03

4-4-8-19:04

4-4-8-19:05

4-4-8-19:06

4-4-8-19:07

4-4-8-19:08

4-4-8-19:09

4-4-8-19:10

4-4-8-19:11

4-4-8-19:12

4-4-8-19:13

4-4-8-19:14

4-4-8-19:15

4-4-8-19:16



APPENDIX C  
CONSERVATION DISTRICT  
TARO SUBZONE



## Appendix C Conservation District Taro Subzone

§3-2-16 Taro (T) subzone. (a) The objective of this subzone is to protect taro cultivated wetlands that also serve as endangered waterbird habitat while allowing for the necessary maintenance activities for crop viability or wildlife enhancement purposes.

(b) The boundaries for the (T) subzone shall encompass:

- (1) Wetlands currently in taro or luau leaf cultivation;
- (2) Undeveloped wetlands historically in taro or luau leaf cultivation; and
- (3) Wetlands necessary to support the continuation of taro or luau leaf farming.

(c) The following uses are permitted in the (T) subzone:

- (1) All permitted uses stated in the (P), (L) and (R) subzone;
- (2) Construction, maintenance and repair of on-farm water delivery (not diversion) systems such as ditches, dikes, and inlet and outlet structures necessary for the cultivation of taro or luau leaf;
- (3) Farming and harvesting practices such as discing, tilling, leveling, mowing, plowing, planting, prescribed burning, harvesting, Environmental Protection Agency approved herbicide spraying and Cooperative Extension Service approved fertilization;
- (4) Construction, maintenance and repair of structures accessory to these uses such as loi access roads, fences, and agricultural storage buildings without partitions when said facilities are compatible with the natural physical environment;
- (5) Measures to prevent or control crop damage such as fencing and if necessary depredation in accordance with state and federal regulations;
- (6) Rehabilitation of wetlands and enhancement of habitat through the construction of ponds with nesting islands;
- (7) Grazing when used as a part of a wildlife habitat enhancement program or grazing of work horses; and
- (8) Traditional aquaculture practices.





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<u>Name</u>	<u>Affiliation</u>
Lyman Abbott Glenn Abe	National Park Service and U.S. Fish and Wildlife Land Management Division, Department of Land and Natural Resources
Mike Adams Paul Aki	Resident, County of Maui Environmental Management Division, Department of Health
Toshio Ansai Aric Arakaki Thomas Arizumi	County Planning Commission, County of Maui Molokai Ranch Environmental Management Division, Department of Health
Kaipo Asing Leo Asuncion Stephanie Aveiro Ron Bachman	Kauai County Council Land Use Commission staff Department of Human Concerns, County of Maui Division of Forestry and Wildlife, (Hawaii), Department of Land and Natural Resources
Vince Bagoyo, Jr. Gary Barbano Arthur Bauckham Hobie Beck Carl Berg Steven Bergfeld	Maui County Council National Park Service Department of Health Waikoko Valley Taro Farmer Department of Health Division of Forestry and Wildlife, Department of Land and Natural Resources
Roy Blackshear Hartwell Blake Marie Brueggemann	W.H. Shipman, Ltd. Planning Commission, County of Kauai Hawaii Heritage Program, The Nature Conservancy of Hawaii
Michael Buck	Division of Forestry and Wildlife, Department of Land and Natural Resources
Andrew Bushnell Teresa Cabrera	Planning Commission, County of Kauai Hawaii Heritage Program, The Nature Conservancy of Hawaii
Julie Ann Cachola David Callies	Office of State Planning William S. Richardson School of Law, University of Hawaii
Bill Cameron Wayne Carvalho Luisa Castro Meredith Ching Brian Choy Joseph Chu Lester Chuck	Environmental Center, University of Hawaii Dillingham Partners The Nature Conservancy of Hawaii Alexander & Baldwin, Inc. Office of Environmental Quality Control Department of Hawaiian Home Lands Department of Education

Gail Chun	Hawaii Heritage Program, The Nature Conservancy of Hawaii
John Coatts	U.S. Soil Conservation Service
Heather Cole	PIA Sports Properties
Joseph Conant	Housing Finance Development Corporation
Roy Cooper	W.H. Shipman Properties
John Corbin	Aquaculture Development Program, Department of Land and Natural Resources
Ross Cordy	Historic Preservation Division, Department of Land and Natural Resources
Carolyn A. Corn, Ph.D.	Division of Forestry and Wildlife, Department of Land and Natural Resources
Maxine Correa	Kauai County Council
David Craddick	Department of Water Supply, County of Maui
Ralph Daehler	Division of Forestry and Wildlife, (Kauai), Department of Land and Natural Resources
Dan Davidson	Land Use Research Foundation
Linda Delaney	Office of Hawaiian Affairs
Bill Devick	Aquatic Resources Division, Department of Land and Natural Resources
Joannie Dobbs	Hawaii Heritage Program, The Nature Conservancy of Hawaii
David Dodds	Resident, County of Maui
Gary Doi	Agriculture Coordinating Committee
Takashi Domingo	Hawaii County Council
Leinaala Drummond	Maui County Council
Fern Duvall	Department of Land and Natural Resources
Tom Dye	Historic Preservation Division, Department of Land and Natural Resources
Rick Eichor	Department of Attorney General
Marge Elliott	Insight International
Henry Eng	Campbell Estate
Thomas English	W.H. Shipman, Ltd.
Mary Alice Evans	Office of State Planning
Roger Evans	Office of Conservation & Environmental Affairs, Department of Land and Natural Resources
Keoni Fairbanks	Planning Department, County of Maui
John Ford	U.S. Fish and Wildlife Service
Frank Howarth	Bishop Museum
Kathleen Fruth	U.S. Fish and Wildlife Service
Bill Fuhrman	Hana Community Advisory Committee, Maui
Howard Fujimoto	Office of State Planning
Tatsuo Fujimoto	Office of State Planning
Roy Fujioka	Department of Finance, County of Kauai
Alvin Fukunaga	Director of Public Works, County of Maui
Jesse Fukushima	Kauai County Council
Jim Funaki	Takushi, Funaki, Wong and Stone
James Gannon	Farmers Lokahi Hawaii
Sam Gon	Hawaii Heritage Program, The Nature Conservancy of Hawaii
James M. Greenwell	Palani Ranch/Lanihau Partners
James S. Greenwell	Palani Ranch/Lanihau Partners

Annie Griffin	Historic Preservation Division, Department of Land and Natural Resources
Warren Haight	Molokai Ranch
Dona Hanaike	Department of Land and Natural Resources
Skippy Hao	Aquatic Resources Division, (Maui), Department of Land and Natural Resources
Rodney Haraguchi	Kauai Taro Growers Association
John Harder	Environmental Management Division, Department of Health
Kim Harris	The Nature Conservancy of Hawaii
Roger Harris	PIA Sports Properties
John T. Harrison, Ph.D.	Environmental Center, University of Hawaii
John Harry	Department of Finance, County of Kauai
Christopher Hart	Chris Hart & Partners
Jerry Haruno	Environmental Management Division, Department of Health
Norman K. Hayashi	Planning Department, County of Hawaii
Kazu Hayashida	Board of Water Supply, City and County of Honolulu
Don Heacock	Aquatic Resources Division, (Kauai), Department of Land and Natural Resources
Edward Henry	Office of Conservation and Environmental Affairs, Department of Land and Natural Resources
Don Hibbard	State Historic Preservation Division Department of Land and Natural Resources
Nani Hill	Planning Commission, County of Kauai
Miles Hironaka	Planning Department, County of Kauai
Ray Ho	Kauai resident
Bob Hobdy	Division of Forestry and Wildlife, Department of Land and Natural Resources
Goro Hokama	Maui County Council
Alan Holt	The Nature Conservancy of Hawaii
Luciana Honigman	Hawaii Heritage Program, The Nature Conservancy of Hawaii
Eric Honma	Kauai Liaison, Office of the Governor
Howard Horiuchi	Division of Forestry and Wildlife, (Hawaii), Department of Land and Natural Resources
Tosh Hosoda	The Gentry Companies
Charley Ice	Department of Hawaiian Home Lands
Glenn Ifuku	Department of Business, Economic Development and Tourism
Jim Jacobi	Hawaii Research Center, Volcano
Jack Jeffrey	Hakalau National Wildlife Refuge
James Juvik	Geography Department, University of Hawaii at Hilo
Kelvin Kai	Kamehameha Schools/B.P. Bishop Estate, Kauai
Charmaine Kamaka	Department of Parks and Recreation, County of Hawaii
Greg Kamm	Grove Farm Company, Inc.
Roy Kamm	Hawaii Heritage Program, The Nature Conservancy of Hawaii
LaFrance Kapaka-Arboleda	Hawaiian Farmers of Hanalei

<u>Name</u>	<u>Affiliation</u>
Moses Keale	Office of Hawaiian Affairs
George Kekuna	Civil Defense Agency, City and County of Honolulu
Sidney Keliipuleole	The Kamehameha Schools/B.P. Bishop Estate
Steve Kellogg	R.M. Towill Corporation
Jack Keppler	Department of Land and Natural Resources
Mike Kido	Kauai Community College, University of Hawaii
Howard Kihune	Maui County Council
Harry Kim	Civil Defense Agency, County of Hawaii
Connie Kiriū	Planning Department, County of Hawaii
Yukio Kitagawa	Department of Agriculture
Paul Kiyabu	Department of Education
Christine Kobayashi	Resident, County of Kauai
Joseph N. Kobayashi	Resident, County of Kauai
Russell Kokubun	Hawaii County Council (former member)
Ron Kouchi	Kauai County Council
Darrel Kuamoo	Aquatic Resources Division, (Hawaii), Department of Land and Natural Resources
Ben Kudo	Dwyer, Imanaka, Schraff and Kudo
Jeffrey Lacy	Planning Department, County of Kauai
Libert Landgraf	Hana Ranch
Denis Lau	Environmental Management Division, Department of Health
Joel Lau	Hawaii Heritage Program, The Nature Conservancy of Hawaii
Stephen Lau	Land Management Division, Department of Land and Natural Resources
Stephen Lau, Ph.D.	Water Resources Research Center, University of Hawaii
Michael Lauretta	Planning Department, County of Kauai
Alice Lee	Maui County Council
Benjamin B. Lee	Department of General Planning, City and County of Honolulu
Lynn Lee	Office of Hawaiian Affairs
Michael T. Lee	U.S. Army Corps of Engineers
Jerry Leinecke	Hawaiian and Pacific Islands National Wildlife Refuge Complex, U.S. Fish and Wildlife Service
Greg Leong	Department of Business, Economic Development and Tourism
John C. Lewin	Department of Health
Robert Lindsay	The Kamehameha Schools/B.P. Bishop Estate
Bill Liu	U.S. Department of Navy
Peter L'Orange	Hawaii Leeward Planning Conference
Rae Loui	Department of Land and Natural Resources
Kem Lowry, Ph.D.	Department of Urban and Regional Planning, University of Hawaii
Phillip M. Luce	Planning Commission, County of Hawaii
Debra Luning	Housing Finance and Development Corporation
Lorene Maki	Office of State Planning
Brian Mamaclay	Planning Department, County of Kauai
Cynthia Marnie	The Outdoor Circle
Fred Matsumoto	Department of Economic Development, County of Maui

Fred Matsumoto	Department of Economic Development, County of Maui
George Matsumoto	Water and Land Management Division, Department of Land and Natural Resources
Scott Matsuura	Alexander & Baldwin, Inc.
Dwight Matsuwaki	Hawaii Heritage Program, The Nature Conservancy of Hawaii
Maurice Matsuzaki	Conservation and Resources Enforcement Division, Department of Land and Natural Resources
Bruce C. McClure	Department of Public Works, County of Hawaii
Nancy McMahon	State Historic Preservation Division, Department of Land and Natural Resources
Ricardo Medina	Maui County Council
Jeff Melrose	The Kamehameha Schools/B.P. Bishop Estate
Yola Meyer Forbes	R.W. Meyer Limited
Karin Meyer	The Nature Conservancy of Hawaii
Jackie Miller	Environmental Center, University of Hawaii
Susan Miller	Natural Resources Defense Council
John Min	Chris Hart and Partners
Brian Miskae	Planning Department, County of Maui
Abe Mitsuda	Office of State Planning
Wally Miyahira	Castle & Cooke, Inc.
Steve Montgomery	Bishop Museum
Barry Morgan	The Nature Conservancy of Hawaii
John Morgan	Kualoa Ranch, Oahu
Mina Morita	Planning Commission, County of Kauai
Martha Mowry	Hanalei Garden Farms
William Mowry	Hanalei Garden Farms
Maurice Munechika	Kauai County Council
Duk Hee Murabayashi	DHM, inc.
Ed Murabayashi	Water Resources Research Center University of Hawaii
Ralston Nagata	State Parks and Outdoor Recreation Division, Department of Land and Natural Resources
Peter Nakamura	Princeville Corporation
Rodney Nakano	Planning Department, County of Hawaii
Audrey Newman	The Nature Conservancy of Hawaii
Melvin Nishihara	Civil Defense Division, Department of Defense
Wayne Nishiki	Maui County Council
Bob Nishimoto, Ph.D.	Aquatic Resources Division, (Hawaii), Department of Land and Natural Resources
Brian Nishimoto	AMFAC/JMB, Hawaii, Inc. (as of 1991)
Brian Nishimura	Office of Housing and Community Development, County of Hawaii
Keith Nitta	Planning Department, County of Kauai
Wes Nohara	Maui Land and Pine
John Obata	National Tropical Botanical Garden
Ann Ogata-Deal	Department of Attorney General
Edwin Okubo	Housing Division, County of Maui
Steve Oliver	Department of Public Works, County of Kauai
Randall Osakoda	Resident, County of Kauai
Gregory Pai, Ph.D.	Office of State Planning
Jim Parrish	Environmental Center, University of Hawaii

William W. Paty	Department of Land and Natural Resources
Steve Perlman	National Tropical Botanical Garden
Lyman Perry	Hawaii Heritage Program, The Nature Conservancy of Hawaii
Edwin Petteys	Division of Forestry and Wildlife, (Kauai), Department of Land and Natural Resources
Richard Poirier	Office of State Planning
Dan Polhemus	Bishop Museum
David Pratt	Grove Farm Company, Inc.
Thane Pratt	Hawaii Research Center, Volcano
Roy Price	Civil Defense Division, Department of Defense
Bill Puleloa	Aquatic Resources Division, (Molokai) Department of Land and Natural Resources
Diane Ragone	National Tropical Botanical Garden
Monte Richards	Kahua Ranch
Barbara Robeson	Planning Commission, County of Kauai
Warren S. Robinson	Gay and Robinson, Inc., Kauai
Henry Sakuda	Aquatic Resources Division, Department of Land and Natural Resources
Cynthia Salley	McCandless Ranch
Bert Saruwatari	Land Use Commission staff
Robert Sasaki	Alexander & Baldwin, Inc.
Hal Schofield	Department of Attorney General
Paul Schwind, Ph.D.	Planning and Development Office, Department of Agriculture
William H. Sewake	Department of Water Supply, County of Hawaii
Mark Sheffel	Division of Forestry and Wildlife, Department of Land and Natural Resources
Peter Simmons	McCandless Ranch
Alan Smith	Grove Farm Company, Inc.
Clifford Smith, Ph.D.	University of Hawaii, Botany
Robert Smith	U.S. Fish and Wildlife Service
Jean Nishida Souza	Office of State Planning
Wayne Souza	State Parks Division, Department of Land and Natural Resources
Ken Sprague	Board of Water Supply, City and County of Honolulu
Hana Springer	Hawaii Resident
William Stormont	Division of Forestry and Wildlife, (Hawaii), Department of Land and Natural Resources
C. Michael Street	Department of Public Works, City and County of Honolulu
Alfred Suga	Department of Education
James Sugai	Farmers Lokahi Hawaii
Manabu Tagomori	Water and Land Management Division, Department of Land and Natural Resources
Janice Takahashi	Housing Finance and Development Corporation
Clyde Takekuma	Department of Public Works, County of Kauai
Clyde Takemura	Department of Health
Kelvin Taketa	The Nature Conservancy of Hawaii
Wayne Takeuchi	Division of Forestry and Wildlife, Department of Land and Natural Resources
Fred Talon	Land Use Commission

Bill Tam	Department of Attorney General
Joe Tanaka	Maui County Council (until November 1992)
Craig Tasaka	Office of State Planning
James Tehada	Kauai County Council
Tom Telfer	Division of Forestry and Wildlife, (Kauai), Department of Land and Natural Resources
Cliff Temps	Kealakekua Development Corporation
Mary Rose Teves	Environmental Planning Office, Department of Health
Douglas Tom	Office of State Planning
Patricia Tottori Liu	Gentry Hawaii, Ltd.
Gary Toyama	Environmental Management Division, Department of Health
Ron Tsuzuki	Highways Division, Department of Transportation
Dennis Tulang	Environmental Management Division, Department of Health
Edward Uchida	Statewide Transportation Planning Office, Department of Transportation
Esther Ueda	Land Use Commission
Ann Usagawa	Planning Department, County of Hawaii
Randal Valencio	Kauai County Council
Kaye Varela	Ophihale Community Association
Richard Voss	U.S. Fish and Wildlife Service
Charles Wakida	Division of Forestry and Wildlife, (Hawaii), Department of Land and Natural Resources
Ron Walker	Division of Forestry and Wildlife, Department of Land and Natural Resources
Richard Wass	Hakalau National Wildlife Refuge
Kimo Wendt	Resident, County of Maui
Mark White	The Nature Conservancy
Carol Wilcox	Planning Department, County of Kauai
Margaret Wilson	Office of Environmental Quality Control
Roderick Wilson	AMFAC/JMB, Hawaii, Inc.
Toni Withington	Citizens for the Protection of the North Kohala Coastline
Norma Wong	Office of State Planning
Wes Wong	Division of Forestry and Wildlife, (Maui), Department of Land and Natural Resources
Ken Wood	National Tropical Botanical Garden
Earl Yamamoto	Planning and Development Office, Department of Agriculture
James Yamamoto	Office of State Planning
Karen Yamamoto	Office of State Planning
Andrew Yanoviak	Save Mount Olomana Association
Journ Yee	Finance Realty
Randall M.L. Yee	Planning Commission, City and County of Honolulu
Mason Young	Land Management Division, Department of Land and Natural Resources
Andy Yuen	U.S. Fish and Wildlife Service
Moani Zablan	McCandless Ranch
Dan Zevin	Hawaii Heritage Program, The Nature Conservancy of Hawaii
Marjorie Ziegler	Sierra Club Legal Defense Fund

## State Land Use District Boundary Review

### Project Team

Mary Lou Kobayashi, Project Manager  
Judith Henry  
Charles Carole  
Scott Derrickson  
Robyn Loudermilk  
Sanford Beppu  
Sallie Edmunds  
Darrell Zane

### Graphics Support

Stewart Wastell  
Adele Carpenter  
David Morikami

### Geographic Information System Support

Craig Tasaka, Project Manager  
Joan Esposito  
Susan Bevacqua  
Jon Hodge  
Jon Chun

### Clerical Assistance

Karen Tasaka  
Mineyo Nii  
Fay Nishimoto  
Karen Oshiro



## LIST OF ABBREVIATIONS

CDUA	Conservation District Use Application
DHHL	Department of Hawaiian Home Lands
DLNR	Department of Land and Natural Resources
DOA	Department of Agriculture
DOE	Department of Education
DOFAW	Division of Forestry and Wildlife
DOH	Department of Health
DOT	Department of Transportation
FR	Forest Reserves
GMA	Game Management Areas
HHP	Hawaii Heritage Program
HOST	Hawaii Ocean Science Technology
HRS	Hawaii Revised Statutes
LESA	Land Evaluation and Site Assessment
LESAC	Land Evaluation and Site Assessment Commission
LUC	Land Use Commission
LUPAG	Land Use Pattern Allocation Guide Maps
mgd	Million gallons per day
MLCD	Marine Life Conservation Districts
NARS	Natural Area Reserves System
NHP	National Historic Park
NHS	National Historic Sites
NP	National Parks
NWR	National Wildlife Refuge
OSP	Office of State Planning
SLH	Session Laws of Hawaii
UCPC	United Cane Planters' Cooperative
UH	University of Hawaii
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WWTP	Wastewater Treatment Plant

