KO'OLAU LOA
SUSTAINABLE COMMUNITIES PLAN

CITY AND COUNTY OF HONOLULU
DEPARTMENT OF PLANNING AND PERMITTING

OCTOBER 1999

EFFECTIVE DATE: FEBRUARY 14, 2000
OFFICE OF THE CITY CLERK

DEVELOPMENT PLAN

KO'OLAU LOA SUSTAINABLE COMMUNITIES PLAN

CITY AND COUNTY OF HONOLULU DEPARTMENT OF PLANNING AND PERMITTING

TABLE OF CONTENTS

PAGE

PREFACE **24-58.4**

EXECUTIVE SUMMARY **24-58.13**

1. KO'OLAU LOA'S ROLE IN O'AHU'S DEVELOPMENT PATTERN **24-58.19**

2. THE VISION FOR KO'OLAU LOA'S FUTURE **24-58.22**

2.1 ESTABLISH RURAL COMMUNITY, AGRICULTURAL, AND PRESERVATION BOUNDARIES 24-58.23

2.1.1 Rural Community Boundary 24-58.23

2.1.2 Agricultural Boundary 24-58.24

2.1.3 Preservation Boundary 24-58.24

2.2 PRESERVE AND ENHANCE THE NATURAL, RECREATIONAL AND CULTURAL RESOURCES WHICH CONTRIBUTE TO KO'OLAU LOA'S SENSE OF "OLD HAWAI'I" 24-58.26

2.3 PRESERVE AGRICULTURAL LANDS 24-58.28

2.4 ENHANCE EXISTING RECREATIONAL AREAS AND RESOURCES 24-58.29

2.5 ESTABLISH RURAL AREA DEVELOPMENT STANDARDS TO MAINTAIN THE RURAL CHARACTER OF RESIDENTIAL AREAS 24-58.30

2.6 ENHANCE THE CHARACTER OF THE REGION'S COMMERCIAL AREAS AND RECOGNIZE THE CONTRIBUTION OF COUNTRY STORES TO KO'OLAU LOA'S RURAL FABRIC 24-58.31

3. LAND USE POLICIES, PRINCIPLES, AND GUIDELINES **24-58.31**

3.1 OPEN SPACE PRESERVATION 24-58.31

3.1.1 General Policies 24-58.31

3.1.2 Planning Principles 24-58.31

3.1.3 Guidelines 24-58.32

3.1.3.1 Mountain Areas and Trails 24-58.32

3.1.3.2 Shoreline Areas 24-58.33

3.1.3.3 Wildlife Sanctuaries 24.58-33

3.1.3.4 Natural Gulches, Streams and Drainageways 24-58.34

3.1.3.5 Community-Based Parks 24-58.35

3.1.3.6 Golf Courses 24-58.37

3.1.3.7 Kahuku Military Training Area 24-58.37

3.1.4 Relation to Open Space Map 24-58.38

3.2 AGRICULTURAL AREAS 24-58.38

3.2.1 General Policies 24-58.39

3.2.2 Planning Principles 24-58.39

3.2.3 Guidelines 24-58.40

3.2.4 Relation to Open Space and Land Use Maps 24-58.40

3.3 PARKS AND RECREATION AREAS 24-58.40

3.3.1 Overview 24-58.40

3.3.1.1 Island-Based Parks and Other Recreation Areas 24-58.41

3.3.1.2 Community-Based Parks 24-58.43
3.3.2 General Policies 24-58.44
3.3.2.1 Island-Based Parks and Other Recreation Areas 24-58.44
3.3.2.2 Community-Based Parks 24-58.45
3.3.3 Planning Principles 24-58.45
3.3.4 Guidelines 24-58.45
3.3.4.1 Beach or Passive Parks 24-58.45
3.3.4.2 Community-Based Parks 24-58.45
3.3.4.3 Active Recreation Areas 24-58.46
3.3.5 Relation to Open Space and Land Use Maps 24-58.46
3.4 HISTORIC AND CULTURAL RESOURCES 24-58.46
3.4.1 Overview 24-58.46
3.4.2 General Policies 24-58.47
3.4.3 Planning Principles 24-58.48
3.4.4 Guidelines 24-58.48
3.5 RESIDENTIAL USES 24-58.48
3.5.1 Overview 24-58.49
3.5.2 General Policies 24-58.49
3.5.3 Planning Principles 24-58.50
3.5.4 Guidelines 24-58.50
3.5.4.1 Rural 24-58.51
3.5.4.2 Rural Residential 24-58.51
3.5.4.3 Low Density Apartment 24-58.52
3.5.4.4 Special Needs Housing 24-58.52
3.5.5 Relation to Land Use Map 24-58.53
3.6 COMMERCIAL AREAS 24-58.55
3.6.1 Overview 24-58.55
3.6.2 General Policies 24-58.58
3.6.3 Planning Principles and Guidelines for All Commercial Areas 24-58.60
3.6.4 Planning Principles and Guidelines for Kahuku Country Town 24-58.62
3.6.5 Planning Principles and Guidelines for Lā'ie Rural Regional Commercial Center 24-58.62
3.6.6 Planning Principles and Guidelines for Hau'ula Rural Community Commercial Center 24-58.63
3.6.7 Planning Principles and Guidelines for Country Stores 24-58.63
3.6.8 Relation to Land Use Map 24-58.63
3.7 INDUSTRIAL AND TECHNOLOGY PARK AREAS 24-58.64
3.7.1 General Policies 24-58.64
3.7.2 Planning Principles and Guidelines for Industrial Areas 24-58.65
3.7.3 Planning Principles and Guidelines for Technology Parks 24-58.65
3.7.4 Relation to Land Use Map 24-58.66
3.8 VISITOR FACILITIES 24-58-66
3.8.1 Kuilima Resort 24-58.67
3.8.1.1 General Policies 24-58.67
3.8.1.2 Planning Principles 24-58.67
3.8.1.3 Guidelines 24-58.67
3.8.1.4 Kuilima Resort Master Plan 24-58.68
3.8.2 Visitor Attractions 24-58.68
3.8.2.1 General Policies 24.58-68
3.8.2.2 Planning Principles 24-58.69

3.8.2.3 Guidelines 24-58.69
3.8.3 Eco-Tourism Operations 24-58.70
3.8.3.1 General Policies 24-58.70
3.8.3.2 Planning Principles 24-58.71
3.8.3.3 Guidelines 24-58.71
3.8.4 Relation to Land Use Map 24-58.71
3.9 INSTITUTIONAL USES 24-58.72
3.9.1 Health and Wellness Facilities 24-58.72
3.9.1.1 General Policies 24-58.72
3.9.1.2 Planning Principles 24-58.72
3.9.1.3 Guidelines 24-58.72
3.9.2 Brigham Young University – Hawai'i 25-58.73
3.9.3 Relation to Land Use Map 24-58.73

4. PUBLIC FACILITIES AND INFRASTRUCTURE POLICIES AND PRINCIPLES 24-58.74
4.1 TRANSPORTATION SYSTEMS 24-58.74
4.1.1 Overview 24-58.74
4.1.1.1 Roadway System 24-58.74
4.1.1.2 Transit System 24-58.75
4.1.1.3 Bikeway System 24-58.75
4.1.2 General Policies 24-58.76
4.1.3 Planning Principles and Guidelines 24-58.76
4.2 WATER ALLOCATION AND SYSTEM DEVELOPMENT 24-58.77
4.2.1 General Policies 24-58.78
4.2.2 Planning Principles and Guidelines 24-58.78
4.3 WASTEWATER TREATMENT 24-58.79
4.3.1 General Policies 24-58.79
4.3.2 Planning Principles and Guidelines 24-58.80
4.4 ELECTRICAL POWER DEVELOPMENT 24-58.80
4.4.1 General Policies 24-58.80
4.4.2 Planning Principles and Guidelines 24-58.80
4.5 SOLID WASTE HANDLING AND DISPOSAL 24-58.80
4.5.1 General Policies 24-58.81
4.5.2 Planning Principles and Guidelines 24-58.81
4.6 DRAINAGE SYSTEMS 24-58.81
4.6.1 General Policies 24-58.82
4.6.2 Planning Principles and Guidelines 24-58.83
4.7 SCHOOL FACILITIES 24-58.83
4.7.1 General Policies 24-58.84
4.7.2 Planning Principles and Guidelines 24-58.85
4.8 CIVIC AND PUBLIC FACILITIES 24-58.85
4.8.1 General Policies 24-58.86
4.8.2 Planning Principles and Guidelines 24-58.86

5. IMPLEMENTATION 24-58.87
5.1 PUBLIC FACILITY INVESTMENT PRIORITIES 24-58.87
5.2 DEVELOPMENT PRIORITIES 24-58.88
5.3 SPECIAL AREA PLANS 24-58.88
5.4 FUNCTIONAL PLANNING 24-58.88

5.5 REVIEW OF ZONING AND OTHER DEVELOPMENT APPLICATIONS . . . 24-58.89
5.5.1 Adequate Facilities Requirement 24-58.90
5.6 FIVE-YEAR *SUSTAINABLE* COMMUNITIES PLAN REVIEW 24-58.90
5.7 TRANSITION FROM THE CURRENT SYSTEM 24-58.90
5.7.1 Development Plan Common Provisions and Existing Land Use Approvals 24-58.90
5.7.2 Relation to General Plan Population Guidelines 24-58.91
5.7.3 Review and Revision of Development Codes 24-58.91

LIST OF TABLES

Table 3-1: Types of DPR Island-Based Parks 24-58.41
Table 3-2: Island-Based Parks and Golf Courses in Ko'olau Loa 24-58.42
Table 3-3: State Parks in Ko'olau Loa 24-58.42
Table 3-4: Types of DPR Community-Based Parks 24-58.43
Table 3-5: DPR Community-Based Park in Ko'olau Loa 24-58.44
Table 3-6: Significant Cultural and Pre-Contact Sites in Ko'olau Loa 24-58.47
Table 3-7: Residential Category Density and Height Guidelines 24-58.50
Table 4-1: Public School Enrollment and Capacity in Ko'olau Loa 24-58.84

LIST OF FIGURES

Figure 1-1: Development Plan and *Sustainable* Communities Plan Areas for O'ahu 24-58.21
Figure 2-1: Ahupua'a Concept 24-58.25
Figure 3-1: Natural and Recreation Areas 24-58.36
Figure 3-2: Rural Residential Development Standards 25-58.54
Figure 3-3: Commercial Area Design Guidelines 24-58.59
Figure 3-4: Kuilima Resort Land Use Map 24-58.69

APPENDIX A: CONCEPTUAL MAPS

Open Space Map 24-58.97
Land Use Map 24-58.98
Public Facilities Map 24-58.99

PREFACE

The Ko'olau Loa *Sustainable* Communities Plan has been prepared in accordance with the Charter-prescribed requirements for development plans and is to be accorded force and effect as such for all Charter- and ordinance-prescribed purposes. It is one of eight community-oriented plans intended to help guide public policy, investment, and decision-making through the 2020 planning horizon. Each of these plans addresses one of eight geographic planning regions on Oahu, responding to specific conditions and community values of each region.

Of the eight documents, the plans for 'Ewa and the Primary Urban Center, to which growth and supporting facilities will be directed over the next 20 years, have been entitled "Development Plans." They will be the policy guide to development decisions and actions needed to support that growth. Plans for the remaining six areas, which are envisioned as relatively stable regions for which public actions will focus on supporting existing populations, have been entitled "Sustainable Communities Plans" in order to appropriately indicate their intent.

Ko'olau Loa is a *Sustainable* Communities Plan. Its vision statement and supporting provisions are oriented toward maintaining and enhancing the region's ability to sustain its unique character, current population, growing families, lifestyle, and economic livelihood that all contribute to its vitality and future potential.

P.1 THE *SUSTAINABLE* COMMUNITIES PLAN PROCESS

This document is the culmination of a planning effort lead by the City and County of Honolulu's Planning Department and its successor agency, the Department of Planning and Permitting. This effort comprised a process that encouraged and enabled significant involvement from the region's neighborhood boards, community associations, groups of business leaders, religious and cultural organizations, private landowners, institutions and numerous individuals. In its final form, the plan will have incorporated input received from seven meetings of a 26-member Community Advisory Committee (CAC) and two community-wide meetings held from November 1997 to December 1998.

P.2 THE HONOLULU LAND USE PLANNING AND MANAGEMENT SYSTEM

The City and County of Honolulu guides and directs land use and growth through a three-tier system of objectives, policies, planning principles, guidelines and regulations. The General Plan forms the first tier of this system. First adopted by resolution in 1977, the General Plan is a relatively brief document, consisting primarily of one-sentence statements of objectives and policies. It has been amended several times, but the basic objectives and policies set forth in the 1977 plan remain intact.

The second tier of the system is formed by the Development Plans and *Sustainable* Communities Plans, which are adopted and revised by ordinance. These plans address eight geographic regions of the island, including the Primary Urban Center, East Honolulu, Central Oahu, ʻEwa, Waianae, North Shore, Koʻolau Loa and Koʻolaupoko. Under the current revision program, the Primary Urban Center and ʻEwa retain the title "Development Plan." The other regions are now referred to as "*Sustainable* Communities Plans" to reflect their policy intent.

The third tier of the system is composed of the implementing ordinances, including the Land Use Ordinance (Honolulu's zoning code) and the City's Capital Improvement Program. Mandated by the City Charter, these ordinances constitute the principle means for implementing the City's plans. These ordinances are required to be consistent with the General Plan, the Development Plans, and each other.

In addition to these three Charter-mandated tiers, the Development Plans are supplemented by two planning mechanisms that are not required by the Charter, including the functional planning process and special area planning. Functional planning activities, some of which are mandated by state or federal regulations, provide long-range guidance for the development of public facilities such as the water system, wastewater disposal, and transportation. Special area plans are intended to give specific guidance for neighborhoods, communities or specialized resources.

P.3 AUTHORITY OF THE DEVELOPMENT AND *SUSTAINABLE* COMMUNITIES PLANS

The authority of the Development and *Sustainable* Communities Plans is derived from the City Charter, which mandates preparation of a General Plan and Development Plans to guide "the development and improvement of the city." Together with the General Plan, the Development Plans provide a policy context for the land use and budgetary actions of the City. This is the authority the originally adopted Development Plans carried, and it remains unchanged in the revised Plan presented in this document.

The Charter provides that "public improvement projects and subdivision and zoning ordinances shall be consistent with the development plan for that area." Although the Development Plans are not themselves regulatory, they "regulate the regulators." They are policy tools and are to be used, in conjunction with the programs and budgets of the City, to accomplish the objectives of the City and as guides for the decisions made in the private sector.

P.4 WHY THE DEVELOPMENT PLANS HAVE BEEN REVISED

In 1992 the City Charter Commission recommended, and the voters of Honolulu adopted, amendments to the City Charter. Chief among its findings, the Charter Commission concluded that the Development Plans were overly detailed and had created processes that duplicated the zoning process. To eliminate this unnecessary duplication, the 1992 Charter amendments changed the definition of Development Plans from "relatively detailed plans" to "conceptual schemes."

The 1992 Charter amendments established that the purpose of the Development Plans is to provide:

- "priorities . . . (for the) coordination of major development activities;" and
- sufficient description of the "desired urban character and the significant natural, scenic and cultural resources . . . to serve as a policy guide for more detailed zoning maps and regulations and public and private sector investment decisions."

In response to the 1992 Charter amendments, the Planning Department launched a thorough review of the Development Plans. The goal of that review was the revision of all eight of the Development Plans to bring them into conformance with the Charter-mandated conceptual orientation. The revised plan presented in this document conforms to that mandate.

P.5 BASIS FOR THE KO'OLAU LOA *SUSTAINABLE* COMMUNITIES PLANS

This section traces the origins of the major themes that are the core of this *Sustainable* Communities Plan, and which were developed through direct input by Ko'olau Loa residents.

P.5.1 VALUES, ISSUES AND PRELIMINARY VISION

In an initial meeting in November 1997 focused on the values, issues and vision for Ko'olau Loa, a series of questions were discussed with the CAC, including:

1) Values: *What do you like about Ko'olau Loa and your community?*
What makes Ko'olau Loa special?
What do you think of when you picture your community?

2) Issues: *What don't you like about your community and your region?*
What changes are happening that you like, which don't you like?

3) Vision: *What do you want in the community for the future of your children's children?*
What should we keep and what should we change?

This interactive process helped the City to document the core values of the Ko'olau Loa people, the most important issues, and people's hopes and dreams for the region's future. A brief summary of CAC/resident comments is provided below.

a. Values. Ko'olau Loa is an uncrowded rural area. Each community has a small-scale commercial and economic base and agricultural enterprises which exist in harmony with its towns and villages. The natural beauty and dramatic scenery is a lasting impression for residents and visitors, with "more green than

concrete." From its mountain watersheds and streams to its coastal wetlands, nearshore waters, beaches, reefs, and offshore islands, the region is endowed with natural and scenic resources.

This country community is made up of a series of coastal villages and inland areas distinguished from each other by the mountain ridges which extend from the main Ko'olau Loa spine to the area's coastal plain. Area residents value community involvement in the planning process to beautify, preserve, redevelop and revitalize the region. Ko'olau Loa people care about youth and education. They believe they are part of a "healthy community". Ko'olau Loa is a close knit, small community, characterized by an island feeling of the *aloha* spirit and *'ohana*, which values the revitalizing of its culture through *lōkahi* (unity), *ho'opono* (to correct), (*laulima* (cooperation), *mālama* (care for), and *aloha āina* (love of the land). Its ocean, beach parks and inland/*mauka* open space areas are valued recreational resources.

b. Issues. Residents want to maintain and enhance the country communities with an *ahupua'a* collection of villages. Efforts should be made to beautify, preserve, redevelop and revitalize the area, with community involvement to have an impact on the planning process. People want to protect the natural beauty and rich resources of the mountains, watersheds, streams, wetlands, coastline, reefs, and offshore islands.

The community is looking for ways to create employment in the area, to provide options to the long commutes to jobs in town, and to encourage the creation of low-impact businesses that are compatible with the country setting, such as health industry, eco-tourism and diversified agriculture. It has suggested re-thinking of certain regulations for rural areas to respond to the country setting. Overcrowding in local housing should be relieved with quality affordable housing that fits the region's rural character.

Other issues include the need for improvements to enhance safety on Kamehameha Highway, more dependable sewer, water and drainage systems, improved beach park and inland park facilities, and protection of open space areas with scenic and recreational values. The State of Hawai'i should be encouraged to help Ko'olau Loa with more funding for facilities and services. The communities should be free from crime, gangs and drugs, with the help of community policing. The area should focus on becoming a "healthy community" with strong educational institutions. The Hawaiian culture should be revitalized in Ko'olau Loa through *lōkahi, ho'opono, laulima, mālama,* and *aloha 'āina.*

c. Preliminary Vision. Ko'olau Loa should remain as an uncrowded rural area with low population density, and limited growth in Kahuku, Lā'ie and Hau'ula. Each community will have its own small-scale commercial and economic base. Elements of the vision include the following:

- Agricultural interests should exist in harmony with built areas. This includes expanded diversified agricultural activities, agriculture-related commercial opportunities tied into the region's communities, centralized facilities for processing to share costs, and farmer's markets/aquaculture markets serving both local residents and attracting visitors. Products sold would include shrimp, prawns, fish, fruits, vegetables, cut flowers, ornamental plants, and crafts by local artisans.

- Resource areas will be managed in mountain watersheds, streams and wetlands, as well as the coastline resources, reefs, and offshore islands. Scenic views in Ko'olau Loa will be preserved through land use policies and guidelines which protect the most sensitive areas of natural beauty and dramatic scenery.

- Activities on land will be properly planned to protect water quality in nearshore waters and streams. Future development in Ko'olau Loa will integrate natural buffers, and implement erosion controls and best management practices to protect surface water quality.

- Quality affordable housing will be made available in the communities of Kahuku, Lā'ie and Hau'ula. Housing sites will be planned to fit the rural character. A model for rural area affordable housing will be created, possibly incorporating use of clustered, low-rise development, integrated open space, and single-family and multi-family types. Rural infrastructure standards will be instituted to enable dedication of roads without excessive built features for streets, drainage, etc.

- O'ahu's tourism industry will be promoted and encouraged by retaining and enhancing Ko'olau Loa's image and setting as an uncrowded rural area, as it provides visitors an experience of the "old Hawai'i". Tourism to Ko'olau Loa will be encouraged, centered at the existing Kuilima Resort and Polynesian Cultural Center. Beach parks, *mauka* parks and ecologically compatible outdoor recreational opportunities are other visitor attractions that will be promoted and encouraged.

- Kamehameha Highway will be improved with safety measures such as wider shoulders, turning lanes, improved lighting, drainage and intersection configurations. Each community will have dependable sewer, water and drainage systems. Energy conservation will be expanded through commercial wind and solar power operations.

- Country communities will be maintained as intact units in an *ahupua'a* type of organization, defined by significant landscape features. Design character will be improved in village highway corridors with scenic design areas. Redevelop/expand village centers behind Kamehameha Highway in well-planned, clustered commercial centers, instead of stringing retail outlets along the highway frontage.

- Ko'olau Loa will have safe communities, free from crime, gangs and drugs, with caring neighbors and community policing. Ko'olau Loa will continue and expand its effort to function as a "healthy community" with strong educational institutions that capitalize on the unique resources and setting of the region. Promote the various commercial health industry uses possible, such as elder care/assisted living, health retreats, specialty clinics, etc. Improve public educational facilities in the Windward region to a level comparable with other districts on O'ahu.

- Hawaiian culture will be revitalized in Ko'olau Loa communities through *lōkahi, ho'opono, laulima, mālama,* and *aloha 'āina.* Redeveloped areas and new developments will be planned with sensitivity to the culture and environment. Beach park facilities will be improved for residents of the region and visitors. Ecologically compatible outdoor recreational opportunities, such as hiking, biking, camping, agricultural tours, eco-tours, etc., will be encouraged, provided the activities do not have adverse impacts to existing resources and uses.

P.5.2 SURVEY OF COMMUNITY DEVELOPMENT PATTERNS

In March 1998, a Briefing Package was issued to the CAC to provide a background and setting for the Ko'olau Loa *Sustainable* Communities area. A second CAC/public meeting held in April focused on a slide presentation which elicited specific comments regarding the values and vision for the region. The presentation addressed the regional land use types and the specific identity of each community in Ko'olau Loa.

Photographic slide images were shown to depict the existing character found within seven major land use categories. Examples from within and outside Ko'olau Loa were used for images of Open Space/Scenic Areas, Agricultural Areas, Commercial Centers, Residential Neighborhoods, Resort Areas, Community Facilities and Recreational Areas.

The community development patterns survey considered the future vision and identity for the six settlement communities found in Ko'olau Loa. Representative images of each community were presented in slides showing the communities of Kahuku, Lā'ie, Hau'ula, Punalu'u, Kahana and Ka'a'awa. Participants provided oral and written comments regarding the images presented. The responses form the basis for the City's documentation of a community development pattern in Ko'olau Loa. The following is a summary of these responses:

Open Space Preservation–Preserve the rural character of Ko'olau Loa. The regional setting of uncluttered scenic vistas is vital to the character of Ko'olau Loa. The recommendations and policies of the Coastal View Study should be adopted.

Parks and Other Recreational Facilities–There is a need for parks with playfields, especially for soccer. Other new facilities could include a skateboard park, an indoor facility (gym), pool, ball fields, and biking/walking trails near the ocean. Build facilities to serve the local population, not as an attraction for islandwide park users, and improve existing facilities.

Economic Development: Agriculture–Promote diversified agriculture and aquaculture. Preserve and maximize the use of existing agricultural lands. Develop niche markets for Hawaiian crops (taro, ti leaves), and exotic and tropical fruits. Link to resort/visitor industry. Market items in small roadside stands or larger farmer's markets. Combine other uses with agriculture such as agricultural tours, and open produce markets.

Economic Development: Commercial–Renovate and maximize the use of existing commercial centers. Establish areas in each community for cooperative markets: corn, watermelon, aquaculture in Kahuku, taro and greens in Lā'ie, and arts and crafts in Punalu'u. Commercial centers should have a rural, village-style character. Strip development should be avoided, and commercial centers should be clustered, except for a few country stores and roadside stands.

Economic Development: Resort/Visitor Industry–Encourage creative resort/visitor industry attractions and accommodations such as retreats, cultural attractions, luaus, weddings, eco-tours, and water-based and outdoor recreational activities. Existing resort/visitor destinations generally should be contained, or allow for controlled expansion or enhancement based on market demand and infrastructure capacity. Acknowledge Turtle Bay Resort and the Polynesian Cultural Center as major attractions that may be sufficient to accommodate long-term visitor industry needs.

Economic Development: Health Industry–Maintaining Kahuku Hospital and its emergency care is viewed as critical before any new facilities can be considered. Other facilities or services requested by community members include a dialysis center, drug treatment and mental health programs, preventative care health and wellness programs, and the expansion of existing clinics into outlying areas. Traditional culturally based healing practices could be integrated, where it is economically viable/feasible and with proper licensing.

Economic Development: Light Industrial–Appropriate types of light industrial uses should be sited in Lā'ie and Kahuku. Light industrial uses could be combined or mixed with compatible commercial uses.

Economic Development: Education/Research/Technology–BYU-Hawai'i could serve as a catalyst for new facilities or enterprises in education, cultural studies, technology, language, business, computer

software development, and Hawaiian horticulture. BYU-H could be a training center. A technology park could be developed adjacent to the campus. Emphasize agriculture and aquaculture training/education in local schools. Support the 20-year long-range plan for Kahuku High School.

Housing Communities–The existing older housing stock needs to be rehabilitated and brought up to code and, in some cases, provided with adequate water, sewer, drainage and electricity. New housing is needed for area residents first. It should not be built for people from other parts of the island, but for Ko'olau Loa residents. Housing should be "affordable" and well- designed. Multi-family housing is needed and could be clustered with surrounding open areas for landscaping and play. There is a need for affordable rental housing and apartments, some of which are needed for senior citizens.

Areas identified for new housing were Lā'ie, Kahuku and Hau'ula. There should be a balance between containing the communities' growth and maintaining the open countryside. Housing should be sensitively sited so as to protect *mauka* and *makai* views. There was a split response regarding drawing a "hard line" at the base of the slopes to limit any *mauka* housing development. Responses included: it should be looked at on an individual basis, the "no-pass line" should serve as the boundary, restrict housing to where it can be built, most of the available lands are *mauka*, and it varies by community.

Other General Comments–Rehabilitate, improve and fully utilize the existing assets of Ko'olau Loa (parks, housing, commercial areas, agricultural land, resort areas, etc.). The area needs rural development standards and village-style design. People would like to be employed within Ko'olau Loa and not drive into town. Need to bring/create employment opportunities within the district. Create more affordable housing, multi-family housing and rentals. Maintenance of the area's existing infrastructure is important. We need a delineation between town and country.

P.5.3 INTRODUCTION OF MAJOR THEMES

The third CAC/public meeting was held in June 1998 to discuss the proposed conceptual basis for the Ko'olau Loa *Sustainable* Communities Plan. The concept for Ko'olau Loa emerged from the community's input and participation at the November 1997 and April 1998 meetings, as well as from various planning studies and agency meetings that have been undertaken. These concepts are expressed below in the overall "Vision" for Ko'olau Loa, the "Major Themes" which organize the living environment in accordance with the vision, and finally the "Implementation Tools" which are mechanisms to achieve the vision. Together, they are intended to provide the foundation for the *Sustainable* Communities Plan's more detailed policies and guidelines, which will direct the future land use and development decisions in Ko'olau Loa.

VISION: ***Maintain the Rural Character of the Ko'olau Loa Region***

THEMES:

- *Rural Communities:* Maintain the existing rural development pattern in Ko'olau Loa through in-fill of vacant lands in Ka'a'awa, Punalu'u and Hau'ula, with moderate targeted growth in Lā'ie and Kahuku.
- *Agricultural Areas:* Reserve agricultural lands for diversified agriculture.
- *Preservation and Park Areas*: Provide for access to mountain and shoreline resources for recreational and cultural purposes. Preserve scenic views of ridges, valley slopes, prominent land features and coastal views.

IMPLEMENTATION TOOLS:

Ko'olau Loa consists of natural resource elements and man-made expressions. The tools we use to protect its rural character include: *ahupua'a* divisions, rural community boundaries, village centers and rural development standards.

***Ahupua'a* Divisions**: As recommended by the CAC, we must recognize and enhance traditional *ahupua'a* divisions and distinctions between the various communities in Ko'olau Loa. Natural breaks between existing communities (open areas and shoreline views) must be retained or expanded to preserve a separation between the natural and built environment within each *ahupua'a*.

The *ahupua'a* concept is a way of defining the region's distinctive communities by establishing organizational boundaries along mountain ridgelines which extend from the Ko'olau spine to the coast, as shown in Figure 2-1. This defines the prototypical rural Hawai'i community, surrounded by agricultural areas, with preservation along *mauka* slopes and oceanfronts. This pattern extends along the entire coastline, with significant natural open space breaks between built areas, enabling the unique identities of individual communities to be expressed.

Rural Community Boundary: To maintain an identifiable rural community edge and to prevent sprawl and encroachment into agricultural lands and open space, a rural community boundary is proposed. This preserves the relationship between the natural landscape of the mountain range and ocean to the man-made landscape of agricultural fields and small rural communities so as to maintain the rural character of the region. This implementation tool recognizes that lateral development along this coast has been the trend, and now seeks to contain and manage growth *mauka/makai*.

The rural community boundary is shown as a generalized line around the settlement area (as shown in the *ahupua'a* concept image). In the *Sustainable* Communities Plan this is not a fixed line but rather an expression of the policy intent dividing agriculture and residential uses. Without this line, lateral expansion along the coast will continue, open space breaks are lost, and Ko'olau Loa's communities will lose their unique identity. The *Sustainable* Communities Plan intends to reinforce this policy by recognizing the *ahupua'a* division and creating a rural community boundary.

Village Centers (*Kauhale*): Establish village center design guidelines to help ensure that new development will be in keeping with the low-rise, low density rural character of the region. (Kauhale is the Hawaiian reference for a village center.) Another image (Figure 3-3) was prepared to present a typical reinforcement of what might exist at centers in Ko'olau Loa. The Kahuku center was used for this example, providing an expression of how the village center could be revitalized. The center needs more critical mass and signage to increase visibility. There would be community-based retail activities to reinforce the existing center. The theme of Kahuku is the plantation heritage, and the commercial center is developed in relation to the theme. This would not be a western style front like Hale'iwa town – it's more a plantation quality/camp. The center could consider converting small old houses into shops in a cluster, through which people could wander through, enjoy, shop, eat, and learn about the culture. Consistent with the community's desire to re-energize the commercial centers, we build around what exists and express the specific community theme in design.

Rural Development Standards: Establish rural standards for new housing developments in order to preserve the country lifestyle. Encourage rural housing clusters or neighborhoods which are defined by open space and blend into the surrounding landscape with as little disruption as possible to the scenic quality of the area.

Promote a new ordinance for rural development standards that is appropriate to the country with reduced pavement widths, curbs, gutters and sidewalks. This keeps subdivision costs lower and makes the neighborhood more livable.

The image (Figure 3-2) is a rural neighborhood with ample landscaping, narrow pavement, and no curbs, gutters and sidewalks. The individual lot appears bigger - or it feels bigger. The street side is an informal mix of public and private domain. It's like some of the old Kailua neighborhoods, or the mill camps. It gives a greater sense of community, instead of feeling like a standard urban subdivision.

P.5.4 CONCEPTUAL *SUSTAINABLE* COMMUNITIES PLAN LAND USE MAP

The Conceptual *Sustainable* Communities Plan Land Use Map in Appendix A was also presented and discussed at the June 1998 meeting. Major themes were presented for each *ahupua'a*, with arrows identifying the primary visual orientation along each section. A proposed Rural Community Boundary was shown as a heavy dashed line around each community, with some pockets of agriculture or park/preservation within this boundary. Major themes identified for each *ahupua'a* are summarized as follows:

Kawela. Major themes are resort *makai* of Kamehameha Highway and diversified agriculture *mauka* of it. There would be no change to the Kuilima Resort development area. The only new change would be the military lands *mauka*. Between Kawela/Kahuku, the major themes are wetlands and aquaculture *makai* and diversified agriculture *mauka*, with a continuation of the existing pattern here. This forms a natural/open space break between the resort and Kahuku town.

Kahuku. The major themes are plantation heritage, health and wellness, and agriculture/aquaculture. There is potential for expanded health-related support facilities adjacent to Kahuku Hospital. Expansion of the Kahuku High School campus is included. Limited expansion of the residential area is allowed, primarily to accept affordable housing that is conditioned in the Unilateral Agreement for the Kuilima Resort zone change approval.

Mālaekahana. Major themes of ranching and aquaculture would continue *mauka* of Kamehameha Highway. On the *makai* side, any increase in density or redevelopment should be avoided. Mālaekahana should remain as an open space break between Kahuku and Lā'ie to avoid lateral growth.

Lā'ie. Major themes for Lā'ie are sustainable community, education and cultural tourism. Aside from Kuilima Resort, this is the employment center of Ko'olau Loa, and a community-based master plan has been developed. The Lā'ie plan includes light industry, commercial, technology enterprise/BYU-H, and residential uses. The rural community boundary includes: a portion of light industry *mauka* of the Cackle Fresh Store site, a new tech park, and expansion of the commercial area, Polynesian Cultural Center, and *mauka* residential area.

The natural break of open space/agriculture which separates Lā'ie and Hau'ula should be maintained to retain the identity of each community. If the current pattern continues, the communities of two district characters will eventually meet. The break between Kahuku and Lā'ie should also be retained. This is a good example of the application of the *ahupua'a* concept and rural community boundary. Limited development that will occur will be *mauka* - not lateral, and it will not diminish the rural character of the region. Yet these changes will accommodate the need for modest growth for jobs and housing at Lā'ie.

Hau'ula, Punalu'u, Kahana and Ka'a'awa. These are stable communities, with no significant projected growth. Some new homes could be built as a result of infill on lands with existing zoning and *Sustainable* Communities Plan designation. There are major themes of managed growth at Hau'ula, diversified

agriculture/healing center at Punalu'u, environmental/cultural heritage at Kahana, diversified agriculture and eco-tourism at Ka'a'awa. No new expansion areas are proposed for these communities. In addition, scenic *mauka* and *makai* views should be preserved and enhanced.

CONCLUSION

As a result of comments from the CAC/public meetings and community-at-large, the *Sustainable* Communities Plan for Ko'olau Loa has been formulated around the core value of retaining and enhancing the rural quality of the region. The fundamental concept for facilitating this is the use of an *ahupua'a* concept for organizing and distinguishing individual communities. With implementation of rural community boundaries, current and future needs of the region are accommodated without compromising rural quality. Other implementation tools, such as enhancement of village centers, and creation of rural subdivision standards, are used to further reinforce the rural character.

EXECUTIVE SUMMARY

The Ko'olau Loa *Sustainable* Communities Plan is incorporated into Ordinance 99-72 by reference, and is organized in five chapters and an appendix, as follows:

- Chapter 1: Ko'olau Loa's Role in O'ahu's Development Pattern defines the region's role and identity within the overall framework of island planning and land management.
- Chapter 2: The Vision for Ko'olau Loa's Future summarizes the community's vision for the future of the region, and lists important elements of that vision.
- Chapter 3: Land Use Policies, Principles, and Guidelines is the plan's policy core. It provides policy guidance for the region's various land use elements.
- Chapter 4: Public Facilities and Infrastructure Policies and Principles outlines policies, principles, and actions needed to support the land use policies of Chapter 3.
- Chapter 5: Implementation addresses needs for carrying out provisions outlined by the plan.

The contents of each chapter are briefly summarized below.

E.1 Chapter 1: Ko'olau Loa's Role in O'ahu's Development Pattern

Consistent with the provisions of the General Plan, Ko'olau Loa is projected to maintain its country character and to experience very little growth over the plan's 20-year planning horizon. The plan supports this and includes policies to limit the growth of the region's housing and commercial development, protect cultural and natural resources, and retain the patterns of development characteristic of the region.

E.2 Chapter 2: The Vision for Ko'olau Loa's Future

The vision for Ko'olau Loa seeks to preserve the region's rural character and its natural, cultural, scenic and agricultural resources. The region will remain country, characterized by small towns and villages with distinct identities that exist in harmony with the natural settings of mountain ridges and winding coastline. Key elements of the vision for Ko'olau Loa include:

- Establish Rural Community, Agricultural and Preservation Boundaries.
- Preserve and enhance the natural, recreational and cultural resources which contribute to Ko'olau Loa's sense of "Old Hawai'i."
- Preserve agricultural lands and encourage diversification of agricultural-related enterprises to maintain its viability.
- Enhance the existing recreational areas and resources which offer a variety of outdoor recreational activities and cultural experiences.
- Establish rural area development standards to maintain the rural character of residential areas in Ko'olau Loa.
- Enhance the character of the region's commercial areas and recognize the contribution of country stores to Ko'olau Loa's rural fabric.

E.3 Chapter 3: Land Use Policies, Principles and Guidelines

This chapter presents general policies, planning principles and guidelines for land use and resource management in Ko'olau Loa. General policies related to each land use type are summarized for each land use category.

E.3.1 OPEN SPACE PRESERVATION

- Maintain the region's rural character, protect scenic views and provide recreational resources.
- Define clear boundaries and separations between existing communities.

E.3.2 AGRICULTURAL AREAS

- Preserve the availability and crop production potential of agricultural lands.
- Protect agricultural lands from conversion to uses that are primarily residential, industrial or commercial.
- Encourage diversification of agriculture-related enterprises.
- Allow residential use in agricultural areas only as secondary to agricultural activity.
- Allow facilities necessary to support intensive cultivation to be located in agricultural areas.
- Allow for appropriate non-agricultural uses that are of a compatible open space and resource character, such as outdoor recreation, on agricultural lands not currently suitable for intensive cultivation.
- Recognize the function of agricultural areas as an important part of the region's natural drainage system.

E.3.3 PARKS AND RECREATION AREAS

- Maintain and enhance existing parks by utilizing under-developed park land area and improving the condition of existing facilities.
- Employ appropriate siting and screening for park facilities.
- Ensure environmental compatibility in the design and construction of park facilities.
- Integrate recreational opportunities with the characteristics of the surrounding community.
- Integrate new community-based parks within the neighborhoods and communities they serve. Integrate the provision of new parks with development of larger new residential development.

E.3.4 HISTORIC AND CULTURAL RESOURCES

- Emphasize physical references to Ko'olau Loa's history and cultural roots.
- Protect existing visual landmarks and support the creation of new, culturally appropriate landmarks at ahupua'a boundaries.
- Preserve and restore historic and cultural resources associated with native Hawaiian and pre-contact periods.
- Preserve significant historic features from earlier periods such as the plantation era.
- Retain, wherever possible, significant vistas associated with archaeological features.

E.3.5 RESIDENTIAL USES

- Respect and help to preserve the natural setting of the Ko'olau Loa region by requiring development in residential areas to be sensitive to physical constraints and have minimal impact on the area's rural character.
- Provide a sufficient capacity within the Rural Community Boundary to accommodate existing and future housing needs.
- Maintain the existing residential capacities for the communities of Ka'a'awa, Hau'ula and Punalu'u. Future residential needs in these communities will be met through infill residential development.
- Adopt zoning, subdivision and related project design regulations which foster a rural character in new residential developments and improvements to existing residential areas.
- Encourage and support the development of affordable housing in the region in order to meet the needs of a variety of market sectors, existing pent-up demand for housing, and overcrowded housing conditions.

E.3.6 COMMERCIAL AREAS

- Support the maintenance, redevelopment, or expansion of various types of commercial establishments in the region in keeping with their type and purpose, and appropriateness to the character and needs of the communities they serve.

- Maintain and enhance the rural character of the recognized commercial areas including: Kahuku Country Town, Lāʻie Rural Regional Commercial Center, Hauʻula Rural Community Commercial Center, and various country store sites within the region.

E.3.7 INDUSTRIAL AND TECHNOLOGY PARK AREAS

- Minimize the visibility of large building volumes and tall building or machinery elements from residential areas, commercial and civic districts, resort areas, and parks through careful site planning and use of ample landscaping.

- Locate and buffer operations that discharge air or water pollutants, or noise, in areas where they would impose the least potential harm on the natural and human environment.

- Establish and maintain a campus-like setting and low-intensity development at the Lāʻie Technology Park.

E.3.8 VISITOR FACILITIES

- Maintain existing plans to establish a major resort destination at Kuilima to provide a major source of jobs, improve shoreline access and use opportunities for residents, and create other amenities for use by residents and visitors.

- Renew and expand facilities as necessary to maintain the viability and vitality of the Polynesian Cultural Center (PCC).

- Adopt appropriate regulations for appropriate location, operation, and allowable uses of eco-tourism facilities.

E.3.9 INSTITUTIONAL USES

- Support the retention and long-term viability of Kahuku Hospital through land use policies, public facility improvements and community assistance programs.

- Encourage limited development of other health and wellness facilities in Koʻolau Loa in order to enhance job opportunities and the availability of a "continuum of care" for local residents, in a manner which is compatible with adjacent uses and the region's rural character.

- Brigham Young University-Hawaiʻi should continue to evoke a sense of place that distinguishes it as an important educational and cultural institution and unique asset to the Koʻolau Loa region.

- The University should maintain its strong community-orientation and continue to serve the Koʻolau Loa region as a center of Hawaiian and other Polynesian cultures, as well as support community activities and services and provide adult educational opportunities.

- The design of new facilities should be environmentally sensitive and reflect the appropriate architecture and culture of the existing campus and adjacent residential areas.

E.4 Chapter 4: Public Facilities and Infrastructure Policies and Principles

This chapter presents the general policies and planning principles for the major issues relating to public facilities and infrastructure in Ko'olau Loa. General policies related to each facility type are summarized in this chapter.

E.4.1 TRANSPORTATION SYSTEMS

- To retain Ko'olau Loa's role as a predominantly rural area with limited future growth, its transportation system should provide:

  1. Adequate access between communities, shopping and recreation areas in Ko'olau Loa.

  2. Highway improvements, developed in consultation with Ko'olau Loa communities, which emphasize highway safety as the highest priority while providing efficient, pleasant travel experiences.

  3. Adequate capacity for peak travel to and from community centers.

- Reduce reliance on the private passenger vehicle by promoting travel demand management measures (e.g., carpool and vanpool programs) for both commuting and local trips.

- Provide an integrated system of bikeways as a means of transportation to and from work, school, shopping and recreation, including rides to playgrounds and beach parks.

E.4.2 WATER ALLOCATION AND SYSTEM DEVELOPMENT

- Integrate management of all potable and nonpotable water sources, including groundwater, stream water, storm water and effluent, following State and City legislative mandates.

- Adopt and implement water conservation practices in the design of new developments and the modification of existing uses, including landscaped areas.

E.4.3 WASTEWATER TREATMENT

- Provide collection systems, where practical, to eliminate individual cesspools, to protect aquifers, streams, estuaries and nearshore waters from contamination.

- Replace outdated individual cesspools with septic tanks and leaching fields.

- Treat and beneficially use, where feasible, reclaimed water for irrigation as a water conservation measure.

E.4.4 ELECTRICAL POWER DEVELOPMENT

- Locate and design system elements such as renewable electrical power facilities, substations, communication sites, and transmission lines, including consideration of underground transmission lines, to mitigate any potential adverse impacts on scenic and natural resources, as well as public safety considerations.

E.4.5 SOLID WASTE HANDLING AND DEVELOPMENT

- While the region is not expected to contribute significantly to future increases in O'ahu's solid waste management demands and does not contain sites suitable for the processing or disposal of solid waste on an islandwide scale, Ko'olau Loa can and should play a part in the City's efforts toward recycling, waste diversion and more efficient solid waste collection.

E.4.6 DRAINAGE SYSTEMS

- Emphasize and implement comprehensive or systemic solutions to local flooding and drainage problems.

- Emphasize control and minimization of non-point source pollution and the retention of storm water on-site and in wetlands in the design of drainage systems in accordance with existing City, State and Federal regulations while maintaining the existing habitat capability and water quality of streams and nearshore waters.

- View storm water, where appropriate, as a potential irregular source of water for recharge of the aquifer that should be retained for absorption rather than quickly moved to coastal waters.

- When drainageways must be modified for flood control purposes, select approaches and solutions which:

  1. Improve existing habitat capability;

  2. Maintain existing rural and aesthetic qualities;

  3. Avoid degradation of existing coastline and estuarine areas or nearshore water quality;

  4. Avoid degradation of the quality of water entering nearshore waters;

  5. Avoid increase in the volume or rate of freshwater intrusion into nearshore waters.

- Encourage coordination between public agencies and private landowners on needed drainage improvements with community input.

- Keep drainageways clear of debris to avoid flooding problems.

- Create buffer zones and/or setbacks along rivers and streams. In keeping with the *ahupua'a* concept, and to support the anadramous fish life cycle, streams should be protected along their entire length from headwaters to the ocean.

- The State should assess areas of Kamehameha Highway where the pavement diverts or detains overland flow of stormwater runoff causing localized flooding of the highway and *mauka* properties.

E.4.7 SCHOOL FACILITIES

- Approve new residential development only after the DOE certifies that adequate school facilities, either at existing schools or at new school sites, will be available when the development is completed.

- Have developers pay their fair share of all costs needed to ensure provision of adequate school facilities for the children living in their developments.

- Support the implementation of the Kahuku High School Master Plan.

E.4.8 CIVIC AND PUBLIC SAFETY FACILITIES

- Support adequate staffing and facilities to ensure effective and efficient delivery of basic governmental service, emergency and primary medical services, and protection of public safety.

- Develop a regional library for Ko'olau Loa.

- Provide emergency shelters in Ko'olau Loa.

E.5 Chapter 5: Implementation

This section discusses the measures necessary to ensure timely implementation of the plan, including those measures that will minimize disruption during the transition into the plan. Among the measures addressed by this chapter, changes to the zoning maps and the Land Use Ordinance will be necessary to achieve consistency with the *Sustainable* Communities Plan, as will various other regulatory codes and standards. This chapter also addresses monitoring of plan implementation and provides for biennial reporting as well as comprehensive review of the plan at five-year intervals.

E.6 Appendix

The appendix provides three color maps that illustrate some of the plan's textual provisions. Because these maps are intended merely to be illustrative of the text, if there are any conflicts between the maps and the text, the text shall prevail.

1. KO'OLAU LOA'S ROLE IN O'AHU'S DEVELOPMENT PATTERN

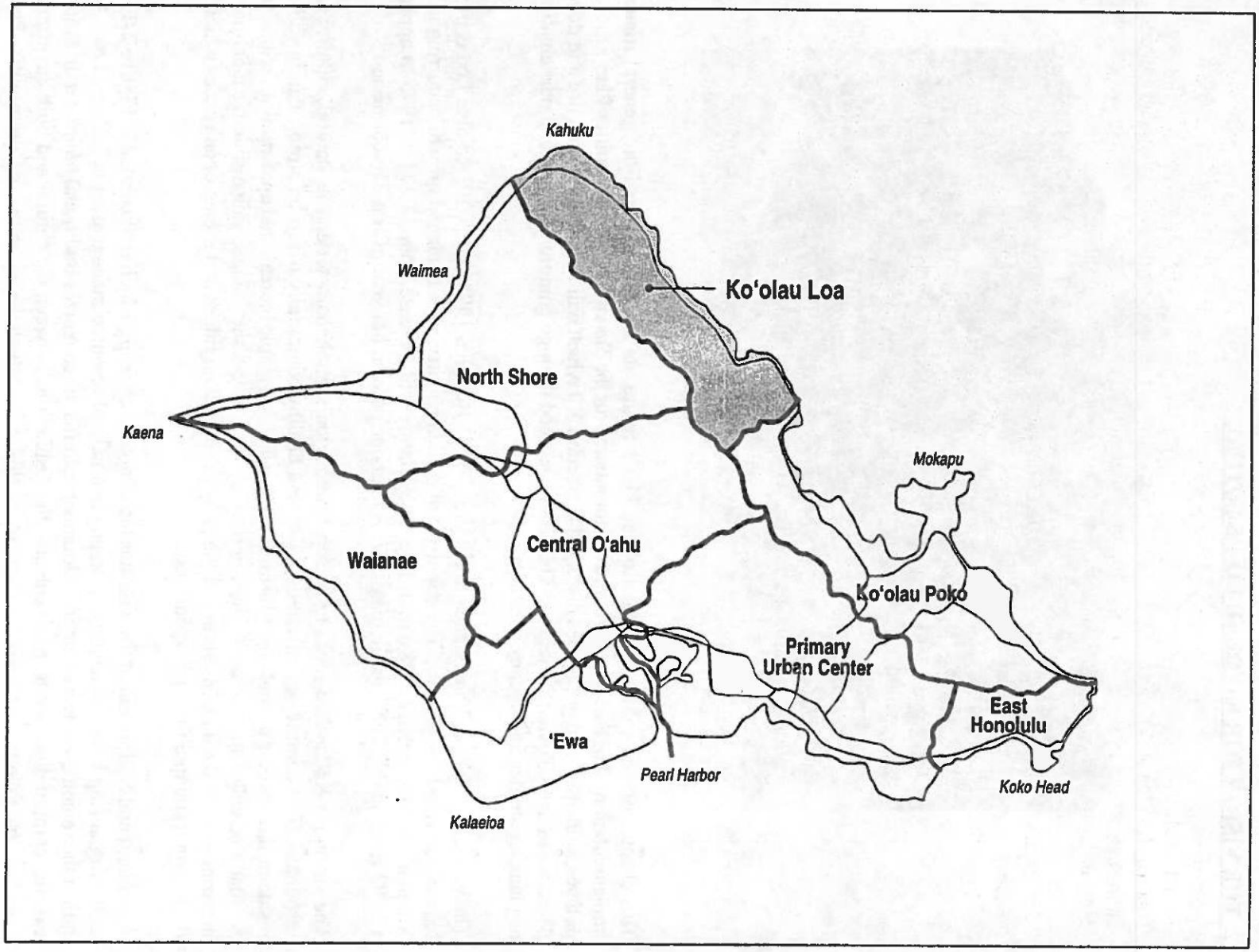
The General Plan of the City and County of Honolulu designates the Ko'olau Loa *Sustainable* Communities Plan Area, shown in **Figure 1-1**, as a rural area and specifies that its natural resources and predominately "country" character should be maintained by allowing only limited development in established communities.

The sparsely populated Ko'olau Loa region spans the northern half of O'ahu's windward coast. It is bordered on the north by the Waiale'e community just beyond Kawela Bay, and on the south by the ridgeline just beyond the north end on Kāne'ohe Bay. The residential communities located along Kamehameha Highway, the only arterial roadway linking this area with the North Shore and Ko'olaupoko, include Kahuku, Lā'ie, Hau'ula, Punalu'u, Kahana and Ka'a'awa. The rural character of this region and its cultural and agricultural history are reminiscent of old Hawai'i. The *Sustainable* Communities Plan's vision is to maintain and enhance the man-made and natural elements that make Ko'olau Loa's rural character so unique and special.

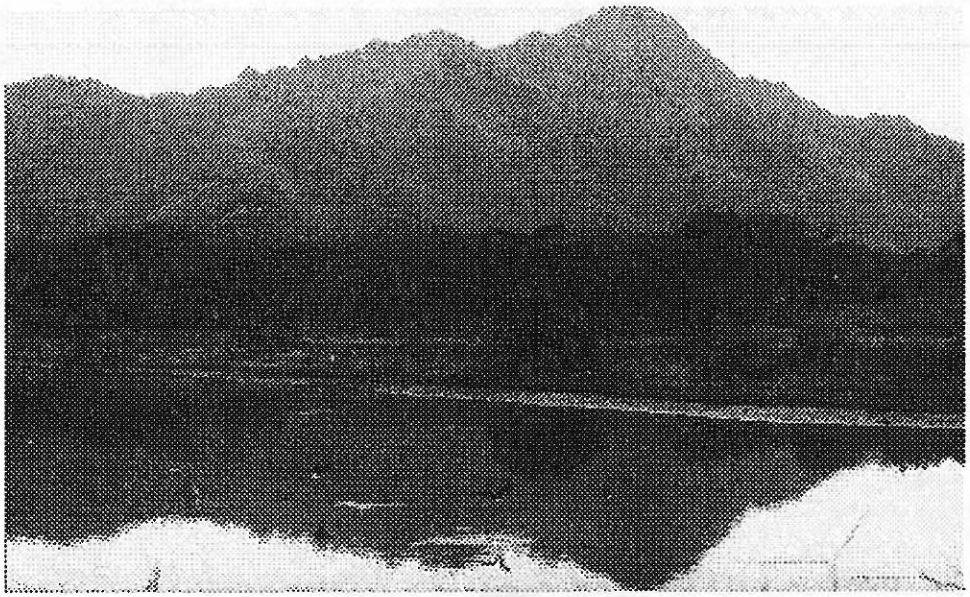
This update reaffirms Ko'olau Loa's role in O'ahu's development pattern as intended in the General Plan policies by establishing the following principles for future land use and development in the *Sustainable* Communities Plan Area:

- Recognize traditional *ahupua'a* divisions and distinctions and incorporate the ahupua'a concept as the primary basis for land use planning in Ko'olau Loa.
- Maintain and, where possible, expand critical open space areas and shoreline views between the existing pattern of community development so as to preserve a separation between the natural and built environment within each ahupua'a.
- Preserve the existing strong relationship between the natural landscape of the mountains to the ocean, and the man-made landscape of agricultural fields and small rural communities.
- Promote diversified agriculture and aquaculture on existing agricultural lands in accordance with the General Plan policy to support agricultural diversification in all rural areas on O'ahu.
- Preserve continuous coastal views and scenic views of ridges, valley slopes, and prominent land features.
- Provide for new employment-based development which will offer quality jobs and be compatible with the existing communities' rural fabric and the natural environment.
- Limit future resort development to the existing zoned lands in secondary resort areas at Kahuku Point-Kawela Bay area and Lā'ie.
- Support and encourage improvements at existing educational and recreational facilities.
- Preserve the "country" lifestyle as expressed by rural housing clusters or neighborhoods which are defined by open space and blend into the surrounding landscape with as little disruption as possible to the scenic quality of the area.
- Establish rural residential development standards so that new infrastructure and site layout requirements will be in keeping with the desired rural character of the region.
- Establish country town design guidelines for commercial and other non-residential use areas so that new development will be in keeping with the region's rural character.
- Promote access to mountain and shoreline resources for recreational purposes and traditional hunting, fishing, gathering, religious, and cultural practices.

Figure 1-1
Development Plan and *Sustainable* Communities Plan Areas for O'ahu



2. THE VISION FOR KO'OLAU LOA'S FUTURE



This chapter presents the vision for Ko'olau Loa's future, its key elements and the general framework for implementation. Together they provide the foundation for the *Sustainable* Communities Plan's more detailed policies, principles and guidelines discussed in Section 3.0 which will direct future land use and development decisions in the Ko'olau Loa region. The vision emerged through community input and participation, as well as planning studies and agency meetings.

The vision for Ko'olau Loa extends to the year 2020. Between 1998 and 2020, Ko'olau Loa is projected to experience very little growth. The country will remain country, with managed growth occurring in Lā'ie and Kahuku. It is projected that Ko'olau Loa's population will increase from 14,271 in 1995 to approximately 15,093 residents by 2020, an increase of less than one percent per year over a 25-year period.

The vision for Ko'lau Loa seeks to preserve the region's rural character and its natural, cultural and scenic resources. The community envisions a safe and healthy community based on strong family values, where residents have access to quality jobs, affordable housing and ample recreational opportunities within the region. Ko'olau Loa will remain country, characterized by small towns and villages with distinctive identities that exist in harmony with the natural settings, defined by the mountain ridges and scenic open spaces which help give the region its unique form of organization.

A fundamental component of this vision is the *ahupua'a* concept, which is illustrated in **Figure 2-1.** It is used as the organizing basis for land use planning and natural resource management in Ko'olau Loa. Adapted to reflect the region's contemporary development patterns, it recognizes traditional *ahupua'a* divisions between existing communities and helps to enhance the distinctions between the natural and built environment. The materials that follow summarize the elements of this vision which the *Sustainable* Communities Plan seeks to support.

2.1 ESTABLISH RURAL COMMUNITY, AGRICULTURE AND PRESERVATION BOUNDARIES

Three types of boundaries have been established to guide development and preserve open space and agricultural areas. These are the Rural Community Boundary, the Agricultural Boundary, and the Preservation Boundary. It is intended that these boundaries will remain fixed through the 2020 planning horizon. They are intended to help guide future development, redevelopment, and resources management within existing zoning designations or future zoning designations and other standards or guidelines that may be developed in response to the provisions of this plan, other established entitlements, or in accordance with pertinent policy and character described in this plan.

2.1.1 RURAL COMMUNITY BOUNDARY

The Rural Community Boundary is established to define, protect, and contain communities in areas that the General Plan designates "rural" and that exhibit the physical characteristics of rural lifestyles. This boundary is intended to provide adequate lands to accommodate a modest increase in population, to allow development of facilities needed to support these established communities, to protect such communities from the more intense land uses and patterns of development associated with more urbanized areas, and to protect areas outside the boundary for agriculture or other resource or open space values. The Rural Community Boundary may include lands designated "park," "agriculture," "preservation," or areas with development-related hazards such as steep slopes or unstable soils; it is intended these areas will not be developed with uses unsuitable to their designations or in ways that may tend to exacerbate those hazards.

Rural communities defined by this boundary consist of smaller, more dispersed, less intensively developed residential communities and towns than those of urban areas. Development character should be generally low-density, low-rise, small scale, and reflective of a "country" setting. Within residential areas, the landscaping and front yards that provide the foregrounds to the dwellings should be the principal visual elements. In commercial areas, the pedestrian environment and associated amenities should predominate, and storefronts on both sides of the street should be simultaneously perceivable. Buildings should be oriented to encourage interaction between the public and private domains.

The main objectives of the Rural Community Boundary are to:

- *Preserve Agricultural Lands, Significant Open Space, and Natural Resources.* The Rural Community Boundary should prevent the encroachment of development onto productive agricultural lands, and protect agricultural lands, significant open space, and natural resources outside the boundary.

- *Promote an Efficient Development Pattern.* The Rural Community Boundary primarily focuses new development to "infill" sites within the existing communities. A compact form of development concentrated in the existing communities along the coast will result in relatively lower development costs, more efficient utilization of existing urban infrastructure systems, and reduced reliance on the automobile by making transit, walking, and bicycling more feasible and attractive as alternative modes of travel.

- *Provide Sufficient Capacity for Projected Growth.* The community areas within the Rural Community Boundary contain ample capacity to accommodate anticipated residential and commercial development to the year 2020. Due to anticipated long-term job growth and diversified employment opportunities within the Kuilima Resort area and the Lāʻie community, the *Sustainable* Communities Plan allows for limited expansion of residential areas in Kahuku and Lāʻie, in addition to previously designated but undeveloped residential areas within each community.

- *Protect Natural and Scenic Resources.* Significant natural landscape features can be more effectively protected from physical changes by more clearly limiting the potential area for new community development through the Rural Community Boundary. These natural scenic landscape elements include the mountain ridges, valleys, open areas, and coastal resources.

The Rural Community Boundary generally circumscribes the built sections of Ka'a'awa, Kahana, Punalu'u, Hau'ula, Lā'ie and Kahuku. It also includes pockets of agricultural lands and parks, which should be preserved and maintained as such unless otherwise designated, to retain the open space character within the Rural Community Boundary.

2.1.2 AGRICULTURAL BOUNDARY

The Agricultural Boundary is established to protect important agricultural lands for their economic and open space values, and for their value in helping to give the region its identifiable rural character. Important agricultural lands include lands currently in agricultural use and lands with high value for future agricultural use. They include agriculturally important lands designated "prime," "unique," or "other" on the Agricultural Lands of Importance to the State of Hawaii (ALISH) maps.

The primary use of all lands within the Agricultural Boundary must be agriculture or directly supportive of the agriculture industry. Exceptions include "institutional" uses, which must be developed and operated to maintain compatibility with agricultural uses.

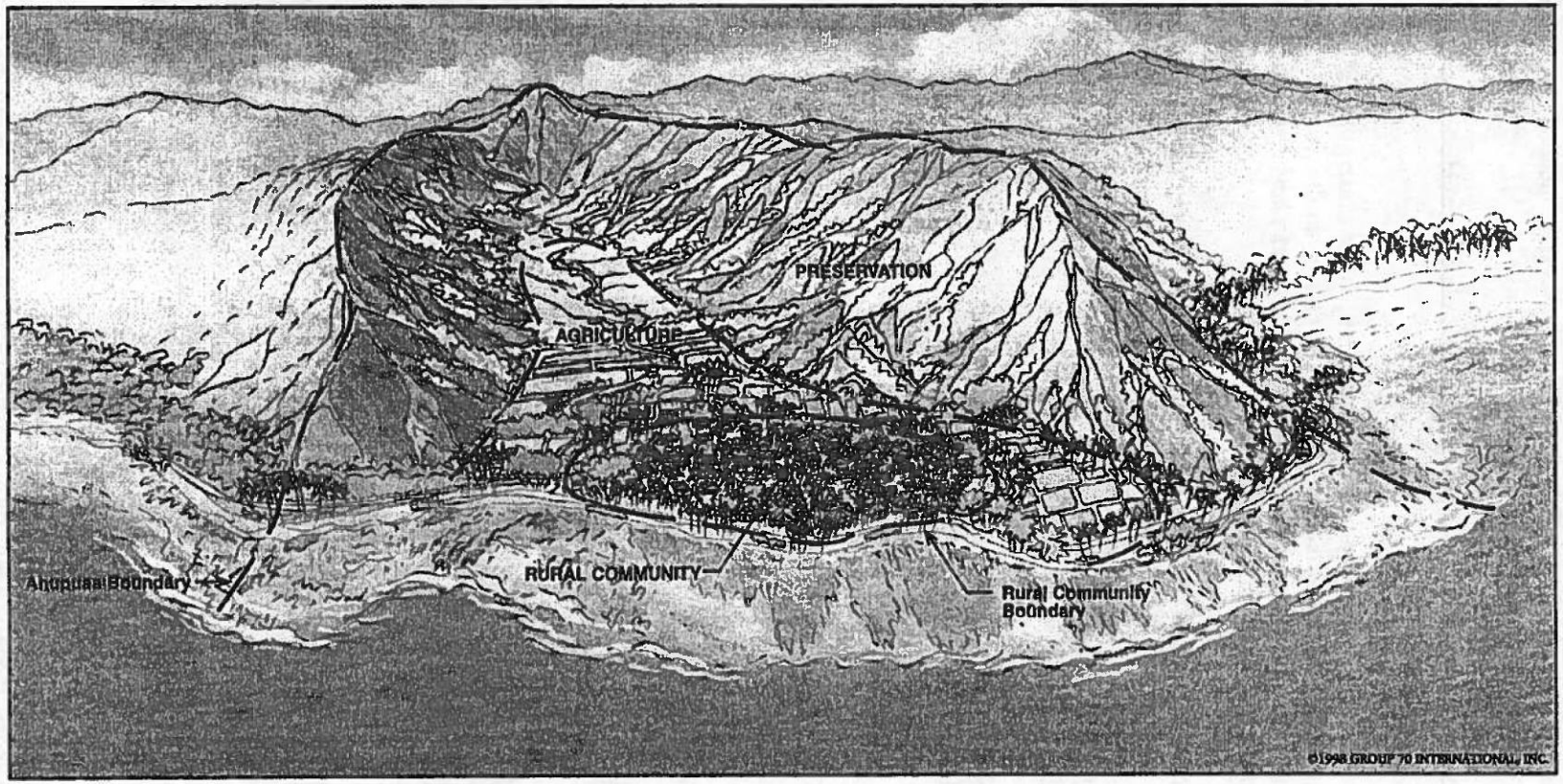
2.1.3 PRESERVATION BOUNDARY

The Preservation Boundary is established to protect undeveloped lands that are not valued primarily for agriculture but which form an important part of the region's open space fabric. Such lands include important wildlife habitat, archeological or historic sites, significant landforms or landscapes over which significant views are available, development-related hazard areas.

The Preservation Boundary generally circumscribes undeveloped lands that:

- Are necessary for protection of watersheds, water resources and water supplies;
- Are necessary for the conservation, preservation and enhancement of sites with scenic, historic, archeological or ecological significance;
- Are necessary for providing and preserving park lands, wilderness and beach reserves, and for conserving natural ecosystems of endemic plants, fish and wildlife, for forestry, and other activities related to these uses;
- Are located at an elevation below the maximum inland line of the zone of wave action, and marine waters, fishponds, and tidepools unless otherwise designated;
- Comprise offshore and outlying islands unless otherwise classified;

Figure 2-1
Ahupua'a Concept



- Are generally characterized by topography, soils, climate or other related environmental factors that may not be normally adaptable or presently needed for urban community, rural community, or agricultural use;

- Have general slopes of 20 percent or more which provide for open space amenities and/or scenic values;

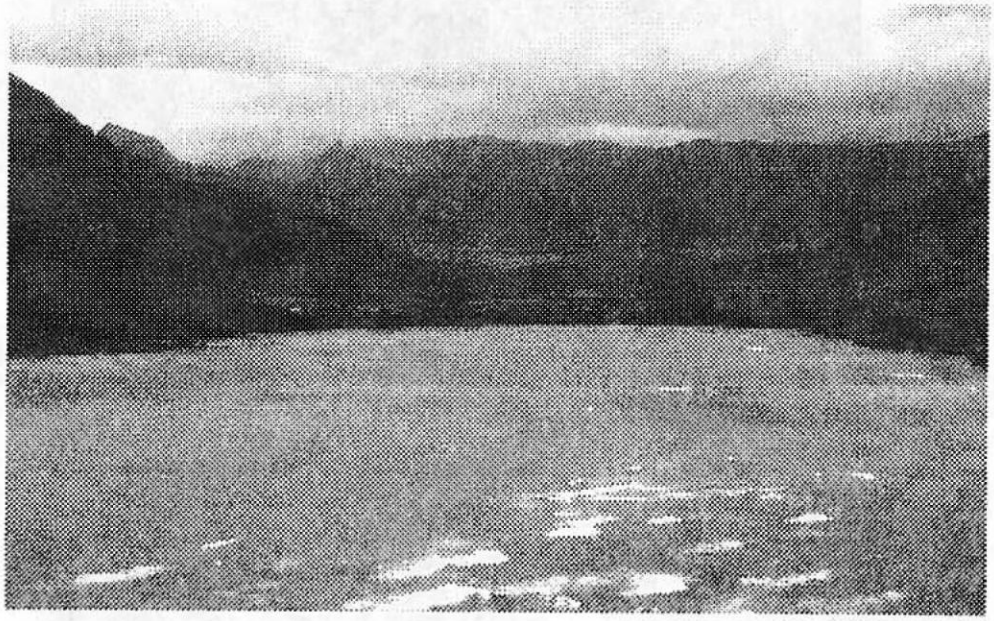
- Are susceptible to floods and soil erosion, lands undergoing major erosion damage and requiring corrective attention, and lands necessary to the protection of the health, safety and welfare of the public by reason of soil instability or the lands' susceptibility to landslides and/or inundation by tsunami and flooding;

- Are used for state or city parks outside the Rural Community Boundary; or

- Are suitable for growing of commercial timber, grazing, hunting, and recreation uses, including facilities accessory to such uses when such facilities are compatible with the natural and physical environment.

The Preservation Boundary excludes such features, sites or areas located within the Rural Community or Agricultural Boundaries.

2.2 PRESERVE AND ENHANCE THE NATURAL, RECREATIONAL AND CULTURAL RESOURCES WHICH CONTRIBUTE TO KO'OLAU LOA'S SENSE OF "OLD HAWAI'I"



Kahana Bay

Protection of this region's resources and rural character has island-wide importance because of its unique quality and beauty to both residents and visitors. Natural resources will be conserved through retaining natural drainageways and protecting valuable plant and wildlife habitats. Open space will be preserved in recreation

and preservation areas, parks, and agricultural areas. The *Sustainable* Communities Plan calls for the protection of this region's many significant scenic mauka and makai views of mountain ridges, valleys, slopes and coastline.

Of Ko'olau Loa's many natural resources, the following wetlands are listed by the U.S. Fish and Wildlife Service (USFWS) O'ahu Team as significant (as of September 10, 1998) because of the occurrence and abundance of native waterbirds, including the endangered Hawaiian stilt (*ae'o*), Hawaiian coot (*'alae ke'oke'o*), Hawaiian duck (*koloa maoli*), Hawaiian moorhen (*'alae 'ula*), and migratory waterfowl and shorebird. The USFWS-listed wetland areas include:

- Turtle Bay Golf Course Ponds
- Kuilima Mitigation Pond
- Kuilima Sewage Treatment Pond
- Punaho'olapa Marsh
- James Campbell Natural Wildlife Refuge, Ki'i Unit and Punamanō Unit 5
- Kahuku Aquafarms (former AmOrient)
- Airstrips Ponds
- Kahuku Prawn Farm
- Lā'ie Aquaculture Farm/Po'ohaili Wetlands
- Hau'ula
- Punalu'u Prawn Farm
- Kahana State Park/Huilua Pond
- Ka'a'awa Wetlands

Other natural resources include streams and gulches which contain important biological, scenic, cultural and recreational values that should be preserved and protected from development or incompatible activities. Perennial streams and stream corridors are designated as Preservation on the Open Space, Land Use, and Public Facilities Maps in Appendix A. In addition, the following streams and gulches in Ko'olau Loa were identified in the State Commission on Water Resource Management, Hawaii Stream Assessment (December 1990) as having outstanding aquatic resources:

- Koloa Gulch
- Kaluanui Stream
- Punulu'u Stream
- Kahana Stream
- Ka'a'awa Stream
- Makaua Stream

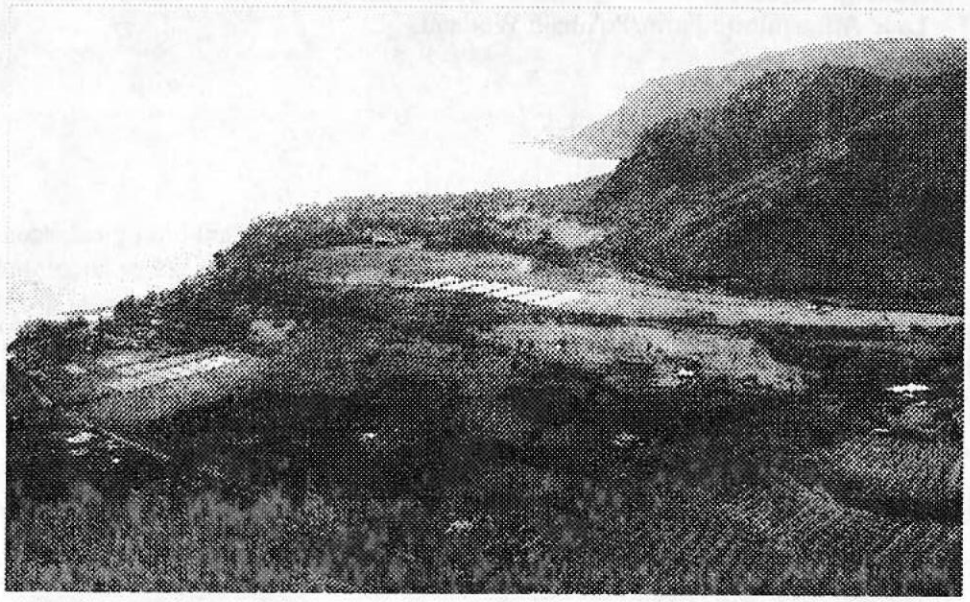
It should be noted that the above lists of wetlands and streams are based on available information. Those not listed above are just as worthy of protection as they may contain other resources or may have resources as good as those listed above but were not classified as such because of incomplete of inadequate information. In general, any activities in the vicinity of streams and wetlands need to ensure that their biological, scenic, cultural or recreational values are not impaired.

A *konohiki* approach to management of natural resources should be re-established and maintained in order to properly sustain and protect them. In summary, *konohiki* practices focused on *sustainable* usage and systematic management of natural resources, respecting ecosystem relationships and using the *ahupua'a* as a contextual or management unit. This approach should be used in the management, monitoring, and regulating of uses to avoid resource misuse or mismanagement.

The Ko'olau Loa region also contains several different types of historic and cultural resources. For example, the plantation era is an important period that made a substantial contribution to the development of this region. Reminders of that period, such as the Kahuku Sugar Mill, are valuable records of the past. Significant historic features from earlier pre-contact periods or significant vistas associated with cultural features should also be preserved wherever possible.

2.3 PRESERVE AGRICULTURAL LANDS

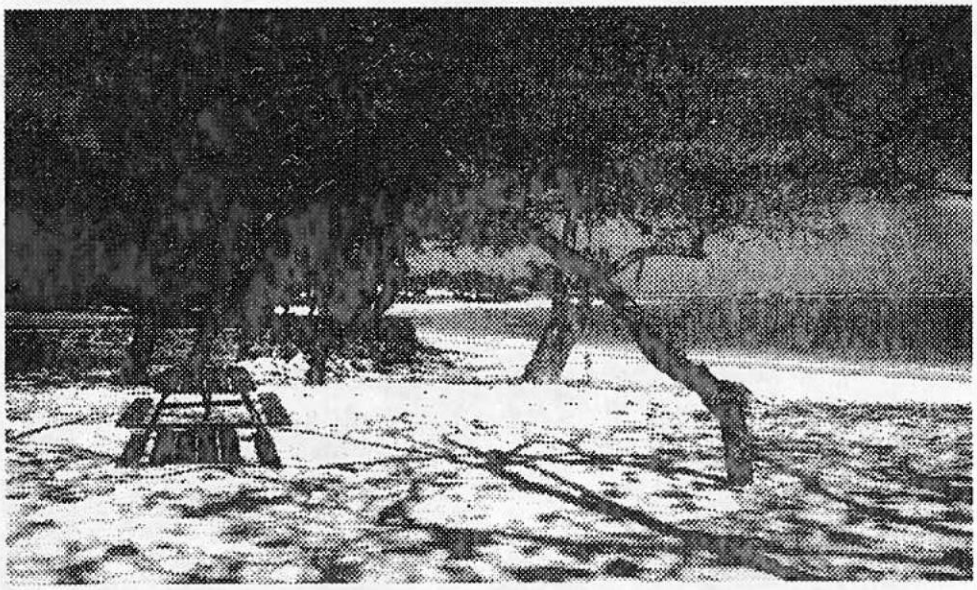
The *Sustainable* Communities Plan calls for the preservation of agricultural lands and encourages diversification of agricultural-related enterprises in order to maintain the viability of agriculture throughout Ko'olau Loa. Over 25 percent–or more than 9,000 acres–of the Ko'olau Loa region is designated for Agricultural use on the *Sustainable* Communities Plan. Successful agricultural operations including truck crops, vegetables, taro, and flowers and landscaping plants are currently being pursued on former sugarcane lands and in the mauka valleys throughout the region. In addition, aquaculture uses have been developed in outlying areas near Kahuku and in rural areas and mauka valleys within Mālaekahana, Punalu'u and Ka'a'awa.



Punalu'u Agriculture

Agricultural lands are protected from development through the establishment of the Rural Community and Agriculture Boundaries. By supporting the active use of these lands for agricultural purposes, the opportunity to retain and protect diversified agriculture and aquaculture activities on small and large farms is enhanced.

2.4 ENHANCE EXISTING RECREATIONAL AREAS AND RESOURCES

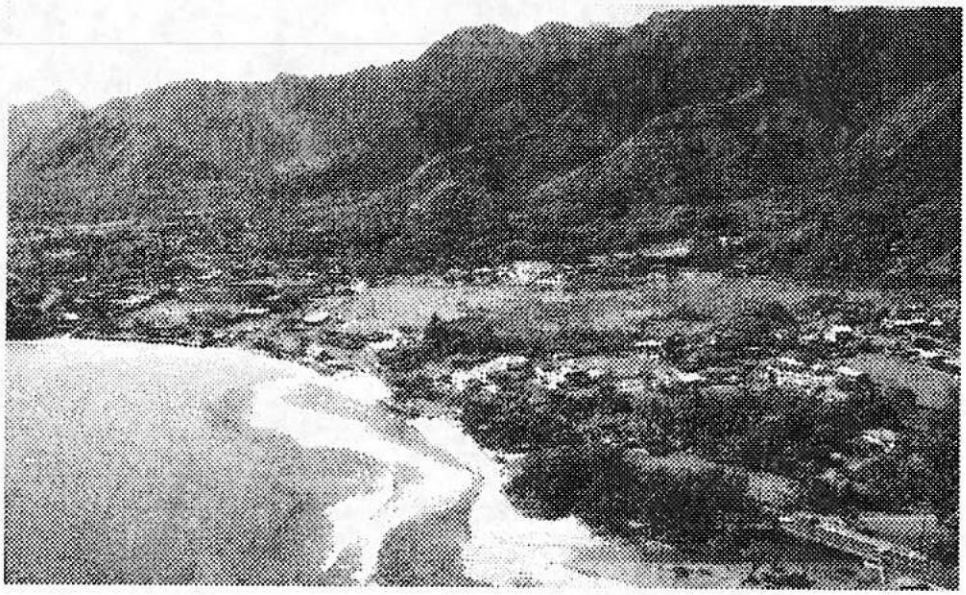


Beach Park Picnic Area

The Ko'olau Loa *Sustainable* Communities Plan Area contains significant areas and resources which offer a variety of outdoor recreational opportunities, as well as cultural experiences such as at Kahana Valley. The region contains numerous beach parks along its coastline and State parks such as Kaliuwa'a (Sacred Falls), Mālaekahana and Kahana Valley. These resource areas should be recognized as important open space and recreation assets of the Ko'olau Loa region.

The existing parks and recreation areas should be maintained and enhanced to utilize the region's abundance of natural and scenic resources for the enjoyment of residents and visitors. At the same time, the value of these resources should be protected from overuse. Existing beach access should be maintained and new shoreline access properties should be acquired along narrow stretches of ocean-front land as opportunities arise. An open space system of landscaped pathways will link communities together along major roadways, streams, wetlands and other drainageways.

2.5 ESTABLISH RURAL AREA DEVELOPMENT STANDARDS TO MAINTAIN THE RURAL CHARACTER OF RESIDENTIAL AREAS



Hau'ula's Rural Setting

Appropriate rural residential development standards should be established in order to retain the rural character unique to the Ko'olau Loa region. New regulations should be adopted and residential subdivisions should be characterized by larger house lots, ample landscaping, and narrower paved streets without the requirement for sidewalks, curbs and gutters.

The need for additional housing related to long-term growth in Ko'olau Loa will be met primarily by the "infill" development of existing vacant lands within each of the region's rural communities. In addition, the *Sustainable* Communities Plan allows for limited expansion of residential areas in Kahuku and Lā'ie, to accommodate long-term housing needs related to projected employment growth at Kuilima Resort and to an expansion of diversified employment opportunities in Lā'ie.

The physical changes brought about by infill home construction or expansion in existing, built-up neighborhoods will be slower and subtler than the development of moderate-sized vacant parcels. In any case, effective residential lot and subdivision development standards should be adopted to limit building height, lot coverage, paving width of streets, and enhance landscaping in order to reflect the rural character of Ko'olau Loa.

2.6 ENHANCE THE CHARACTER OF THE REGION'S COMMERCIAL AREAS AND RECOGNIZE THE CONTRIBUTION OF COUNTRY STORES TO KO'OLAU LOA'S RURAL FABRIC

The character of the region's commercial areas, as well as its stand-alone "Country Stores," should be enhanced through design guidelines that are appropriate to the scale and theme of the region and communities they serve. (See Section 3.6 for a description of types of commercial areas.) Rural architectural style guidelines should be drafted for the Kahuku Sugar Mill, and Lā'ie and Hau'ula shopping centers, with building and landscape treatment recommendations unique to the character and needs of each of these commercial areas.

Design guidelines should also be established to provide information regarding the appropriate rehabilitation or renovation of existing commercial centers and country-store operations. "Country Store"-type establishments are an important part of Ko'olau Loa's character and should be allowed to renovate or reconstruct accordingly. These small businesses provide convenient locations for residents to eat out, get groceries or gather to socialize; and for visitors to shop in locally run stores and purchase a variety of handcrafted items. In general, these businesses should be limited to their existing locations and not expanded along Kamehameha Highway in order to maintain the rural character of the region's "front door" and avoid the creation of a commercial strip along the coastline.

3. LAND USE POLICIES, PRINCIPLES, AND GUIDELINES

The key element in implementing the vision for Ko'olau Loa's future, as described in Section 2.0, will be the application of the ahupua'a concept to land use planning and development decisions. This concept defines the essence of Ko'olau Loa's rural character and provides the foundation for the organization of land uses within the region. The land use general policies, and the planning principles and guidelines presented below provide greater detail as to how the ahupua'a concept should be applied to achieve this vision.

3.1 OPEN SPACE PRESERVATION

Open space preservation is a key element of the vision for Ko'olau Loa's future. Long-term protection and preservation of scenic resources, agricultural areas, natural areas, and recreational areas are important to maintaining the rural character of Ko'olau Loa for both residents and visitors.

3.1.1 GENERAL POLICIES

Open space will be used to:

- Maintain the region's rural character, protect scenic views and provide recreational resources.
- Define and maintain clear boundaries and separations between existing communities.

3.1.2 PLANNING PRINCIPLES

The general policies listed above provide the basis for the following planning principles:

- *Enhance the Visual and Physical Definition of Rural Communities.* Ko'olau Loa's rural residential communities are generally visually defined and separated physically due in large

part to the topography of the region. These open space "gaps" as well as the large expanses of open space mauka of the Rural Community Boundary, need to be maintained so they will continue to provide the basic definition of the region's rural development pattern.

- *Provide Passive and Active Open Spaces.* The open space system consists of areas in both active and passive uses. Active areas include community-based and State parks, golf courses and agricultural fields. Passive areas include the State Conservation District, fallow land in the State Agricultural District, drainage and utility corridors, nature preserves, and other fallow lands left undeveloped due to physical or hazard constraints. Beach parks and shoreline areas may be either active or passive, depending on the extent to which the landscape has been modified by grading and construction of facilities and the intensity of public use.

- *Promote Accessibility of Recreational Open Space.* Public parks and most golf courses will be accessible for recreational use, but the open space system should also promote the accessibility of shoreline and mountain areas (as required by City Ordinance and State law). Access to mountain trails and shoreline areas should be readily available. Where required, this includes the provision of parking areas that are conducive to the environment.

- *Dual Use of Roadway and Drainageway Corridors.* Roadways should be attractively landscaped to serve as linear open space features and create an inviting environment for walking, jogging and biking. Where physical modification of natural drainageways is necessary to provide adequate flood protection, modifications should attempt to the extent possible to: maintain existing habitat capacity, maintain existing rural character and aesthetic quality, and avoid increase in rate and volume of freshwater run-off into near-shore waters.

3.1.3 GUIDELINES

The following provides a brief description of regional open space resources in Ko'olau Loa. They are followed by guidelines for carrying out the general policies and planning principles related to each open space element.

3.1.3.1 Mountain Areas and Trails

Major trails, which are inventoried by the State Department of Land and Natural Resources (DLNR), provide access to the mountainous areas of Ko'olau Loa. Within the region, the State's Na Ala Hele Program actively manages the Hau'ula Loop, Mākua Gulch, and Ma'akua Ridge trails. These trails all begin along the mauka edge of Hau'ula, extend for 2.5 to 3.0 miles each, and provide valuable and often unique backcountry experiences.

Other trails in the region which are under private ownership could add other, equally valuable wilderness experiences if issues of public access, use, and safety could be satisfactorily addressed. These trails include but are not limited to the Ko'olau Ridge Trail, which offers simultaneous views of Central O'ahu and the Windward coastlines and valleys, and the Castle Trail, which begins in Punalu'u. Access to mauka resources to maintain traditional gathering rights should be provided, in accordance with State Law.

Guidelines pertaining to mountain areas are as follows:

- Maintain, protect, and/or restore native forests in the State Conservation District.

- Identify and protect endangered species habitats and other important ecologically sensitive areas from such threats as fire, alien species, feral animals and human activity.

- Avoid disturbances caused by utility corridors and other uses on areas with high concentrations of native species.
- Maintain and enhance mauka trail systems, including parking areas and signage at trailheads.
- Support State efforts to seek opportunities for cooperative agreements with private landowners to gain access to trails leading to public lands.

3.1.3.2 Shoreline Areas

The Ko'olau Loa shoreline extends for over 20 miles between Ka'a'awa Valley and Kawela Bay. The shoreline provides residents and visitors with significant active and passive recreational resources, and contributes significantly to the region's rural Hawaiian character and lifestyle. Therefore, mauka-makai and lateral public access to the shoreline should be maintained and improved to the greatest extent possible. In addition to their recreational value, shoreline areas also provide significant scenic value. It is important to retain and, where possible, expand visual access to the shoreline from the coastal highway. It is equally important to maintain the physical integrity of these shoreline areas. The State Department of Land and Natural Resources (DLNR) has developed a Coastal Lands Program to manage growth along the state's shoreline, to balance conservation and development, and to oversee the implementation of technical recommendations and policies embodied in the Coastal Erosion Management Plan (COEMAP) to ensure sustainable coastal development.

Guidelines pertaining to shoreline areas are:

- Maintain and, where possible, enhance the physical integrity and habitat value of shoreline areas.
- Preserve rare coastal resources including coastal strand vegetation, sand dunes, and anchialine pools. Establish buffer zones around these resources where necessary.
- Maintain existing makai view openings along the coastal highway. Avoid obstructions, such as walls and heavy landscaping which block views, except where necessary for safety reasons. Maintain public beach parks to avoid unnecessary landscape screening or the placement of park structures within the view corridor. Recommendations of the Coastal View Study (1987) should be incorporated.
- To the extent possible, acquire shallow developed beach-front lots which would be impractical to redevelop given existing zoning standards or wave hazard considerations in order to improve public access and lateral shoreline views along Kamehameha Highway.
- Require additional minimum setbacks for structures near the shoreline and implement other management strategies to protect unstable sandy beach areas that impact Kamehameha Highway along the Ka'a'awa, Punalu'u and Hau'ula shorelines.
- Maintain the untamed landscape quality of the Kahuku shoreline.
- Protect nearshore coral reefs from damaging activities such as soil erosion, non-point source pollution, dredging, and alterations to near-shore water circulation.

3.1.3.3 Wildlife Sanctuaries

Ko'olau Loa contains the following wildlife sanctuaries and preserves (**Figure 3-1**):

- *State Seabird Sanctuaries*. There are five islands designated as State Seabird Sanctuaries which are located off the coast of Lā'ie and Mālaekahana: Moku'auia, Kīhewamoku, Pulemoku, Kukuiho'olua, and Mokuālai. These off-shore islands are managed by the State Department of Land and Natural Resources, Division of Forestry and Wildlife, and provide habitats for the wedgetail shearwater as well as other migratory waterbirds.

- *National Wildlife Refuge*. The United States Fish and Wildlife Service manages over 160 acres at the Punamanō and Ki'i pond units which together constitute the James Campbell National Wildlife Refuge. These refuges provide wetland habitat for four endangered native Hawaiian waterbirds (ae'o, 'alae ke'ok'eo, kōloa maoli, 'alae'ula).

Guidelines relating to wildlife sanctuaries in Ko'olau Loa are as follows:

- Respect and establish an appropriate balance between natural habitats and human uses in the management of wildlife sanctuaries. Appropriate buffers between uses should be established wherever necessary. In general, there should be no reduction in preservation zoning in the vicinity of Kahuku's Punaho'olapa Marsh, Punamanō and Ki'i Pond National Wildlife Refuges.

- Encourage landowners to establish additional sanctuaries in other areas within the region that provide habitats for endangered wildlife, flora and fauna.

3.1.3.4 Natural Gulches, Streams and Drainageways

The ridges and valleys of the Ko'olau Loa mountain range form natural streams and drainageways throughout the region. Significant perennial streams which are identified in the streams, and drainageways include State Commission on Water Resource Management, *Hawaii Stream Assessment*, (December 1990) and other drainageways as identified by the Department of Design and Construction or Department of Planning and Permitting. Significant wetlands include those identified by the Army Corps of Engineers.

These stream channels are the primary means for carrying water from the inland areas to the ocean and are generally capable of handling normal rainfall runoff. However, during periods of intense rainfall, some of these drainageways overflow and create flooding problems. Section 4.6, "Drainage Systems" summarizes these conditions. In these cases, improvements which effectively address and correct the causes of these flood conditions are needed.

Guidelines pertaining to natural gulches, streams and drainageways in Ko'olau Loa are:

- Preserve the aesthetic and biological values of natural gulches, streams and drainageways as part of the open space system. Protect ecologically sensitive areas and ecosystems which should be maintained and enhanced as open space elements. Any activities in the vicinity of these areas need to ensure that the open space system will not be significantly impacted or that biological values will not be significantly degraded.

- Minimize soil erosion, runoff of pesticides, fertilizers and other non-point source contaminants into streams, wetlands and marine habitats with strategies such as stream setbacks, erosion control devices, integrated pest management plans, and revegetation of disturbed areas. Incorporate erosion control measures and best management practices, as cited in Office of State Planning, *Hawai'i Coastal Zone Management Program, Hawai'i's Coastal Non-point Pollution Control Program Management Plan*, Volume I (June 1996), to prevent pollution of

wetlands, streams, estuaries, and nearshore waters.

- Where feasible, establish setbacks along rivers, streams, and shoreline areas to preserve these resources and protective buffer zones around biologically sensitive areas to minimize habitat disturbance. Where possible, provide access as part of the open space network.

- Uses in these areas should be limited to conservation uses, compatible recreational uses such as walking and bicycling, protection of traditional and customary Hawaiian rights, and controlled diversion for agricultural purposes. Avoid development in ecologically sensitive areas; if activities are allowed, minimize impacts and implement mitigative measures that will fully offset any loss of resources.

- Protect and maintain stream habitat values along the entire stream length, from the headwaters to the ocean, to avoid degradation or interruption of habitat for native organisms.

- To the extent possible, limit any modifications to natural gulches and streams, except for measures which are necessary for flood protection. If modifications are needed, take all possible steps to preserve water quality and protect aesthetic and biological resources. These could include stream-side vegetation and rip-rap boulder lining of stream banks; channelization should be a last resort and should be limited to v-shaped bottom channels to maintain a stream flow during low rainfall periods and/or other measures that maintain environmental habitat qualities and capabilities.

- Enhance, restore and preserve streams while providing public access.

- Develop an implementation schedule with input from community and public agencies to establish permanent instream flow standards. The setting of instream flow standards should weigh the benefits of instream and non-instream uses of water resources, including the economic impact of restrictions of such uses.

3.1.3.5 Community-Based Parks

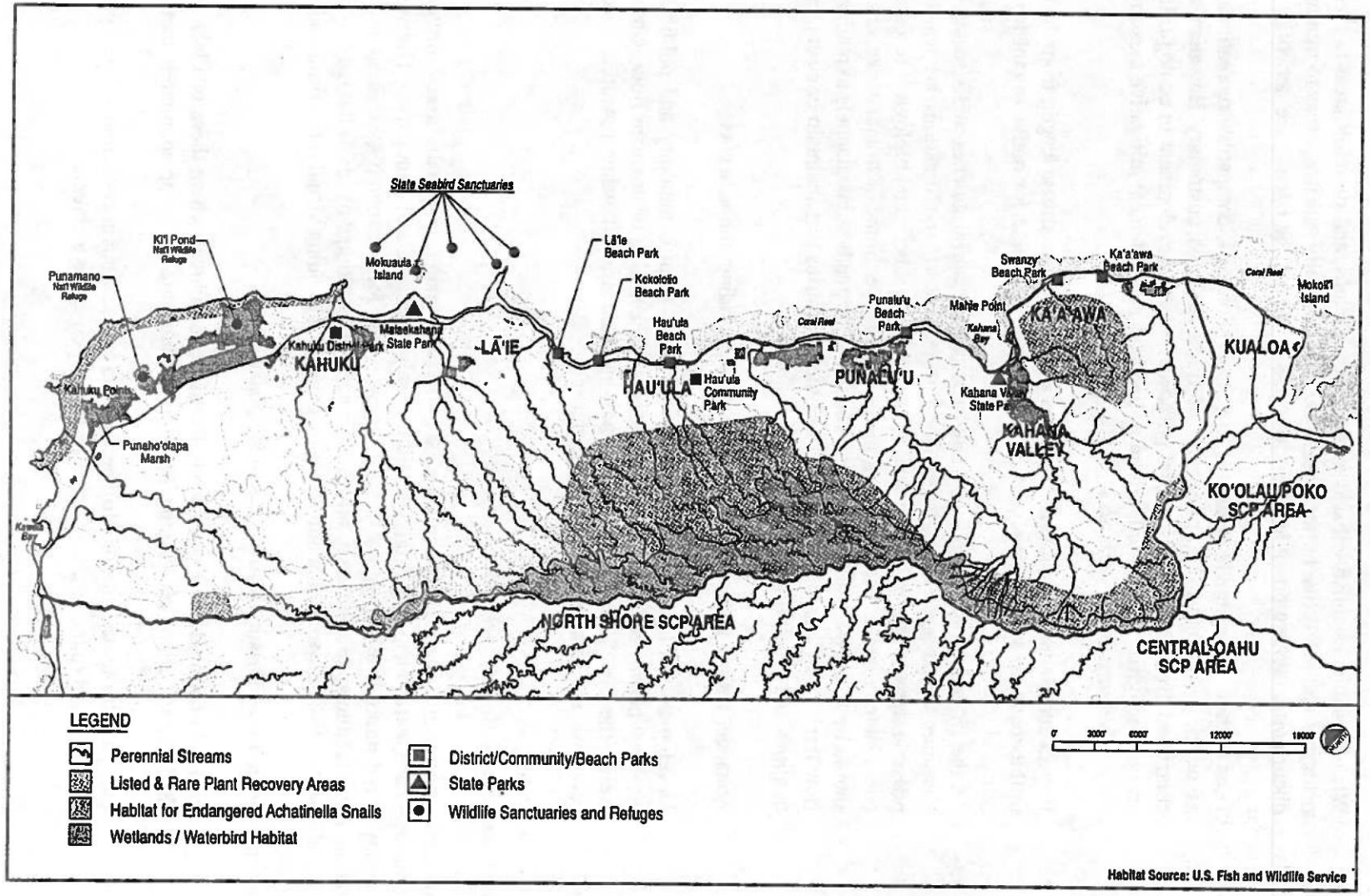
There are approximately 29 acres of community-based parks in Ko'olau Loa. As discussed further in Section 3.3, community-based parks include district, community, neighborhood, and mini parks. The main purpose of community-based parks is to provide active recreation space for the region's residents in the form of playfields and other facilities. In addition to meeting the active recreational needs of the region, community-based parks also serve as open spaces that add aesthetic value by providing visual relief from and contrasts to urban land uses.

Guidelines pertaining to community-based parks in Ko'olau Loa are:

- Expand or provide new community-based parks in areas where there is a lack of sufficient facilities and where recreational needs of residents are not being adequately met.

- Design and site structural improvements and landscaping in community-based parks so as to create or add to the aesthetic value of these open space elements.

Figure 3-1
Natural and Recreation Areas



3.1.3.6 Golf Courses

There are three golf courses in Ko'olau Loa: The Links at Kuilima, an 18-hole course; the nine-hole Turtle Bay Country Club course; and the City and County's nine-hole course at Kahuku. All three golf courses are open to public play. These golf courses are important elements of Ko'olau Loa's open space system because they provide areas for active recreation while preserving the visual quality of the northern end of the region. In addition to their open space value, the location, design, and grading of golf courses, and siting of water features can contribute in a significant way to a passive stormwater drainage management system. Wildlife habitats are enhanced or created as a by-product of retention/detention capabilities that this integrated system provides.

Guidelines pertaining to golf courses in Ko'olau Loa are:

- Optimize and maintain the function of golf courses as passive drainageways to maximize their potential to serve as drainage retention areas, as well as wildlife habitats.
- Maintain golf course designs to provide view amenities for adjacent urban areas, including public rights-of-way, parks and vista points.
- Provide safe access through golf courses, as necessary, for regional continuity of shoreline access.
- When necessary for safety reasons, use screening, landscape treatment, setbacks and modifications to the course layout rather than fencing or solid barriers.
- Golf courses must be designed to minimize environmental impacts such as siltation, pesticide and fertilizer runoff, and destruction of coastal, riparian and wetland habitat. New golf courses should conform to Office of State Planning, *Golf Course Development in Hawaii – Impacts and Policy Recommendations* (1992).

3.1.3.7 Kahuku Military Training Area

The United States Army utilizes approximately 9,363 acres of *mauka* lands above the Kuilima Resort and Kahuku Town for military training purposes, of which they own 8,214 acres, purchased recently from the Estate of James Campbell. This large area of *mauka* lands is an important open space and visual resource along Ko'olau Loa's northern boundary. Approximately one-half of the training area is located within the State Conservation District. These undeveloped lands which border the agricultural areas of the lower plains should as much as possible be maintained in their natural state.

Guidelines pertaining to the Kahuku Military Training Area are:

- The U.S. Army should manage its training area lands to minimize potential adverse drainage impacts to the lowland areas in Kahuku Town. Storm water runoff from the Kahuku Training Area should not be increased from existing conditions, and long-term measures should be considered to reduce runoff flowing toward Kahuku Town.
- Prohibit live-fire training in the area. This is consistent with the Army's stated position that the Kahuku Training Area will be used for tactical maneuver training with no live-fire.
- Conduct training exercises in a manner that will not significantly disturb the natural

vegetation; alter the landform that contributes to runoff; and affect the flow of natural streams and drainageways. For example, the Army's current policy of restricting or prohibiting blanks and pyrotechnic use during the dry seasons to minimize any fire hazard should be maintained as long as this area is used for training purposes.

3.1.4 RELATION TO OPEN SPACE MAP

The following components of the regional open space system are shown on the Open Space Map in Appendix A:

- *Mountain Areas*. These areas are to remain outside of the designated Rural Community Boundary.
- *Natural Gulches and Drainageways*. Gulches in the steeper sloped areas both within and beyond the Rural Community Boundary are indicated for preservation.
- *Shoreline Areas*. Shoreline areas with high scenic or wildlife value, generally along the Kahuku coastline between Mālaekahana and Kahuku Point, are designated for preservation.
- *Parks*. Areas designated as parks are labeled with the park's name and, where space allows on the maps in Appendix A, the general location and land area of the park is outlined and colored.
- *Golf Courses*. The three golf courses in Ko'olau Loa are shown because of their recreational value and visual contribution to the landscape.
- *Kahuku Training Area*. Although depicted as a military training area on the map, these lands are an important open space resource that should to the greatest extent possible be maintained in their natural wild state.

3.2 AGRICULTURAL AREAS

A key component of Ko'olau Loa's rural character and open space is the agricultural lands found throughout the region. Whether actively cultivated in diversified crops or aquaculture, or used for more passive ranching activities, agricultural lands serve as important natural separators between the concentrations of small rural communities.

The *Sustainable* Communities Plan protects agricultural lands from urban development through the establishment of the Rural Community and Agricultural Boundaries. By supporting the active use of these lands for agricultural purposes, the opportunity to retain and protect diversified agriculture and aquaculture activities on small and large farms is enhanced.

The *Sustainable* Communities Plan calls for the preservation of agricultural lands and encourages diversification of agriculture-related enterprises to maintain the viability of agriculture throughout Ko'olau Loa. Over 25 percent–or more than 9,000 acres–of the Ko'olau Loa region is designated for Agricultural use on the *Sustainable* Communities Plan. Agricultural operations including truck crops, vegetables, taro, indigenous Hawaiian plants, shrubs, trees, and flowers and landscaping plants are currently being pursued on former sugarcane lands and in the *mauka* valleys throughout the region. Aquaculture uses have also been developed in outlying areas near Kahuku and in rural areas and *mauka* valleys within Mālaekahana, Punalu'u and Ka'a'awa. These agricultural activities contribute significantly to the diversified economic base for the Ko'olau Loa region and provide local employment opportunities for area residents.

In addition to the above activities, a vocational training facility has been proposed for relocation on lands *mauka* of Kamehameha Highway, opposite the Turtle Bay Golf Course. The relocated facility should be evaluated in the context of whether it has any adverse impact to the environment, agricultural uses and the rural character of the region.

3.2.1 GENERAL POLICIES

The following general policies relate to the agricultural areas designated in the Ko'olau Loa *Sustainable* Communities Plan:

- Preserve the availability and crop production potential of lands designated as Agriculture in the Ko'olau Loa Sustainable Communities Plan.
- Protect agricultural lands from conversion to uses that are primarily residential, industrial, or commercial in purpose.
- Encourage the diversification of agriculture-related enterprises for the continued production of truck-crops, vegetables, flowers and landscaping plants, aquaculture and ranching activities.
- Allow residential use in agricultural areas only as secondary to agricultural activity. In all such cases, the site's primary use should be agricultural and either the owner/occupant or lessee(s) should be actively engaged in crop or livestock production for the duration of their tenure.
- Allow facilities necessary to support intensive cultivation of arable agricultural lands to be located in agricultural areas.
- Allow for appropriate non-agricultural uses that are compatible with open space and resource character, such as recreational or educational programs, or other uses consistent with the character of a rural agricultural area which provide supplemental income necessary to sustain the primary agricultural activity. There should be a direct connection between those activities and the maintenance of agricultural uses on the same or nearby properties.
- Recognize the function of agricultural areas as an important part of the region's natural drainage system. Cultivation activities or physical improvements in agricultural areas should not adversely modify critical natural drainageways.
- Agricultural uses should be designed to minimize environmental impacts such as soil erosion, siltation, pesticide and fertilizer runoff and avoid destruction to coastal, riparian and wetland habitat.

3.2.2 PLANNING PRINCIPLES

The general policies listed above provide the basis for the following planning principles:

- *Maintain the Long-Term Economic Viability of Agricultural Lands.* To preserve active agricultural uses and provide employment opportunities for Ko'olau Loa residents, reserve lands currently designated as Agriculture on the Ko'olau Loa Sustainable Communities Plan principally for such uses. No actions or uses that would undermine or irreversibly compromise their long-term availability or agricultural production capabilities should be

permitted.

- *Recognize the Contribution of Agricultural Lands to Ko'olau Loa's Rural Character.* Ko'olau Loa's rural character is in large part defined by the region's agricultural areas. Allowable uses should be appropriate to onsite or adjacent resources and open space settings. Any onsite development must be low-key, low-impact and predominately open space in character.

3.2.3 GUIDELINES

Guidelines relating to agricultural areas are:

- Discourage subdivision of Agricultural designated and zoned lands for residential uses, except for farm dwellings that have bona fide agricultural activities on site.
- Cluster agricultural subdivisions that include farm dwellings to avoid the inefficient use of more productive agricultural lands and to reduce infrastructure costs. Locate agricultural subdivisions near similar subdivisions or rural communities.
- Maintain adequate buffers between agricultural lands and new residential development, with consideration given to prevailing winds and the noise or air-borne emissions associated with the type of agricultural operation.
- Design and locate buildings and other facilities that are accessory to an agricultural operation in a way that minimizes the impact on nearby community and residential areas, and the road system.

3.2.4 RELATION TO OPEN SPACE AND LAND USE MAPS

Agricultural areas are depicted in light green on the Open Space and Land Use Maps in Appendix A:

- *Agricultural Areas.* The Open Space and Land Use Maps depict agriculture lands outside the Rural Community Boundary. However, there are also pockets of agricultural lands within the boundary which should be protected and maintained for agricultural purposes, unless otherwise designated.

3.3 PARKS AND RECREATION AREAS

This section begins with an overview of island-based parks, community-based parks, and other recreation areas in Ko'olau Loa, and is followed by general policies, planning principles, and guidelines for development of these resources. The location of the region's major parks and recreational areas is shown on the Open Space Map, Land Use Map, and Public Facilities Map in Appendix A.

3.3.1 OVERVIEW

The City and County of Honolulu Department of Parks and Recreation (DPR) develops and maintains a system of park and recreation facilities that it classifies in a hierarchical manner. The largest and most specialized parks are classified as "Island-Based Parks" since they serve the needs of all O'ahu residents, while "Community-Based Parks" serve more localized populations.

3.3.1.1 Island-Based Parks and Other Recreation Areas

This group includes regional parks, beach/shoreline parks, beach/shoreline rights-of-way, nature parks/reserves, botanical gardens, golf courses, and zoological parks (**Table 3-1**). DPR's standard for island-based parks is eight acres for every 1,000 persons. The location of public parks and recreation areas in Ko'olau Loa was shown previously in **Figure 3-1**.

Table 3-1
Types of DPR Island-Based Parks

Regional Parks	Large areas that may serve the entire island or a region of the island and may include a variety of recreation types and facilities, natural and cultural sites.
Beach/Shoreline Parks	Areas and sites along the shoreline that may include facilities and support services for water activities, sunbathing, picnicking, and other passive activities.
Beach/Shoreline Rights-of-Way	Access lanes to beaches and the shoreline where residential or other uses prevent development of a beach/shoreline park.
Nature Parks/Reserve	Areas maintained primarily to preserve or conserve unique natural features.
Botanical Gardens	Areas developed for the recreational and educational appreciation of specific types of plants and plant communities.

As shown in **Table 3-2**, Ko'olau Loa has eight island-based beach/shoreline parks, that are maintained by the Department of Parks and Recreation. A brief description of these and State parks and golf courses is provided below.

- ***Beach and Shoreline Parks***
  As noted, there are eight beach and shoreline parks scattered along the coastline in Ko'olau Loa. The Department of Parks and Recreation has no current plans for additional beach park development in Ko'olau Loa. The Ko'olau Loa *Sustainable* Communities Plan Area does not have a regional park, nor are there plans to designate one within the district. The closest regional parks are at Kualoa and Hale'iwa.

Table 3-2
Island-Based Parks and Golf Courses in Ko'olau Loa

Park Type/Name	Acreage
Regional Parks	
None	–
Beach/Shoreline Parks	
Hau'ula Beach Park	9.1
Ka'a'awa Beach Park	2.0
Kalaeoio Beach Park	0.8
Kokololio Beach Park	15.5
Lā'ie Beach Park	4.5
Makaua Beach Park	0.2
Punalu'u Beach Park	2.9
Swanzy Beach Park	4.8
Subtotal	39.8
Nature Parks/Reserves	
None	–
Botanical Gardens	
None	–
Golf Courses	
Kahuku Golf Course	68.0
Total	**107.8**

Table 3-3
State Parks in Ko'olau Loa

Park Type/Name	Acreage
Kahana Valley	5,228.7
Mālaekahana	110.0
Sacred Falls	1,375.9
Lā'ie Point	1.4
Total	**6,716.0**

- ***Golf Courses***

  There are three golf courses within Ko'olau Loa, of which two are privately owned courses located adjacent to Kamehameha Highway at Kuilima Resort. The Kahuku municipal golf course, which is under the Department of Enterprise Services' jurisdiction, is a nine-hole course located along the coastal shoreline makai of Kahuku town.

  Golf courses are considered open space and aesthetic resources while also serving a practical purpose by reducing flooding and non-point pollution by helping retain storm waters. However, they are highly land intensive, typically occupying 150 to 200 acres for an 18-hole course. The Sustainable Communities Plan does not envision the development of additional golf courses within the Ko'olau Loa region; but one could be considered in Kahuku if it serves to mitigate the drainage problem that currently exists there.

- ***Other Park Resources***

  The Ko'olau Loa Sustainable Communities Plan Area also contains three significant and unique State Parks: Kahana Valley, Sacred Falls and Mālaekahana. These State Parks offer a variety of camping, hiking and recreational opportunities, as well as cultural experiences such as at Kahana Valley, for residents and visitors alike. Managed by the State Department of Land and Natural Resources (DLNR), these parks are recognized as important open space and recreational assets in the Ko'olau Loa Sustainable Communities Plan (See Table 3-3). A master plan for Kahana Valley was developed in 1974 and policies for its implementation are currently in place. The DLNR has recently completed a study on restoration of Huilua Fishpond in Kahana Valley.

3.3.1.2 Community-Based Parks

Community-based parks serve more localized populations. This group includes district, community and neighborhood parks, as well as other smaller park areas (**Table 3-4**).

Table 3-4
Types of DPR Community-Based Parks

Park Type	Average Size (Acres)	Population Service Size	Typical Facilities
District	20	25,000	Playfields, playcourts, passive areas, gym/recreation complex, swimming pool
Community	10	10,000	Playfields, playcourts, passive areas, recreation building
Neighborhood	6	5,000	Playfields, playcourts, passive areas, comfort station
Mini Park	Varies	High Density Area	Benches, picnic tables, children's play area

Ko'olau Loa contains only two community-based park areas totaling approximately 26 acres. These are the 16-acre Kahuku District Park and the 10-acre Hau'ula Community Park located adjacent to the elementary school (**Table 3-5**).

In evaluating community-based recreational park needs, the DPR uses a standard of two acres per every 1,000 person, although the figure can vary according to each community's or region's situation. Based on this

population standard and Ko'olau Loa's 1990 population of 14,340, the community-based parks in the region meet the standard. However, there are five distinct communities in Ko'olau Loa which are widely spaced along the region's linear coastline. An overall park standard based on total population does not adequately address concerns related to separation and distance that should be taken into consideration when assessing the adequacy of existing community-based parks. It is more appropriate to look separately at the needs of each individual community in rural areas like Ko'olau Loa.

Table 3-5
DPR Community-Based Parks in Ko'olau Loa

Park Type/Name	Acreage
District Parks	
Kahuku District Park	15.9
Community Parks	
Hau'ula Community Park	10.4
Neighborhood Parks	
None	–
Mini Parks	
None	–
Total Park Area	**26.3**

3.3.2. GENERAL POLICIES

The following general policies relate to island-based parks, community-based parks and other recreational resources in Ko'olau Loa:

3.3.2.1 Island-Based Parks and Other Recreation Areas

- Maintain and enhance, to the extent possible, existing island-based parks by utilizing land area that has not been fully developed for recreational use and improving the condition of existing facilities. These island-based parks are a critical component of the region's abundance of natural and scenic resources and contribute to the attractiveness and accessibility of Ko'olau Loa's coastline and mauka areas for both residents and visitors.

- Establish a wilderness coastline park/reserve from Kuilima Resort to Kahuku Town. Wetland preserve areas should be integrated with the park resources. Any activities or uses proposed for these areas should be carefully reviewed as to their potential impacts on the integrity and viability of this wetland complex.

- Consider an expansion of the existing Kahuku public golf course if it serves to mitigate the drainage problem that currently exists there.

- Develop an integrated system of bikeways to link parks and recreation areas. Consider use of the O R & L tracks where feasible.

3.3.2.2 Community-Based Parks

- Support the development of a community park with a community center facility in Lā'ie.
- Expand the Hau'ula Community Park by acquiring adjacent parcels, when feasible, to include a multi-purpose recreation facility.
- Provide neighborhood parks in Ka'a'awa, Punalu'u, and Kahuku (Adams Field) to serve the residential population of these small communities.
- Support the development of a gymnasium and pool complex at Kahuku District Park to service the Ko'olau Loa communities.
- Larger new residential developments will generate larger community-based "neighborhood" recreational needs and may, because of their size, also have the capability of supplying neighborhood park space to satisfy these needs within the development, where it would be most rational, safe, and needed.

3.3.3. PLANNING PRINCIPLES

The general policies for parks and recreation complexes are supported by the following planning principles:

- *Appropriate Siting and Screening*. Carefully site active playfields and supporting facilities for intensive use, and use generous landscaping and screening to reduce the potential impacts on surrounding areas.
- *Environmental Compatibility*. Construct park facilities in a manner that avoids adverse impacts on natural resources or processes in the coastal zone or any other environmentally sensitive area. In the design of recreation areas, incorporate natural features of the site and use landscape materials that are indigenous to the area where feasible to retain a sense of place.
- *Community Integration*. Link recreational attractions in these parks with the surrounding area through the use of connecting roadways, bikeways, walkways, and landscape features or architectural design. Support establishment of community gardens in unused park areas to expand gardening opportunities for area residents.

3.3.4 GUIDELINES

The following guidelines provide more specific direction for implementing the general policies and planning principles for the parks and recreation areas discussed above.

3.3.4.1 Beach or Passive Parks

- Preserve and enhance coastal-oriented beach and passive park resources by maintaining existing facilities and making site improvements as required.

3.3.4.2 Community-Based Parks

- Continue coordination efforts between the City Department of Parks and Recreation and the

State Department of Education to co-locate neighborhood or community parks with elementary or intermediate schools. Facilities should be designed and operated to achieve efficiencies and reduce duplication in the development and use of athletic, recreation, meeting and parking facilities, wherever possible, either by dedication, or upon agreements between the developer, DOE, and DPR. Co-located parks should be ready for public use upon opening.

- Where feasible, site community and neighborhood parks at the center of neighborhoods to maximize accessibility.

- Provide for accessible pathways from surrounding streets to facilitate pedestrian and bicycle access to parks in master plans for development of new parks or redevelopment of existing parks.

3.3.4.3 Active Recreation Areas

- Locate bus stops or loading areas at principal entries and adjacent to convenient pedestrian access to main activity areas within the park.

- Minimize the visibility of perimeter fencing and maintenance facilities through landscape plantings or other appropriate visual screens adjacent to residential areas and major roadways.

3.3.5 RELATION TO OPEN SPACE AND LAND USE MAPS

The following components of the parks and recreation areas are shown on the Open Space and Land Use Maps in Appendix A:

- *Parks*. Areas designated as parks are labeled with the park's name and, where space allows on the maps in Appendix A, the general location and land area of the park is outlined and colored.

- *Golf Courses*. The three golf courses in Ko'olau Loa are shown because of their recreational value and visual contribution to the landscape.

- *Shoreline Areas*. Shoreline areas with high scenic or wildlife value, generally along the Kahuku coastline between Mālaekahana and Kahuku Point, are designated for preservation and are located outside the Rural Community Boundary.

3.4 HISTORIC AND CULTURAL RESOURCES

The following section provides an overview and a listing of policies, planning principles and guidelines for the preservation of historic and cultural resources in Ko'olau Loa.

3.4.1 OVERVIEW

The Ko'olau Loa region contains several different types of historic and cultural sites which are representative of its history and are valuable as historic records and cultural references. The treatment of a particular site should vary according to its characteristics and potential value.

Early periods are represented by physical remnants of the historic landscape and archaeological sites. In the

1930's, an archaeological survey of O'ahu documented approximately 57 sites within the region of Ko'olau Loa. Many of these sites, however, may have since been destroyed by land altering activities such as agricultural cultivation and development.

The plantation era is also an important period which made a substantial contribution to and imprint on Ko'olau Loa's history. Reminders of that period, such as the Kahuku Sugar Mill, are significant and valuable as records of the past.

There are literally hundreds of archaeological features known to exist in Ko'olau Loa, which attests to the richness of the region's cultural heritage. There are also numerous legends and historical accounts from Ko'olau Loa's past which are important in Hawaiian culture. Table 3-6 presents a sample of the more well-known significant sites found in different parts of the Ko'olau Loa region. McAllister (1933) is the most comprehensive report of the major archaeological features documented from field work in the early 1900's. A more recent field studies of site-specific development areas have identified additional archaeological sites, which is recorded with the State Department of Land and Natural Resources, Historic Preservation Division.

Table 3-6 lists examples of significant pre-contact sites believed to be present in Ko'olau Loa. Although not listed in the table, there may also be other archaeological sites on undeveloped parcels, especially in areas deep within the region's valleys. More comprehensive listing of these sites are recorded in the following references:

- J. Gilbert McAllister, *Archaeology of O'ahu* (1933)
- E.P. Sterling and C. C. Summers, *Sites of O'ahu* (1978)
- Fornander & Thrum, *Ancient O'ahu*
- Burial Sites Program Inventory/O'ahu Burial Council
- State Historic Preservation Division Records

Table 3-6
Significant Cultural and Pre-Contact Sites in Ko'olau Loa

Feature	Location	Reference
Waikane stone	Kawela	McAllister Site 259
Punammanō water hole	Kahuku Point	McAllister Site 261
Kalaewila heiau	Kahuku Point	McAllister Site 266
Wai'āpuka pool	Mālaekahana	McAllister Site 275
Paeo Fishpond	Lā'ie	McAllister Site 277
Nioi heiau	Lā'ie	McAllister Site 281
Laniloa Point	Lā'ie	McAllister Site 284
Kaliuwa'a Valley	Kaluanui	McAllister Site 290
Maka heiau	Punalu'u	McAllister Site 291
Huilua fishpond	Kahana	McAllister Site 301

Source: McAllister, J. Gilbert, *Archaeology of O'ahu* 1933

3.4.2 GENERAL POLICIES

- Emphasize physical references to Ko'olau Loa's history and cultural roots.
- Protect existing visual landmarks and support the creation of new, culturally appropriate landmarks at ahupua'a boundaries.

- Preserve and restore historic and cultural resources associated with native Hawaiian and pre-contact periods.

- Preserve significant historic features from earlier periods such as the plantation era.
- Retain, wherever possible, significant vistas associated with archaeological features.

- Revitalize Hukilau Beach.

3.4.3 PLANNING PRINCIPLES

The treatment of a particular historic or cultural site should depend upon its characteristics and potential value. The following planning principles should be used to determine appropriate treatment:

- *Preservation and Protection.* Implement in situ preservation and appropriate protection measures for sites that have high preservation value because of their good condition or unique features.

- *Compatible Setting.* Determine the appropriate treatment for an historic site by the particular qualities of the site and its relationship to its physical surroundings. The context of an historic site is usually a significant part of its value. Care should be taken in the planning and design of adjacent uses to avoid conflicts or abrupt contrasts that detract from or destroy the physical integrity, historic or cultural value of the site.

  Accessibility and Interpretation. Establish the degree of public access and interpretation that would best promote the preservation of the historic, cultural and educational value of a site. Public access to and interpretation of an historic site may take many forms. In some cases, it may be highly advisable to restrict access to protect the physical integrity or sacred value of the site, while in other cases it may be necessary to recognize that some form of low-impact economic use is an appropriate and feasible way to preserve it.

3.4.4 GUIDELINES

The following guidelines apply to cultural, historical and archaeological sites and implement the general policies and planning principles listed above:

- Require preservation in situ only for those features that the State Historic Preservation Officer has recommended such treatment in conjunction with the community.

- Determine the following on a site-by-site basis in consultation with the State Historic Preservation Officer, O'ahu Burial Council, local Hawaiian cultural organizations, and the owner of the land on which the site is located, and the community:
  - appropriate preservation methods;
  - appropriate delineation of site boundaries and setbacks;
  - appropriate restrictions on uses and development of adjacent lands; and
  - the appropriateness of public access and interpretation.

- Include sight lines and view planes that are significant to the original purpose and value of the site in any restrictions placed on adjacent uses and development.

3.5 RESIDENTIAL USES

An overview of existing and new residential communities in Ko'olau Loa is presented below. This is followed by a description of general policies and guidelines that apply to existing and planned residential developments.

3.5.1 OVERVIEW

The establishment of a Rural Community Boundary is intended to contain the spread of development into significant agricultural and preservation areas. The need for additional housing in Ko'olau Loa will be met primarily by the "infill" development of existing vacant lands within each of the region's rural communities, and by allowing the limited expansion of residential areas in Kahuku and Lā'ie. These areas are contiguous to existing development and will accommodate housing needs in Kahuku related to long-term projected employment growth at Kuilima Resort and in Lā'ie related to an expansion of diversified employment opportunities.

Vital, contemporary communities oriented toward meeting the needs of their residents often offer a network of amenities to facilitate and enhance individual, family, and community life. At their best, they may offer parks and landscaped public open spaces, churches, community centers, and other places for social and civic functions, residences or other facilities for persons with special needs, and safe, pleasant bicycle and pedestrian connections that link homes and important destinations. While this plan refrains from prescribing what the specific ingredients of any given community should be, it takes this opportunity to cite the need, in each community, for appropriate elements which aid and enhance the act of living as well as residence.

While development of moderate-sized vacant parcels may be readily visible and their effects may be more immediately apparent than infill development of small parcels and single lots, the physical changes brought about by incremental intensification in existing built-up neighborhoods through infill and home expansions would be slower and more subtle. Nevertheless, the long-term cumulative impact of the gradual transformation of small parcels and single lots could adversely affect the character of existing neighborhoods in the absence of effective residential lot and subdivision design and development standards which limit building height, lot coverage, paving width of streets, and promote landscaping.

3.5.2 GENERAL POLICIES

The following general policies are applicable to existing and new residential communities:

- Respect and help to preserve the natural setting of the Ko'olau Loa region by requiring development in residential areas to be sensitive to physical constraints and have minimal impact on the area's rural character.

- Provide a sufficient capacity within the Rural Community Boundary to accommodate existing and future housing needs. Allow for limited expansion of residential areas in Kahuku and Lā'ie to meet existing pent-up demand, and anticipated future housing needs related to long-term planned job growth at Kuilima Resort and new diversified employment opportunities in Lā'ie.

- Maintain the existing residential capacities for the communities of Ka'a'awa, Hau'ula and Punalu'u. Future residential needs in these communities will be met through infill residential development on appropriately zoned vacant lots within existing neighborhoods. No new housing areas are designated in these areas.

- Adopt zoning, subdivision and related project design regulations which foster a rural character in new residential developments and improvements to existing residential areas.
- Encourage and support the development of affordable housing in the region in order to meet the needs of a variety of market sectors, existing pent-up demand for housing and overcrowded housing conditions.

3.5.3 PLANNING PRINCIPLES

- *Rural Character of Neighborhoods.* Enhance the design character of existing housing areas and of infill and new residential development through the application of rural development standards which will help to maintain the relatively rural quality of Ko'olau Loa's neighborhoods and residential areas. This concept is illustrated in **Figure 3-2.**
- *Variety of Housing Types.* Provide a variety of housing types in order to meet the appropriate housing needs unique to each community and the physical characteristics of potential building sites. **Table 3-7** presents density and height guidelines for existing and planned residential developments.

Table 3-7
Density and Height Guidelines by Residential Density Category

Residential Category	Density (Housing Units)	Building Height
Rural	1 per acre	Not over two stories
Rural Residental	5-8 acres	Not over two-stories, but may vary according to required flood elevation, slopes, and roof form.
Low Density Apartment	10-20 per acre	Generally not over three stories, but may vary according to required flood elevation, slope, protection of natural features and roof form.

3.5.4 GUIDELINES

Except for pockets of apartments in Punalu'u and proposed ones that were previously approved for Lā'ie, the majority of the housing in Ko'olau Loa consists of rural residential areas. Some of these areas typically exhibit the physical characteristics of a rural context, including:

- Smaller lot coverage and larger setbacks than encountered in more urbanized areas;
- Low-rise structures, generally not exceeding two stories;
- Relatively narrow roadway widths;
- Use of grassed swales rather than curbs and gutters; and
- Rural-oriented landscaping.

This plan recognizes three categories of residential development: Rural, Rural Residential, and Low Density Apartment. Guidelines for these areas are as follows:

3.5.4.1 Rural

This category consists of single-family homes on relatively large lots, e.g., lots of one acre or more. Development is low intensity and generally consists of a single-family home, ancillary structures if necessary, low site coverage, and a predominance of landscaped open space. They are located on existing country-zoned lands between Lā'ie and Ka'a'awa. No intensification in the use of existing Rural areas nor creation of new Rural areas is intended. Existing Rural parcels are recognized, valid uses; however, no new Rural lots should be permitted.

Two variants of the Rural category are recognized by this plan:

- Inside the Rural Community boundaries, Rural areas may be developed as large-lot residential uses.
- Outside the Rural Community Boundary, Rural areas should be used primarily for agricultural uses.

3.5.4.2 Rural Residential

This category is intended to describe the bulk of existing and new residential developments located within the Rural Community boundaries. These areas consist of single-family homes in "country" settings. Typical residential lot sizes range from just less than one acre to about one-eighth acre. Alternate development forms, such as cluster or PD-H approaches which result in greater amounts of open space and common facilities, may also be used.

New Rural Residential development may occur through infill development on existing vacant lots in the region, or in areas designated for residential development in Kahuku and Lā'ie. In Lā'ie, a total of 550 units are planned for two areas *mauka* of BYU-H to accommodate existing resident need and residential needs generated by future economic development of Lā'ie. Except for 100 units, all of these units have been previously approved. In Kahuku, the final phase of Kahuku Villages proposes 177 affordable housing units. No additional housing units are proposed for Kahuku, but any future affordable housing should be accommodated mauka of Kahuku Elementary School, within the State Urban District Boundary, with the support of the Kahuku community.

Existing Residential Districts on O'ahu generally allow for lot sizes of 3,500 to 20,000 square feet with a range of 2 to 10 or 12 units per acre. To address identified market sector needs for lots of 5,000 to 10,000 square feet in the region, densities for designated Rural Residential areas in Ko'olau Loa should range from 5 to 8 units per acre or up to 10 units for cluster and PD-H development that preserve open space. They should adhere to the following guidelines:

- Establish rural development standards that foster a rural character by limiting building height and lot coverage; reducing current requirements for the paving width of residential streets; eliminating or modifying the requirement for curbs, sidewalks and gutters; and encouraging ample landscaping **(Figure 3-2)**.
- Housing development generally should not be sited on areas where the slope exceeds 20 percent. Where this does occur, housing should be developed to avoid adverse visual impacts, potential slope stability problems and increased runoff. Soils engineering and view studies may be necessary to determine the appropriate density and site design for such locations.

- Building scale, roof form, and the quality of materials for infill and new development, as well as future modifications to existing homes, should be generally compatible with the predominant form of existing homes on adjacent properties and with the neighborhood as a whole. Building heights generally should not exceed two stories, but may vary according to required flood elevation, protection of natural features, slope, and roof form. Modification of zoning standards for residential development, such as provisions for building scale or spacing, roadway widths, or sidewalks, and/or changes in existing zoning district categories, may be necessary to promote rural character.

- Sites on level terrain with fewer development constraints may have overall site densities approaching the higher end of the range for Rural Residential use. To achieve higher density while providing an attractive living environment, optional design or rural development standards for clusters and planned unit developments should be promoted in lieu of conventional subdivision provisions.

3.5.4.3 Low Density Apartment

This category consists of predominately two- and three-story townhouse complexes, stacked flats, or low-rise apartment buildings with a maximum height of 40 feet. Densities may be in the range of 10 to 20 dwelling units per acre. There is only one existing Low Density Apartment area within Ko'olau Loa which includes the two multi-story buildings in Punalu'u along the *makai* side of Kamehameha Highway.

Low density apartment development may take place within the previously approved apartment district near the Lā'ie Water Reclamation Facility to provide more affordable housing for the residents of Lā'ie and nearby communities, or special needs housing for the elderly, the disabled, or other groups. No new Low Density Residential areas are planned.

Low Density Apartment development should adhere to the following guidelines:

- Limit building heights to three stories or 40 feet, including roof form, with heights above 40 feet allowed only when necessary due to the required flood elevation, steep slope of the site, or the desire to protect important natural features. Gabled or similar roof forms should be used to reflect a primarily rural residential design character.

- Employ design techniques such as building form and orientation, location of entries and landscape screening, etc., to maintain the existing residential scale and provide greater privacy and individual identity for housing units.

3.5.4.4 Special Needs Housing

Special Needs Housing does not indicate a specific housing or building type, rather, it refers to facilities designed for certain segments of the population with special living requirements. Categories of special needs groups include low- and moderate-income sectors, senior citizens, disabled people, and people with health problems or individuals who need other forms of special care. Often such housing includes special features, such as congregate dining and social rooms; laundry, housekeeping and personal assistance services; shuttle bus services for residents; and skilled nursing beds or physical therapy clinics. Special needs housing should be located in close proximity to transit services and commercial centers.

- In general, apply Low Density Apartment building height and density guidelines to Special Needs Housing sites, as described in Section 3.5.4.3.

- Special Needs Housing, as an exception to standard density situations, may have densities up to 30 units per acre if they consist primarily of smaller dwelling units with residential scale and character. Special Needs Housing may have congregate living facilities, and are for elderly and/or disabled residents who, for the most part, do not rely on or require personal automobiles for travel.

- Whenever possible, locate special needs housing close to public transit, community services and commercial centers.

- Allow heights above 40 feet, subject to community and agency review, only when necessary due to the required flood elevation, steep slope of the site, or the desire to protect important natural features. Gabled or similar roof forms should be used to reflect a primarily rural residential design character.

- Ensure compatibility of building scale, roof form, and materials with adjacent residential uses.

3.5.5 RELATION TO LAND USE MAP

Conceptual locations for rural residential areas are shown on the Ko'olau Loa Land Use Map in Appendix A, while the other residential areas are not designated on the Land Use Map.

- *Rural.* Rural areas are recognized where they occur as a pre-existing use but not depicted on the map. No new areas are planned .

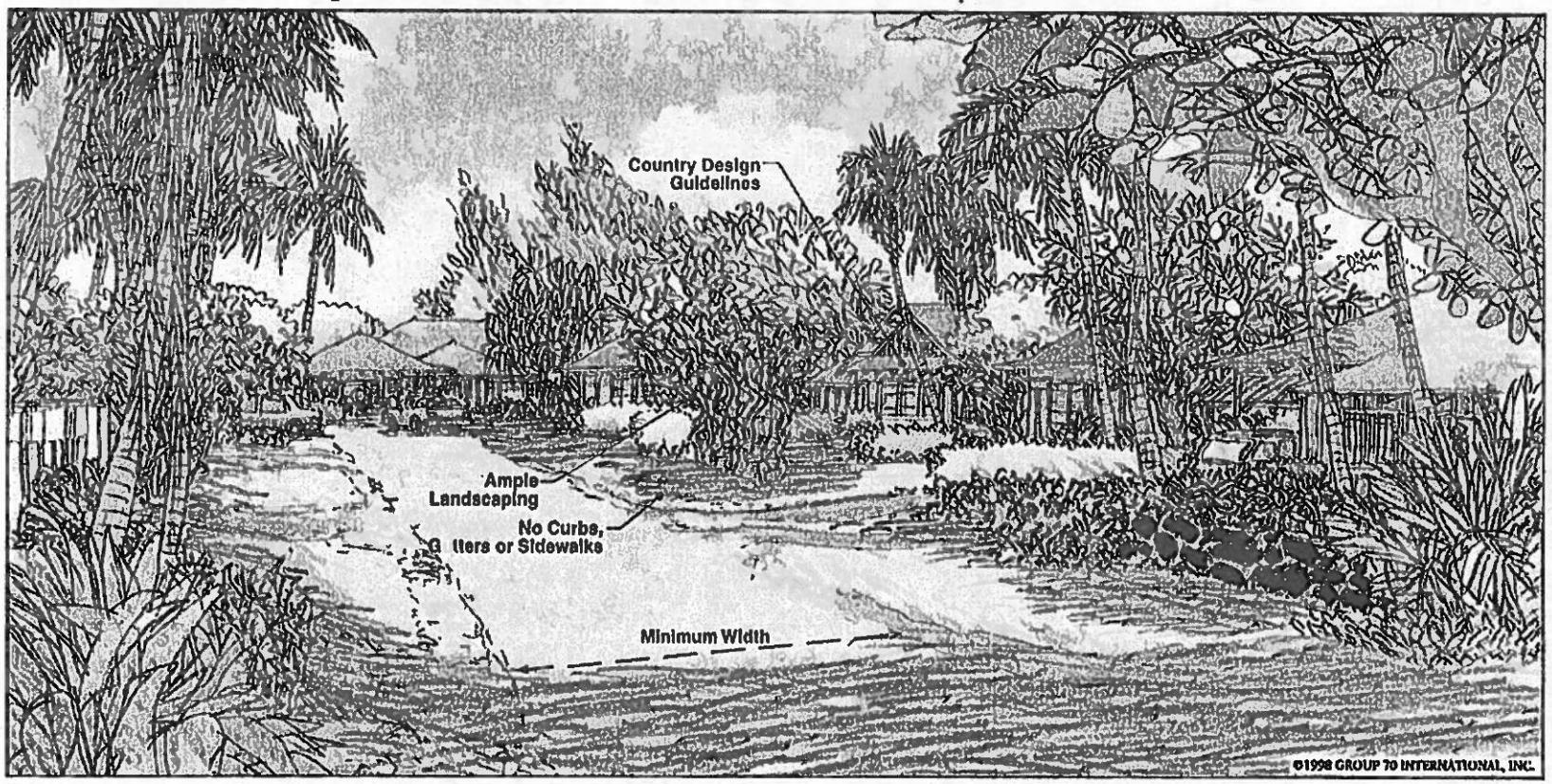
- Rural Residential. Areas with this designation should be zoned as residential subject to appropriate siting considerations, and to the policies, principles and guidelines provided in Sections 3.5.1 through 3.5.4.

- *Low Density Apartment.* General locations for such sites are not shown on the map but are noted in Section 3.5.4.3, Low Density Apartment.

- *Special Needs Housing.* To allow flexibility in the location of Special Needs Housing and to promote flexible site design that preserves natural features or scenic elements, this land use is not specifically designated on the Land Use Map, but it is allowed in residential areas subject to project-by-project review for compatibility with surrounding uses.

The following non-residential uses are not specifically designated on the Land Use Map, but are allowed in all residential areas: elementary schools, parks, churches, community centers, child care centers, and public facilities and utilities serving the area. It should be noted that some of these uses do require project review and issuance of permits before they can be developed within a residential area.

Figure 3-2
Rural Residential Development Standards



3.6 COMMERCIAL AREAS

3.6.1 OVERVIEW

Commercial establishments in Ko'olau Loa range in type from small, individual stores along Kamehameha Highway to a grouping of many shops and other commercial enterprises clustered together to form a shopping area. They are:

- Country Town
- Rural Regional Commercial Center
- Rural Community Commercial Center
- Country Stores

Brief descriptions of each type follow:

- *Country Town*. The country town generally distinguishes itself from its larger, often new urban counterparts by its compactness, small scale and mixture of different land uses, located in close proximity to each other. The land use mixture may include retail and office commercial, dining establishments, compatible service business and light industry activity, and some residential uses. Buildings are usually 1 to 2 stories in height and built to the street property line. Commercial activity is along street frontage in typically "Mainstreet" settings. Country towns often lend identity to adjacent rural communities.

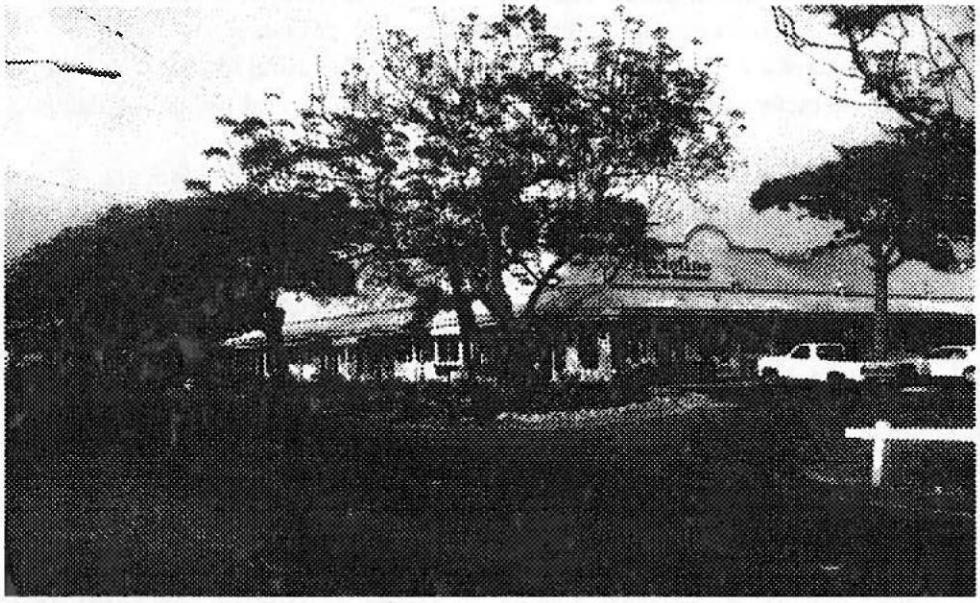
  The commercial district at the north end of Kahuku Village is designated as a Country Town. While current uses are primarily retail shops and restaurants, the intent is to allow commercial, low impact industrial (crafts manufacturing, light assembly, etc.), and residential uses in a compatible mix that is characteristic of many plantation or neighbor island rural towns. The arrangement of uses and the style and character of building designs would be reminiscent of Kahuku's plantation heritage.

- *Rural Regional Commercial Center*. The Rural Regional Commercial Center is a consolidated cluster of commercial retail, offices, and dining establishments that serve both the immediate and nearby communities. These establishments may be located on adjacent, individual parcels or on a single, consolidated parcel. It is located along a major roadway to enable convenient access without intrusion into residential communities. Buildings are generally low-profile and small in appearance, may include taller, vertical accents, and are generally compatible with the scale of adjacent residential areas in locations where such adjacencies exist. Its service area may be regional or sub-regional. Lā'ie Shopping Center is an example of this type of center.

- Characteristics which distinguish this type of commercial establishment from urban or urban fringe counterparts include physical characteristics and type of tenancy. Rural Regional Commercial Centers maintain a rural, small-scale character. Buildings are visually organized, designed, or "broken up" into pieces that approximate or relate to the scale of residential buildings. They also feature elements that are "friendly" to someone walking. They feature covered walkways, open ground-floor storefronts, pathways that offer adequate resting and gathering, as well as walking space, and landscaping to shelter people from the elements and accentuate the Center's best features. While supermarkets are encouraged, "Big Box" retail is not.

Kahuku Sugar Mill and Country Town

While the character has not yet been fully achieved within the Ko'olau Loa region, the photograph below, depicting the North Shore Marketplace, offers an example of the type of atmosphere a rural commercial center, whether regional or community, can assume.



Possible Setting for a Rural Commercial Center

The business center in the middle of Lāʻie is designated as a Rural Regional Commercial Center. It provides a mix of retail shopping, restaurant, personal service, entertainment and professional office uses that serve a regional consumer base which includes local residents, residents from neighboring communities and, to a limited extent, tourists. It is operated as a unit with shared parking and center management.

- *Rural Community Commercial Center*. The rural community commercial center is a small cluster of commercial and service businesses which service primarily the immediate community. Since most are located along highways, these centers also attract visitors and residents from outside the immediate community.

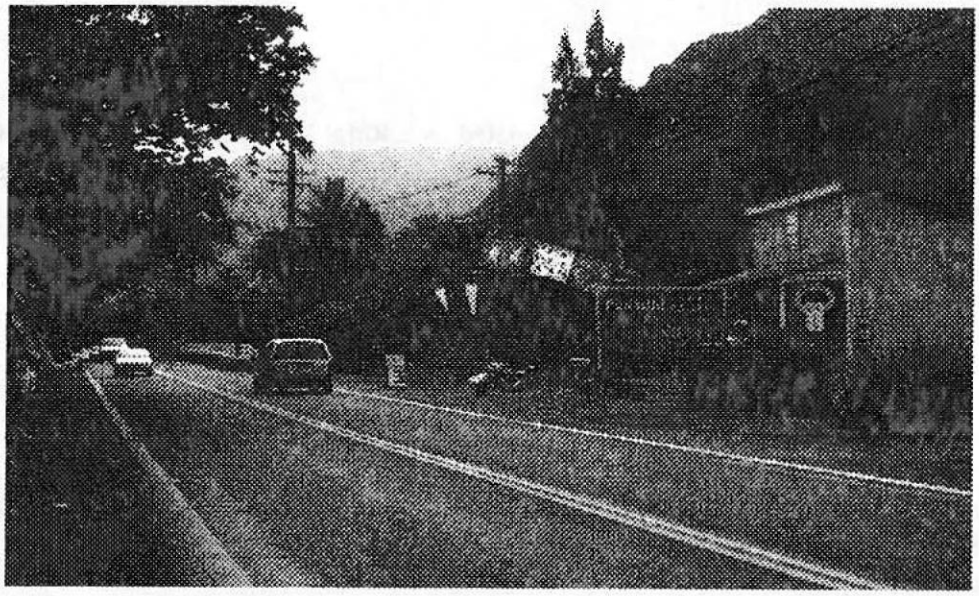
  This type of center typically consists of a cluster of establishments on individual land parcels or a shop consolidated into one or a group of buildings on a single parcel, as at the Hauʻula Kai Center. Structures are generally low-profile (1 to 2 stories) and small in scale.

  The shopping center at Hauʻula, located at a prominent site at the north or Lāʻie end of the town, is designated as a Rural Community Commercial Center. It provides a limited mix of convenience retail shopping and service uses that meet the day-to-day needs of residents living in nearby neighborhoods. Like Lāʻie's town center, it is operated as a unit with shared parking and center management.

  A community-based forum to examine ways to revitalize the site was sponsored by Na Lei Malama, a coalition of community members and providers of health, education, and social services in September 1998. Ideas offered included convenience or community-oriented stores, restaurants, professional services, movie theatres, social service centers, and a cultural arts center with a regional as well as local draw. Approaches toward achieving revitalization ranged from renovation to redevelopment.

- *Country Stores*. This category generally refers to isolated, freestanding retail or eating establishments located on commercially zoned lands or which exist as legally nonconforming uses. Its purpose is to recognize such establishments and to provide guidance for renovation, reconstruction, or minor expansion of these facilities. It is not intended to provide for new country stores.

  Country stores are generally small in scale and low in intensity of uses, often assuming residential size and character. Their character generally approximates that of old neighborhood grocery stores. These businesses serve a variety of purposes, including convenience retail, shops selling art and crafts and other specialty items, and restaurants. Most cater almost exclusively to the needs of area residents, but some such as the restaurants and art studios depend heavily on the business of island residents and visitors who are traveling through the area.



Ko'olau Loa Country Store

3.6.2 GENERAL POLICIES

- *Kahuku Country Town (Figure 3-3)*

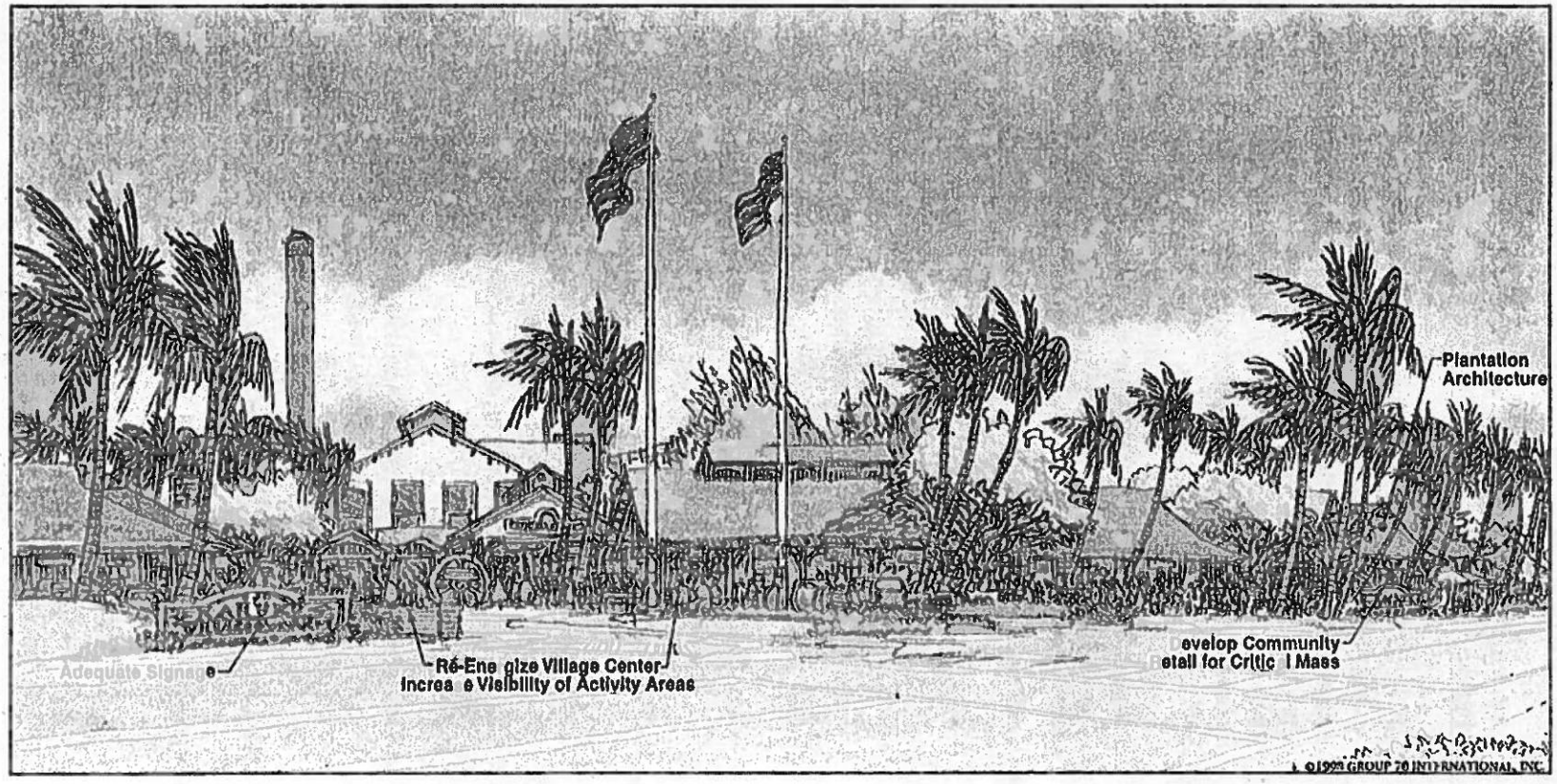
  - Maintain a plantation town character that reflects the building forms and exterior appearance of traditional commercial and mixed-use buildings in Hawai'i's plantation communities. The existing mill should continue to be a dominant element and visual reference for the town. It may be appropriate to adopt design guidelines that would make future structures at or adjacent to the Mill visually compatible with it.

  - Permit limited expansion to create sufficient critical and diversified mass for the center's continued viability to meet local and visitor shopping needs.

  - Allow for compatible mixtures of commercial, industrial and residential uses within the Country Town district. Emphasize commercial uses along the Kamehameha Highway frontage.

  - Emphasize commercial and related uses conducive to pedestrian activity at the street level along main street frontages. Adequate landscaping and where possible and appropriate, bikeway and public transportation provisions, should be part of any program to improve public thoroughfares through these locations.

Figure 3-3
Commercial Areas Design Guidelines



- *Lāʻie Rural Regional Commercial Center*

  - Introduce a rural architectural character which incorporates appropriate themes and building forms reflective of the diverse heritage of Lāʻie's residents.

  - Provide for a modest expansion of the district in order to meet future resident and visitor needs associated with Lāʻie's anticipated long-term housing and employment growth, and the expansion of visitor attractions. Given its size, and potential mix of uses, Lāʻie's center has potential as a focal point for the region's shopping and services, and limited expansion is appropriate in order to better serve adjoining communities as well as local residents.

  - Limit uses primarily to commercial retail, business service establishments, professional offices and public uses such as a satellite city hall, library, post office, or other similar facilities, that provide services to Lāʻie and surrounding communities.

- *Hauʻula Rural Community Commercial Center*

  - Maintain low-rise profile and small building scale, and emphasize rural character in the maintenance, renovation, or redevelopment of the center or site. Such actions or those which involve changes in the tenant mix to improve the range and quality of local shopping and service uses should be oriented toward maintaining the center's primarily community-oriented role.

  - Emphasize a mix of retail and service uses which meet the day-to-day shopping needs of Hauʻula's residents.

- *Country Stores*

  - Recognize the contribution that existing country store-type establishments make to Koʻolau Loa's unique rural character by allowing them to remain and, where necessary, be renovated or reconstructed in accordance with appropriate design criteria.

  - In general, limit these establishments to their existing locations and prohibit expansion that would alter their country store character or create commercial strips along Kamehameha Highway.

3.6.3 PLANNING PRINCIPLES AND GUIDELINES FOR ALL COMMERCIAL AREAS

- *Architectural Style*

  - Utilize building forms and details which reflect the region's rural character and incorporate the style and any desirable distinctive features of buildings in the community in which they are located.

- Encourage the use of false fronts, sloped roofs, and breaks in the roof line to reduce the apparent scale of large roof plates in commercial buildings with multiple s storefronts.

- Avoid blank façades on portions of buildings visible from a street by using texture, articulation, color, windows, or other openings to create visual interest.

- Reflect a more residential scale and character in the portions of commercial buildings that are adjacent to or readily visible from residential areas, or screen them from view with landscaping.

• *Building Scale and Massing*

- Limit commercial buildings to a maximum 40 feet in height, including roof form. In general, buildings should maintain a low-rise, rural scale.

- Avoid the use of large, continuous buildings in new commercial developments. Commercial buildings adjacent to residential areas should be designed to recognize the balance between commercial needs and residential concerns. In general, the physical composition of height, size, and massing of commercial buildings in these locations should be compatible with adjacent residential development.

• *Site Design and Access*

- Provide for the general visibility from Kamehameha Highway of buildings within commercial centers, and employ adequate and appropriately designed signage at entries.

- Provide access to parking and loading areas primarily from Kamehameha Highway for the shopping areas in Kahuku and Lāʻie, and exclusively for the Rural Community Commercial Center (Hauʻula) and country store establishments that front the highway.

- Employ site design practices and provide facilities which promote pedestrian, bicycle and public transit access.

- Improve bus stops in front of commercial centers, including pull-out bus stop lanes and shelters for waiting passengers.

- Provide racks for bicycle parking at all commercial centers and locate them where they are secure and visible from entry points or other heavy circulation areas.

• *Visual Screening, Lighting and Signage*

- Plant a landscape screen consisting of trees and hedges along streets fronting parking lots.

- Provide shade trees throughout parking lots.

- Visually screen service areas from public and residential areas.

- Require indirect illumination for signage visible from residential areas.

3.6.4 PLANNING PRINCIPLES AND GUIDELINES FOR KAHUKU COUNTRY TOWN (FIGURE 3-3)

- *Architectural Style*

  - Incorporate architectural themes and details in new buildings and building renovations which reflect the traditional built forms and cultural heritage of Kahuku and other plantation communities in Hawai'i.

- *Building Scale and Massing*

  - Promote the development of two-story as well as one-story buildings to accommodate and encourage the desired mix of uses. The existing sugar mill should continue to be the visually dominant structure for the town.

  - Keep buildings relatively small in size and distinctive in character, and avoid the development of long "shopping center"-type structures.

  - Group buildings and related public spaces in a way which fosters a pedestrian orientation and encourages travel on foot between different establishments.

3.6.5 PLANNING PRINCIPLES AND GUIDELINES FOR LĀ'IE RURAL REGIONAL COMMERCIAL CENTER

- *Architectural Style*

  - Employ architectural design strategies, forms, and details in new building design which reduce the sense of building mass of the center. Incorporate architectural forms and details in future renovations of existing buildings which visually reduce their apparent size.

  - Establish a more distinctive rural architectural character for the center through the use of Polynesian themes and built forms.

- *Building Scale and Massing*

  - Maintain the existing center's low-rise building scale consistent with the character of surrounding residential development.

- To the extent possible, site new buildings in a manner which emphasizes a pedestrian orientation and encourages travel on foot between new and existing establishments. Future renovation, redevelopment or expansion of the Rural Regional Commercial Center should take or create opportunities to implement a primarily pedestrian-oriented, village-like setting, in contrast to its current linear form.

3.6.6 PLANNING PRINCIPLES AND GUIDELINES FOR HAU'ULA RURAL COMMUNITY COMMERCIAL CENTER

- *Architectural Style*

  - Encourage and support existing building renovation or site redevelopment in a manner which reflects a more rural character architecture than its current "big box" urban form (see Section 3.6.3).

- *Site Design*

  - Increase landscaping within the parking lot and along the center's Kamehameha Highway frontage in order to soften its appearance and improve its compatibility with the community's rural character.

3.6.7 PLANNING PRINCIPLES AND GUIDELINES FOR COUNTRY STORES

- *Architectural Style*

  - Encourage renovations to existing establishments which maintain or, where appropriate, improve upon the traditional stand-alone "country store" architectural style found in Hawai'i's rural communities.

  - Require the architectural character of any redeveloped buildings to be harmonious with adjacent developments and setting in form, material, finishes and color.

- *Building Scale and Massing*

  - Retain the existing stand-alone, small-scale, limited setback, one-story height building form in the redevelopment of any existing establishments.

3.6.8 RELATION TO LAND USE MAP

Commercial areas are shown on the Ko'olau Loa Land Use Map in Appendix A as follows:

- *Country Town.* The general location of the Kahuku Country Town is designated by an orange diamond.

- *Rural Regional Commercial Center.* The general location of the Lāʻie Rural Regional Commercial Center is designated by an orange triangle.

- *Rural Community Commercial Center.* The general location of the Hauʻula Rural Community Commercial Center is designated by a smaller orange triangle.

- *Country Stores.* Due to their relatively small-scale, their locations are not depicted on the Land Use Map. The following are existing country stores within Koʻolau Loa: Country Kitchen and Crouching Lion Inn in Kaʻaʻawa; Ahi's Restaurant, Kaya's and the Punaluʻu Art Gallery in Punaluʻu; Masa's, Wu Store and Ching Tong Leong in Hauʻula; Cackle Fresh Store, Lāʻie Cash & Carry, and Hukilau Cafe in Lāʻie; and Walsh Farm (Tanaka's) in Kahuku. The Koʻolau Loa Sustainable Communities Plan intends no new locations for country stores.

3.7 INDUSTRIAL AND TECHNOLOGY PARK AREAS

Industrial areas are intended for light and service-related industrial uses associated with repair, processing, construction, manufacturing, transportation, wholesaling, distribution, storage and similar economic activities. These areas should also include a range of compatible commercial activities.

High Tech Parks are areas intended for light, technology, and service-oriented industrial and business uses in a campus-like setting. Development intensity is low, while open space and landscaping are the predominant visual and physical elements.

3.7.1 GENERAL POLICIES

Industrial uses serving the Koʻolau Loa area should be located in the existing Kahuku industrial site or the proposed Lāʻie Industrial Park planned for approximately 25 acres mauka of the Cackle Fresh Store on Kamehameha Highway. The Kahuku Sugar Mill industrial site may also accept agricultural support activities. This should provide adequate space for light industrial functions such as small warehousing facilities; repair facilities for automobiles, appliances and agricultural machinery; light manufacturing such as wood products and local crafts; and agricultural support industries including processing for biomedical and plant products. Development of the site should respect and adequately address on-site and adjacent cultural and natural resource values in compliance with applicable federal and state regulations. Particular consideration should be given to archeological, historic, habitat, water quality and other values and characteristics of streams, wetlands, and other natural or cultural resources. In addition, on-site development and associated activities should take care to avoid adverse impacts on adjacent land uses and activities.

High technology enterprises such as telecommunications, technological support services, computer parts manufacturing, business education, multi-language translation, and research and development facilities should be located in the Lāʻie Technology Park planned for approximately 28 acres mauka of the Brigham Young University – Hawaiʻi (BYU-H) campus.

Appropriately developed, the industrial area and the technology enterprise park will serve to establish an appropriate land supply and locations for these uses and provide a more competitive market for businesses seeking to locate these activities.

3.7.2 PLANNING PRINCIPLES AND GUIDELINES FOR INDUSTRIAL AREAS

The following planning principles apply to the industrial park area:

- *Appropriate Scale and Siting.* Minimize the visibility of large building volumes and tall building or machinery elements from residential areas, commercial and civic districts, resort areas, and parks through careful site planning and use of ample landscaping.

- *Environmental Compatibility.* Locate and buffer operations that discharge air or water pollutants, even when treated, in areas where they would impose the least potential harm on the natural environment, in case the treatment process fails to perform adequately. Uses that generate high noise levels should be located and operated in a way that will keep noise to an acceptable level in existing and planned residential areas.

Guidelines to implement the general policies and planning principles are:

- *Use Allocation.*
  - Provide mostly small lots within the Lā'ie industrial park in order to accommodate small business service uses.
  - Allow retail establishments as accessory uses only.
  - No buildings should be primarily used for offices or business services.

- *Building Height and Mass.*
  - Building heights should generally not exceed 40 feet.
  - Buildings should maintain a low-rise, rural character and be compatible with surrounding land uses which include agricultural lands, open space, and residential areas. Employ building coverage that is appropriate to the rural environment; avoid use of large, continuous buildings; and minimize visibility of structures with careful site planning and ample landscaping.

- *Visual Screening.*
  - Minimize the visibility of parking, storage, industrial equipment and operations areas from the street by planting a landscape screen of trees and hedges along street frontages.

3.7.3 PLANNING PRINCIPLES AND GUIDELINES FOR TECHNOLOGY PARKS

The following planning principles apply to the technology park areas:

- *Appropriate Scale and Siting.* The character of the technology park should be relatively low in scale and visibility. The form of the structures should be modeled on campus-like business

parks, but the architectural style should be in keeping with and blend into the rural character of the technology park's setting and adjacent uses. The buildings should not be visible from off-site scenic viewpoints looking mauka, and the site should be carefully planned and ample landscaping used so the development is integrated into its surroundings.

- *Environmental Compatibility.* The technology park is primarily intended for emerging and technology-oriented industries and support services. Uses that should not be permitted in the technology park include uses that: produce noise and noxious emissions; uses connected with agricultural production; large-scale retailing/wholesaling commercial operations; dwelling units or overnight accommodations of any kind.

Guidelines to implement the general policies and planning principles are:

- *Use Allocation.*
  - Uses are intended to be emerging and technology-oriented industries, including but not limited to telecommunications, business education, and research and development facilities.
  - Allow retail establishments as accessory uses only.

- *Building Height and Mass.*
  - Building heights should generally not exceed 40 feet.
  - Buildings should maintain a low-rise, rural character and be compatible with surrounding land uses which include agricultural lands, open space, and residential areas. Employ building coverage that is appropriate to the rural environment; avoid use of large, continuous buildings; and minimize visibility of structures with careful site planning and ample landscaping.

- *Visual Screening.*
  - Soften the visual impacts of parking, storage, industrial equipment and operations areas from the street by planting a landscape screen of trees and hedges along street frontages. The planting of native trees is encouraged.

3.7.4 RELATION TO LAND USE MAP

The industrial and technology park areas are shown on the Ko'olau Loa Land Use Map in Appendix A as follows:

- *Industrial Park.* The location of the existing industrial site in Kahuku and the planned Lā'ie Industrial Park are designated by light purple colored areas that represent their general location and shape.

- *Technology Park.* The location of the planned Lā'ie Technology Park is designated by a lavender colored area that represents its general location and shape.

3.8 VISITOR FACILITIES

Facilities for visitor activities and accommodations in Ko'olau Loa will be centered at Kuilima Resort and the Polynesian Cultural Center, which includes the Rodeway Inn and adjacent Resort-zoned parcels. Eco-tourism operations can be located at Ka'a'awa Valley (Kualoa Ranch) and Lā'ie, where such uses can be made compatible and integrated with adjacent agricultural land uses.

3.8.1 KUILIMA RESORT

Located at the north end of Ko'olau Loa, this is one of two major resort destinations, the other being Ko'Olina in 'Ewa, planned for O'ahu as supplemental to the resort experience offered by Waikiki. The master plan for Kuilima integrates resort-hotel, resort- condominium, resort-commercial, golf, tennis and other recreation, and wetland and shoreline preserve areas.

3.8.1.1 General Policies

Plans to establish a major resort destination at Kuilima should be maintained. It will provide a major source of jobs for Ko'olau Loa and North Shore residents, significantly improve shoreline access and use opportunities for residents, and include other amenities that can be enjoyed by residents and visitors alike.

3.8.1.2 Planning Principles

The following planning principles apply to the Kuilima Resort.

- *Design Character.* Kuilima Resort is conceived as a destination resort relating to and integrated with the rural North Shore of O'ahu. It is envisioned as a resort overlaid with the simplicity and timelessness of a kama'āina country estate with characteristic hospitality and elegance.

- *Appropriate Scale and Siting.* The master plan reflects the estate-like quality in the low density of buildings, the lush and extensive landscaping on all parcels and common areas, and the gracious entry drive servicing the entire property.

- *Environmental Compatibility.* Kuilima Resort is within a unique environment with several major constraints and guidelines for development, which have been factored into the siting for major facilities. New resort facilities should respect constraints of flooding, wetlands, sand dunes, wildlife, and archaeology.

- *Community Integration.* The master plan includes dedicated public parks at Kawela Bay and Kahuku Point, as well as community access and parking for shoreline use at multiple locations within the resort.

3.8.1.3 Guidelines

Guidelines for the development of Kuilima Resort should follow the adopted Kuilima Resort Design Guide and Kuilima Resort Architectural Guidelines, which include the following:

- *Built Form*
  - Express the kama'āina architectural themes of the resort through building design.
  - Make building massing and configuration compatible with the intimate character of the resort.
  - Develop projects in multistructure complexes rather than single monolithic buildings.

- *Natural Environment*. Preserve and enhance existing features of topography, landscape and views unique to the various use zones within the development.

- *Shoreline Access*. Enhance public access to the shoreline through the creation of two new major shoreline parks. Access through the main resort should also be retained with public parking provided.

- *Views and Vistas*. Site and landscape buildings in a manner that protects and emphasizes the dramatic coastal views from within the resort.

- *Landscaping*. Provide lush and extensive landscaping on all parcels and common areas, and the entry drive servicing the entire property. Integrate mature trees into the complexes.

3.8.1.4 Kuilima Resort Master Plan

The Kuilima Resort Master Plan, **Figure 3-4**, depicts the planned and zoned land uses within the Kuilima Resort. Land uses include the following:

Resort. Sites for resort and low- to medium-density residential units are indicated.

Commercial. A resort commercial area is planned adjacent to the existing Turtle Bay Hilton.

Golf Course. The existing 27-hole golf course is planned to integrate portions of the former golf course area (now open space) to become two 18-hole golf courses.

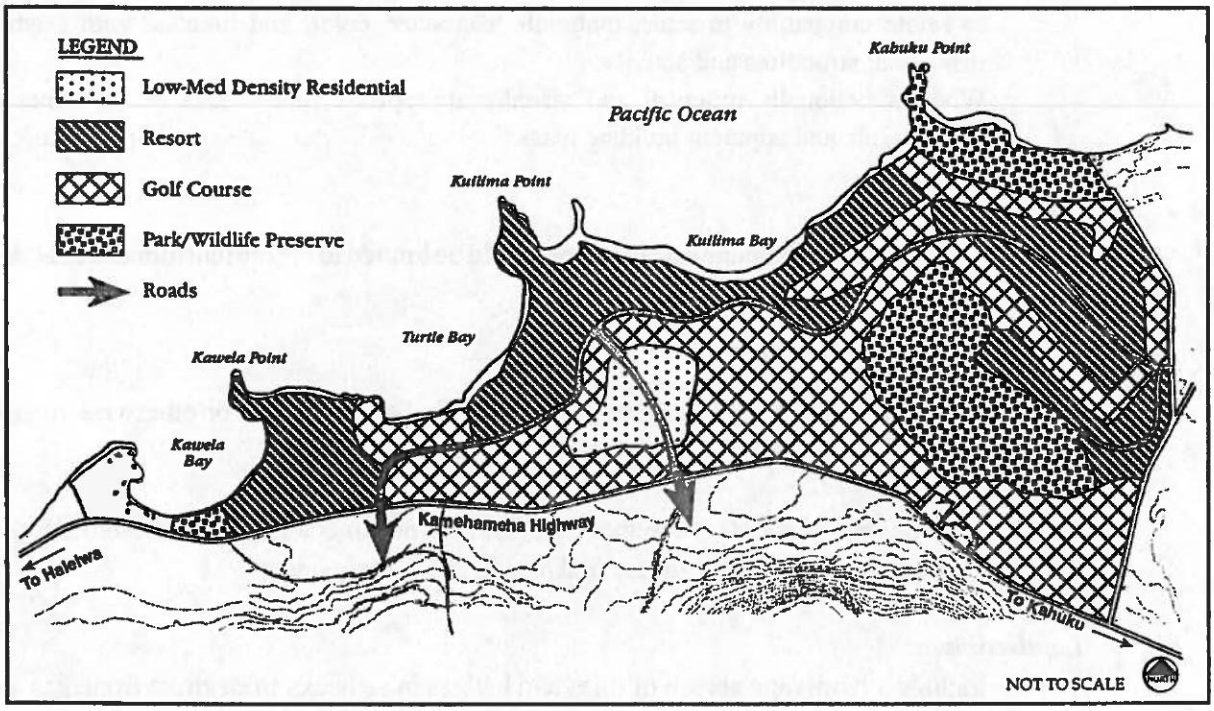
3.8.2 VISITOR ATTRACTIONS

3.8.2.1 General Policies

Plans to renew and expand facilities as necessary to maintain the viability and vitality of the Polynesian Cultural Center (PCC) should be supported. Expansion of PCC may include expanding toward Hau'ula and into the vacant resort-zoned land adjacent to the Rodeway Inn.

The Center, one of O'ahu's leading visitor attractions, is unique in its primary orientation toward Pacific Island themes. To maintain its continued viability, visitor attractions like the PCC must remain constantly aware of market trends and be able to adjust on a timely basis to changing visitor interests.

Figure 3-4 Kuilima Resort Land Use Map



3.8.2.2 Planning Principles

The following planning principles apply to the Polynesian Cultural Center (PCC):

- *Design Character.* Expansion facilities should be consistent with the Polynesian themes expressed in the existing center. The PCC should continue to improve its overall design character and outward appearance as a Polynesian attraction, with emphasis toward tropical landscaping.

- *Appropriate Scale and Siting.* Expansion areas should be low-rise in character and set back from the roadway and adjacent uses. The architectural character of new facilities should respect the region's rural features.

- *Accessibility.* Impacts to Kamehameha Highway traffic flow should be minimized by focusing traffic through existing intersections without creating new driveway connections to the highway.

3.8.2.3 Guidelines

Guidelines for the development of the Polynesian Cultural Center are:

- *Built Height and Mass.*
  - Design and construction of new facilities or renovations should be consistent with existing architectural character or appropriate Polynesian themes.

- Portions of the Center adjacent to residential areas should be organized and designed to relate compatibly in scale, materials, character, color, and function with existing residential structures and activity.
- Where functionally practical and visually appropriate, use breaks in roof lines to reduce scale and apparent building mass.

- *Accessibility.*
  - Access from Kamehameha Highway should be limited to the current number of access points.

- *Views and Vistas.*
  - Place any new parking and service areas behind the buildings or otherwise visually screen them from streets and residential areas.
  - Provide view channels of the shoreline from Kamehameha Highway through any new facilities that are located on the makai side of the highway.

- *Landscaping.*
  - Include a landscape screen of trees and hedges in setbacks from street frontages and property lines.
  - Plant and maintain shade trees throughout parking lots.

- *Shoreline Access.*
  - Provide a public pedestrian easement to the shoreline through any new facilities that are located on the makai side of Kamehameha Highway.

3.8.3 ECO-TOURISM OPERATIONS

Eco-tourism operations are a growing alternative form of tourism activities. They may include guided hiking trips, water-based activities, horseback riding or nature tours, and in some cases overnight camping. These operations could provide new employment and economic opportunities for the residents of Ko'olau Loa's communities, alleviating the need for people to commute outside of the region for employment.

3.8.3.1 General Policies

Appropriate regulations should be adopted to address where eco-tourism operations should be located, their hours of operation, and allowable uses. Within the Ko'olau Loa region, potential appropriate locations for eco-tourism operations include less productive agricultural lands at Kualoa Ranch and within Ka'a'awa Valley, and mauka of Lā'ie's Technology Park site.

3.8.3.2 Planning Principles

The following planning principles apply to eco-tourism operations:

- *Allowable Uses.* Such uses should be low impact, appropriate to sound management of affected resources, compatible with other existing uses in the area, and reflective of community values.

- *Environmental Compatibility.* Eco-tourism uses should be compatible with the natural environment and adjacent uses. Activities should not significantly or negatively alter the natural state of the environment in which they take place or impact other uses.

- *Appropriate Scale and Location.* Facilities used for the assembly of participants and parking of the vehicles should be low-rise and small in scale. They should also be sufficiently set back from public roadways and adjacent properties, and screened with landscaping, so that they are not visible from these locations.

- *Accessibility.* Eco-tourism operations should be reasonably accessible from Kamehameha Highway and should not adversely impact traffic on local streets.

3.8.3.3 Guidelines

Guidelines for the development of eco-tourism operations include the following:

- *Visual Screening.*
  - Visually screen parking areas from roadways, streets and residential areas.

- *Lighting and Signage.*
  - Use only low-level or indirect lighting which meets safety and security requirements.
  - Ensure compatibility between the type, size, design, placement, and color of signage and the context of adjacent uses and the area's rural character.

3.8.4 RELATION TO LAND USE MAP

The resort areas at Kuilima Resort north of Kahuku and at Hukilau Resort in Lāʻie are shown in pink on the Koʻolau Loa Land Use Map in Appendix A. They represent the general location or size of the resort areas.

- The Polynesian Cultural Center is shown on the Land Use Map in burgundy.

- The locations for eco-tourism operations are not depicted on the map. Their locations are to be determined through appropriate zoning permit processes.

3.9 INSTITUTIONAL USES

3.9.1 HEALTH AND WELLNESS FACILITIES

Kahuku Hospital is the primary health care facility in the region. It provides the full range of medical services for both Ko'olau Loa and the North Shore.

In response to the growing demand for alternative methods of health care treatment and prevention programs, specialized facilities are being developed throughout the country which are intended to meet the needs of certain segments of the population, such as the elderly and/or disabled people, those with health problems, and for those wanting to participate in preventative-measure and educational programs. These types of health and wellness facilities can take a variety of forms, ranging from consolidated buildings to relatively small or even residential-scale structures where training and clinical programs could be offered to short-term participants. An example in Ko'olau Loa is the Ponds at Punalu'u assisted living facility. In addition to these existing facilities, the Ponds at Punalu'u is also proposing a 120-bed long-term care nursing facility, which is currently pending City review.

3.9.1.1 General Policies

Where possible, government land use policies, public facility improvements and community assistance programs should support the retention and long-term viability of Kahuku Hospital. Allow for possible development of other health-related facilities that will support the continued viability of Kahuku Hospital and provide critical complimentary health services for the community.

A limited development of other health and wellness facilities in Ko'olau Loa should be encouraged in order to enhance job opportunities and the availability of a "continuum of care" for local residents. Such facilities should be located and designed in a manner which is compatible with adjacent uses and the region's rural character.

3.9.1.2 Planning Principles

The following planning principles apply to health and wellness operations:

- *Design Character*. Health and wellness facilities should be low-density, residential-scale buildings. The visibility of buildings or outdoor activities should be minimized through site planning and landscaping.

- Compatibility *with Environmental and Adjacent Uses*. Facilities should be sited so that the intensity of uses and hours of operation are compatible with adjacent uses. The built environment should avoid adverse impacts on natural resources. To retain a sense of place, facilities should incorporate natural features and landscape materials that are indigenous to the area.

- *Accessibility*. Facilities should be easily accessible from a collector street or major roadway while minimizing negative impacts on residential streets. Sufficient on-site parking should be provided.

3.9.1.3 Guidelines

Guidelines for the development of Health and Wellness Operations include the following:

- *Building Height and Mass*. Maintain a rural character in the height, size, and massing of buildings in order to be compatible with adjacent residential or commercial uses.

- *Landscaping*. Minimize the visibility of parking areas from the street by planting a landscape screen along street frontages.

3.9.2 BRIGHAM YOUNG UNIVERSITY – HAWAI'I

Brigham Young University-Hawai'i (BYU-H) is a four-year college with an annual enrollment of approximately 2,000 students from numerous countries around the world. The existing BYU-H campus is approximately 210 acres in size and has significant land area available to accommodate planned future improvements to academic programs, student and faculty housing, and other support facilities. A technology park, which may be affiliated with the University, has been designated adjacent to the mauka end of the BYU-H campus. Development policies and guidelines for the technology park are addressed in Section 3.7.

Brigham Young University-Hawai'i should continue to evoke a sense of place that distinguishes it as an important educational and cultural institution and unique asset to the Ko'olau Loa region. The following are general principles for development and maintenance of the campus:

- The University should maintain its strong community-orientation and continue to serve the Ko'olau Loa region as a center of Hawaiian and other Polynesian cultures, as well as support community activities and services and provide adult educational opportunities.

- The design of new facilities should be environmentally sensitive and reflect the appropriate architecture and culture of the existing campus and adjacent residential areas.

3.9.3 Relation to Land Use Map

Institutional areas are shown on the Ko'olau Loa Land Use Map in Appendix A as follows:

- *Health and Wellness*. Locations for existing and possible new health and wellness facilities are not depicted on the Land Use Map in Appendix A. They are permitted in all areas subject to project-by-project review for compatibility with surrounding uses. An example of a potentially suitable location is the vacant site adjacent to Kahuku Hospital.

- *Institutional*. The general locations of existing schools are indicated by special symbols. Brigham Young University-Hawai'i's campus is designated by a blue colored area that represents its general location and shape. Churches, child care centers, fire stations, hospitals, and other public facility and utility uses serving the area are not specifically designated on the Land Use Map, but are allowed in all residential and commercial areas, subject to appropriate zoning controls to assure compatibility with surrounding uses.

4. PUBLIC FACILITIES AND INFRASTRUCTURE POLICIES AND PRINCIPLES

The vision for Ko'olau Loa will be implemented in part through application of the general policies and principles for public facilities and infrastructure which are presented in the following sections.

4.1 TRANSPORTATION SYSTEMS

This section describes the existing road, transit, and bikeway network in Ko'olau Loa as well as plans for future improvements. These elements are shown on the Public Facilities Map in Appendix A. The section concludes with general policies and planning principles to guide future transportation system development in Ko'olau Loa.

4.1.1 OVERVIEW

4.1.1.1 ROADWAY SYSTEM

The only arterial highway in Ko'olau Loa is Kamehameha Highway (State Highway 83). It is also the only roadway linking the northerly windward O'ahu coastline communities to North Shore to the west and Ko'olau Poko to the southeast. Kamehameha Highway is a scenic highway, passing directly along the shoreline in several sections, providing dramatic ocean and coastal vistas and *mauka* views of the Ko'olau Mountains.

Kamehameha Highway is a two-lane highway for its entire length in Ko'olau Loa. In recent years, modest improvements have been made along this 19-mile section of coast highway, including paved shoulders, drainage improvements, lighting, bus turn-outs and left-turn lanes at busy intersections. While others are being planned, the one existing traffic signal in Ko'olau Loa is located at the entrance to Kahuku High School.

Other significant roadways in Ko'olau Loa are generally *mauka-makai* serving the inland residential areas of Ka'a'awa, Punalu'u, Hau'ula, Lā'ie and Kahuku. Key intersections along this coast highway include Polinalina Road in Ka'a'awa, Kanaka Nião Road in Kahana Valley, Haleaha Road and Punalu'u Valley Road in Punalu'u, Kukuna and Hauula Homestead Roads in Hau'ula, Naniloa Loop and Hale La'a Boulevard in Lā'ie, Pualalea Road in Kahuku, and Kuilima Drive in Kawela. There are few parallel connector roads within the communities.

Planning and development of major roadways is the shared responsibility of the State Department of Transportation and the City Department of Transportation Services. Planning and use of federal transportation funds is coordinated through the O'ahu Metropolitan Planning Organization (OMPO), a joint City-State agency.

In November 1995, OMPO prepared the 2020 O'ahu Regional Transportation Plan (ORTP). According to the ORTP, there are no major improvement projects which would involve increasing the capacity of Kamehameha Highway. Planned improvements involve a long-term bridge replacement program and coastline reinforcement in areas such as Ka'a'awa, Punalu'u and Hau'ula where coastal erosion has impacted Kamehameha Highway. The community has expressed a need for emergency escape routes, which should be developed without adversely impacting the community.

The community has stated a priority need for safety improvements to the narrow, winding Kamehameha Highway through Ko'olau Loa. These improvements would include widening travel surface and shoulder pavement in critical areas where it would not adversely impact private property rights and cultural and

historical sites, lighting and drainage. A left-turn stacking lane is needed at the traffic signal light at Kahuku High School. In addition, driver education and signage are important components for highway safety.

4.1.1.2 TRANSIT SYSTEM

TheBus provides bus service islandwide, including the Ko'olau Loa community. On a normal weekday, nearly 40 percent of transit trips on TheBus are between home and work. More than 40 percent of the weekday trips are for other home-based trips, such as to school or shopping. The remainder are non-home based trips and trips made by visitors.

Two bus routes serve the Ko'olau Loa region:

No. 55	Kāne'ohe/Wahiawā Circle Island
No. 88A	North Shore Express

There are no formal park and ride facilities serving Ko'olau Loa as a central access point for buses and autos. Kuilima Resort serves as a collection point for commuters that take TheBus to work in Honolulu. The State operates a vanpool program where federal tax credits are made available to participating employers and employees. Vanpools work like an express bus on a smaller scale providing door to door service, and they can be effective for outlying areas, particularly when vanpools are arranged by groups with the same employer.

There are no plans to extend or expand the number of bus routes, but the frequency and capacity of transit service will be increased by additions to the islandwide bus fleet. It is anticipated that the number of buses assigned to the Windward Coast will be increased over the next 10 years from 72 to 97, Comprehensive Bus Facility and Equipment Requirements Study (1994). Service will also be enhanced by making roadway and bus facility improvements (i.e., bus turn-outs, bus stop shelters) designed to make bus travel more efficient, convenient and comfortable.

4.1.1.3 BIKEWAY SYSTEM

The island of O'ahu has 55.4 miles of existing bikeways. A State master plan for bikeways, Bike Plan Hawai'i (1994), proposes another 293 miles islandwide. The timetable for development will depend upon construction feasibility, including right-of-way acquisition and funding. Bike Plan Hawai'i defines the various types of bikeways:

- ***Bicycle Route.*** Any street or highway so designated for the shared use of bicycles and motor vehicles or pedestrians or both. Bike routes are of two types: a) a widened curb lane in an urban-type area; and b) a paved right shoulder in a rural-type area.

- ***Bicycle Lane.*** A portion of a roadway designated by striping, signing, and pavement markings for the preferential or exclusive use of bicycles. Through travel by motor vehicles or pedestrians is not allowed unless specified by law, rule, or ordinance; however, vehicle parking may be allowed for emergencies. Crossflow by motorists to gain access to driveways or parking facilities, and pedestrian crossflows to gain access to parked facilities, bus stops, or associated land use, are allowed.

- ***Bicycle Path.*** A completely separated right-of-way normally designated for the exclusive or semi-exclusive use of bicycles. Through travel by motor vehicles is not allowed unless specified by law, rule or ordinance. Where such a facility is adjacent to a roadway, it is

separated from the roadway by a significant amount of open space and/or a major physical barrier (such as trees or a considerable change in ground elevation.)

The State's bikeway master plan proposes a bike route along Kamehameha Highway in Ko'olau Loa. A bikeway plan for bicycle routes along private streets throughout the community of Lā'ie has also been proposed by the Lā'ie Community Advisory Group.

4.1.2 GENERAL POLICIES

The following general policies support the vision for a multimodal transportation system for Ko'olau Loa:

- To retain Ko'olau Loa as a predominantly rural area with limited future growth, its transportation system should provide:

  1. Adequate access for all communities, shopping and recreation areas in Ko'olau Loa.

  2. Roadway improvements, developed in consultation with Ko'olau Loa communities, which emphasize highway safety as the highest priority while providing efficient, pleasant travel experiences.

  3. Adequate capacity for peak travel to and from community centers.

- Reduce reliance on the private passenger vehicle by promoting travel demand management measures (e.g., carpool and vanpool programs) for both commuting and local trips.

- Provide an integrated system of bikeways for work, school, shopping trips, and recreation, including rides to playgrounds, beach parks, and other recreational areas.

4.1.3 PLANNING PRINCIPLES AND GUIDELINES

Commuter Travel. For commuter trips, the objective is to ensure that travel time and peak periods do not lengthen commensurate with growth in population.

1. Provide improved services and facilities for express buses, such as more frequent, larger-capacity and more comfortable vehicles and park-and-ride facilities.

2. Promote ridesharing such as carpooling and vanpooling.

Local Travel. For local trips, the objective is to promote alternative modes of travel and less automobile travel.

1. Modify right-of-way design in selected areas, particularly along principal pedestrian routes and street crossings, and near bus stops – e.g., change travelway widths, pavement widths or texture, introduce appropriate signage, and more generous landscape planting.

2. Provide more convenient pedestrian paths within commercial and other high-activity areas to encourage people to walk short distances for multi-purpose trips instead of moving the vehicle to another parking facility.

3. Implement traffic calming measures appropriate for residential areas to reduce speeding in excess of posted limits and discourage use of local streets for bypass or shortcut, thereby sustaining overall safety and enjoyment for pedestrians and bicyclists.

4. Design off-street parking facilities more efficiently to encourage joint use of parking and less pavement area dedicated to parking.

5. Provide safe pedestrian walkways on bridges.

4.2 WATER ALLOCATION AND SYSTEM DEVELOPMENT

In keeping with the rural character of Ko'olau Loa, allocation of water is an important issue. Water management strategies include water conservation, groundwater development, surface water development, desalination, and effluent water reuse, without adversely impacting stream flow or nearshore water quality. In the development of water resources, it is important that the needs of Ko'olau Loa be met first, and that the transmission of water out of Ko'olau Loa will not be detrimental to Ko'olau Loa. Hence, the availability of Ko'olau Loa water for the islandwide water supply needs will first account for all in-district agricultural and urban needs, while balancing the environmental and cultural value of the area's stream systems.

The State enacted the Water Code (HRS Chapter 174C) in 1987 to protect, control and regulate the use of the State's water resources. This Code is implemented through the Hawai'i Water Plan which addresses water conservation and supply issues on a statewide level by incorporating county water plans and water-related project plans.

The O'ahu Water Management Plan (OWMP), signed into law in 1990, is the City and County of Honolulu's component of the Hawai'i Water Plan. The OWMP sets forth strategies to guide the State Commission on Water Resource Management (CWRM) in planning, management, water development, use and allocation of O'ahu's water resources. These strategies support the land use policies set forth in the City and County's development plans.

Based on CWRM's 1996 basal permitted uses on O'ahu of about 340 million gallons per day (mgd), there is approximately 75 mgd of untapped *sustainable* yield remaining in the islandwide groundwater supply that could be developed. (This estimate accounts for interim instream flow standards.)

In Ko'olau Loa, municipal water is supplied by the Board of Water Supply (BWS) and the Lā'ie Water Company (LWC). The BWS supplies water to most of Ko'olau Loa, while the LWC provides water to approximately 8,000 residences as well as commercial and agricultural uses in Lā'ie, BYU-Hawai'i, and the Polynesian Cultural Center (PCC). In 1990, BWS and LWC water systems consumed approximately 3.0 mgd of potable water.

Agricultural water, in Ko'olau Loa, is supplied by stream diversions and groundwater wells. Existing and future agricultural water needs will be accounted for in the water management plan for Ko'olau Loa..

The BWS is undertaking an integrated water resources planning process, utilizing community involvement, to provide the next update of the OWMP.

4.2.1 GENERAL POLICIES

The following general policies seek to maintain an adequate supply of good quality water, retain sufficient acreage in watersheds to insure infiltration into groundwater aquifers, and strengthen the protection of watersheds.

- Protect and preserve streams, wetlands' natural drainage systems, watershed areas and the shoreline and coastal areas. The high quality of the region's nearshore and coastal water should be maintained to benefit recreation, the economy, and the region's natural biological systems. Buffer zones around streams and wetlands should be provided to protect the ecological integrity of these features.

- Retain existing acreage in the State Conservation or the City Preservation Districts to protect watersheds. In addition, important watershed areas which are in designated but unused Agricultural or Urban Districts should be reclassified to the State Conservation or City Preservation Districts, in consultation with affected landowners, community and pertinent resource agencies.

- Integrate management of all potable and nonpotable water sources, including groundwater, stream water, storm water and effluent, following State and City legislative mandates.

- Adopt and implement water conservation practices in the design of new development and the modification of existing uses, including landscaped areas.

- Where feasible and appropriate, encourage use of nonpotable water for irrigation of landscaping and agricultural lands to conserve the supply of potable water. Consider the use of dual water lines to allow conservation of potable water and the use of nonpotable water for irrigation and other appropriate uses, where practical.

4.2.2 PLANNING PRINCIPLES AND GUIDELINES

- ***Development and Allocation of Potable Water.*** While the State CWRM has final authority in all matters regarding administration of the State Water Code, the BWS should coordinate development of potable water sources intended for urban use on O'ahu. The BWS and other public utilities should certify that adequate potable and nonpotable water is available for a new residential or commercial development to be approved. State and private well development projects should be coordinated and made consistent with City water source development plans.

- ***Water Conservation Measures.*** Conserve the use of potable water by implementing the following measures, as feasible and appropriate:

  1. Low flush toilets, flow constrictors and other water conserving devices in commercial and residential developments as required by ordinance.

  2. Indigenous, drought-tolerant plant material and drip irrigation systems in landscaped areas, and use drip irrigation systems.

  3. The use of recycled water for the irrigation of golf courses and other landscaped areas where this would not adversely affect potable groundwater supply.

4. Future water development should not adversely impact stream flow or nearshore water quality.

4.3 WASTEWATER TREATMENT

The majority of development in Ko'olau Loa is served by individual wastewater treatment systems. Parts of Ko'olau Loa are served by wastewater service areas, including the County wastewater service area in Kahuku and two private wastewater service areas at Kuilima Resort and Lā'ie.

- **Kahuku Wastewater Treatment Plant.** The Kahuku Wastewater Treatment Plant (WWTP) is the only municipal wastewater treatment facility in the Ko'olau Loa region. The facility is located to the north of Kahuku town, beyond the former sugar mill, near the Ki'i Pond Wildlife Refuge. The facility has a design capacity of 0.4 mgd average flow and is operating at approximately 30 to 40 percent of capacity. The plant receives residential wastewater from Kahuku Villages and the other residential and commercial uses in Kahuku town. The Kahuku WWTP system is designed as a gravity flow collection system from the mauka development areas. Disposal is via an injection well system into the brackish groundwater. This facility should be converted to a recycling facility.

- ***Kuilima Wastewater Treatment Plant.*** Kuilima Resort is served by a private wastewater treatment facility, involving a natural oxidation ponds treatment process. The Kuilima WWTP was designed for initial average flows of 0.66 mgd and can be expanded to 1.3 mgd. The resort currently uses less than half of the existing capacity. Reclaimed water from Kuilima Resort is used for golf course irrigation.

- ***Lā'ie Water Reclamation Facility.*** The Lā'ie Water Reclamation Facility (WRF) is located in the mauka portion of the community behind the BYU-H campus. The Lā'ie WRF was recently upgraded to provide 0.9 mgd of treatment capacity utilizing an activated sludge aeration/clarifier treatment process. Disposal of the treated effluent is through a combination of water reuse for irrigation (agriculture and landscaping) and subsurface disposal. The expansion of the wastewater collection system is planned for existing un-sewered Lā'ie residential and proposed new Lā'ie housing areas. The capacity of the Lā'ie WRF can accommodate the existing and proposed development in Lā'ie.

4.3.1 GENERAL POLICIES

The following general policies apply to wastewater treatment in Ko'olau Loa:

- Encourage coordination between public agencies and private landowners in addressing adequacy of wastewater treatment within the region. The planned expansion of the Lā'ie Water Reclamation Facility proposed for existing and future homes in Lā'ie should proceed in accordance with applicable State and Federal regulations and conditions of existing land use approvals.

- Provide collection systems, where practical, to eliminate individual cesspools, and to protect aquifers, streams, estuaries and nearshore waters from contamination.

- Replace outdated individual cesspools with septic tanks and leaching fields.

- Encourage water recycling at Kahuku Wastewater Treatment Plant.

- Treat and beneficially use, where feasible, reclaimed water for irrigation as a water conservation measure.

4.3.2 PLANNING PRINCIPLES AND GUIDELINES

- ***Water Recycling.*** As feasible and appropriate, beneficially use reclaimed water for agriculture and landscaping irrigation, as well as other non-potable water uses.

- ***Use of Buffer Zones and Landscape Elements.*** Establish and maintain a sufficient separation between wastewater treatment plants and any nearby urban uses to avoid significant adverse odor impacts, and provide sufficient screening which substantially block views of such plants from developed areas, parks and public rights-of-way.

- ***Adjacent Uses.*** Discourage new residential, commercial, resort, or school uses in close proximity to wastewater treatment plants where odors are present.

4.4 ELECTRICAL POWER DEVELOPMENT

The Hawaiian Electric Company forecasts that increased demand will create a need for additional islandwide power generation capacity by 2020. Growth policies in the General Plan of the City and County of Honolulu direct significant residential growth to the Primary Urban Center, 'Ewa and Central O'ahu Development Plan Areas. Ko'olau Loa is designated as a rural area and is projected to have limited future population growth. As such, Ko'olau Loa will not be a major source of future islandwide power demand. There is the possibility that the wind farm located in Kahuku may be modernized or expanded.

4.4.1 GENERAL POLICIES

The following general policy pertains to electrical power development in Ko'olau Loa.

- Locate and design system elements such as renewable electrical power facilities, sub-stations, communication sites, and transmission lines, including consideration of underground transmission lines, to mitigate any potential adverse impacts on scenic and natural resources, as well as public safety considerations.

4.4.2 PLANNING PRINCIPLES AND GUIDELINES

- ***Facility Routing and Siting Analysis.*** If any new or relocated electrical power facilities, substations, communication sites, or transmission lines or communication towers are necessary, the selection of the route or site of such facilities should be supported by an analysis demonstrating how potential adverse impacts on scenic and natural resources have been mitigated. Although these facilities are not shown on the Public Facilities Map, their routes and sites are reviewed and permitted by administrative agencies of the City when they are within the Special Management Areas.

4.5 SOLID WASTE HANDLING AND DISPOSAL

Solid waste collection, transport and disposal operations on the island are a consolidated responsibility of the City Department of Environmental Services, Refuse Division (for domestic curbside pickup) and private haulers (for commercial and multi-family pickup). In addition, individuals can haul their own trash to one of

six convenience centers around O'ahu. The collected refuse is ultimately recycled or disposed of either in a waste incineration facility or sanitary landfill.

Incineration at the H-POWER plant in 'Ewa, accounts for approximately 50 percent of the island's waste disposal. The City's sanitary landfill is at Waimānalo Gulch, also in the 'Ewa region, and has a remaining site life of less than five years under existing load levels. The City has instituted recycling and other waste diversion programs in an effort to extend the useful life of this landfill.

In Ko'olau Loa, there is one convenience center at Lā'ie where residents can dispose of household rubbish, green waste, and large items. The Lā'ie Water Reclamation Facility has a green waste composting facility. The next closest facilities are at Kawailoa Transfer Station north of Hale'iwa and Kapa'a Transfer Station in Kailua. There are no plans to create an additional convenience center, transfer station or landfill operation in Ko'olau Loa.

4.5.1 GENERAL POLICIES

The following general policies apply to solid waste handling and disposal in Ko'olau Loa:

- Support implementation of the Solid Waste Management Plan.
- While the region is not expected to contribute significantly to future increases in O'ahu's solid waste management demands and does not contain sites suitable for the processing or disposal of solid waste on an islandwide scale, Ko'olau Loa can and should play a part in the City's efforts toward recycling, waste diversion and more efficient solid waste collection.

4.5.2 PLANNING PRINCIPLES AND GUIDELINES

- ***Recycling Programs and Facilities.*** Promote the recycling of waste materials by providing expanded collection facilities and services, and public outreach and education programs. Encourage recycling of regional green waste at the City facility and the Lā'ie Water Reclamation Facility composting operation.
- ***Efficient Solid Waste Collection.*** Expand the use of automated refuse collection in residential areas.

4.6 DRAINAGE SYSTEMS

The major streams that drain the valleys of Ko'olau Loa include: Ka'a'awa Stream, Ma'akuo Stream, Kawa Stream, Waiono Stream, Kaluanui Stream, Kaipapau Stream, Lā'iemaloo Stream, Wailele Stream, Kahawainui Stream in Kahana and Lā'ie, Mālaekahana Stream, Ōhia Stream, Kawela Stream, Oio Stream, "Hospital Ditch," and other drainageways. These streams originate in the Ko'olau Range and eventually discharge into the ocean along the Ko'olau Loa coast. The drainage basins vary in size, some being long and narrow, and others including significant collection areas in the agricultural lowlands.

Several drainageways have been prone to flooding during the more intense rainfall events. In particular, lands surrounding Punalu'u Stream, Wailele Stream and Mālaekahana Stream have experienced severe flooding during recent years. Kahawainui Stream channel improvements were made in the mid-1990's, which helped alleviate flooding problems in this part of Lā'ie. Heavy rainfall at the head of the valleys, combined with debris clogging the lowland channels, has on occasion overwhelmed the capacity of these drainageways. In

many areas of Ko'olau Loa, the pavement of Kamehameha Highway diverts or detains the overland flow of stormwater runoff toward the ocean. This condition can cause localized flooding of the highway and *mauka* side properties.

A federal reconnaissance study examined options for flood control along the Wailele Stream. Construction of flood control improvements including a berm is being considered, with the design of the project being jointly funded by the federal government, City and County of Honolulu, and Hawai'i Reserves, Inc.

Drainage problems exist in Kahuku in the lowland floodplains of Ōhia, Kalaeo Kahipa, and Mālaekahana Streams. As existing drainage facilities are inadequate during major storm events, the runoff from *mauka* areas floods the campus of Kahuku High and Intermediate School, as well as portions of the commercial area and the Walkerville residential area. Agencies from the City, State Department of Land and Natural Resources, the U.S. Army Corps of Engineers and the Estate of James Campbell are coordinating their efforts in a regional drainage assessment that provides alternative solutions.

Mālaekahana Stream flooding affects Kamehameha Highway and downstream areas. The State Department of Transportation is completing bridge improvements at Mālaekahana Stream to alleviate highway flooding conditions.

4.6.1 GENERAL POLICIES

General policies pertaining to Ko'olau Loa's drainage areas are:

- Emphasize control and minimization of non-point source pollution and the retention of storm water on-site and in wetlands in the design of drainage systems in accordance with existing City, State and Federal regulations while maintaining the existing habitat capability and water quality of streams and nearshore waters.
- View storm water, where appropriate, as a potential irregular source of water for recharge of the aquifer that should be retained for absorption rather than quickly moved to coastal waters.
- When drainageways must be modified for flood control purposes, select approaches and solutions which:

1. Improve existing habitat capability;
2. Maintain existing rural and aesthetic qualities;
3. Avoid degradation of existing coastline and estuarine areas or nearshore water quality;
4. Avoid degradation of the quality of water entering nearshore waters; and
5. Avoid increase in the volume or rate of freshwater intrusion into nearshore waters.

- Design drainageways for flood control to accommodate a 100-year flood.
- Encourage abutting property owners along streams and/or drainageways to stabilize the banks with vegetation where erosion potential is high.
- Encourage coordination between public agencies and private landowners on needed drainage improvements with community input, and develop a phased plan for improvements.

- Keep drainageways clear of debris to avoid flooding problems.
- The State should assess areas of Kamehameha Highway where the pavement diverts or detains overland flow of stormwater runoff causing localized flooding of the highway and *mauka* properties.

4.6.2 PLANNING PRINCIPLES AND GUIDELINES

Principles to guide the maintenance and improvement of Ko'olau Loa's drainage systems include:

- ***Retention and Detention***. Emphasize retaining or detaining storm water for gradual release into the ground as an alternative strategy for management of storm water.
- ***Stream Channel Improvements.*** Integrate planned improvements to the drainage system into a regional open space network by creating retention basins, passive recreation areas and recreational access for pedestrians and bicycles. Drainage system design should emphasize control and minimization of non-point source pollution. Where the hardening of stream channels is unavoidable, make the improvements in a manner which maintains and protects natural resources and aesthetic values of the stream, and avoid degradation of coastline and of stream and near-shore water quality, consistent with guidelines expressed in Section 3.1.3.4.
- ***Floodplain Management.*** Any future work performed within the 100-year floodplain will have to adhere to the requirements of the Federal Emergency Management Agency (FEMA) and meet all flood-proofing requirements.
- ***Systematic Approach***. Use a comprehensive, systemic approach to addressing local flooding and drainage problems.

4.7 SCHOOL FACILITIES

Public schools in Ko'olau Loa are part of the State Department of Education's (DOE) Windward District. There are five elementary schools, and one intermediate/high school within DOE's Kahuku Complex. (One of the five elementary schools is Sunset Elementary School which, although in the North Shore Development Plan area, contributes to the enrollment of Kahuku High and Intermediate School.)

Recent enrollment figures for these schools show that some are operating below capacity while some are operating at or near capacity, as shown in Table 4-1. School facilities planning must account for existing and additional demand that could be generated by future residential developments, particularly at Lā'ie and Kahuku.

Proposed new housing development in Lā'ie and Kahuku will have an impact on Lā'ie Elementary School, Kahuku Elementary School, and Kahuku Intermediate and High School. The previous Lā'ie Master Plan approved by the City Council in 1992 included an 8-acre site for an elementary school. Current Lā'ie master plan proposals have recommended expansion and improvement of the existing Lā'ie Elementary School as an alternative to building a new school; but the DOE has recommended that a new school should still be included in the plan. It is expected that prior to zone change approval, the developer will need to work closely with the DOE to ensure that adequate school facilities will be in place to meet the demand generated by new residential development in Lā'ie. Developers of new residential development in Kahuku will also need to coordinate with the DOE on the adequacy of school facilities to meet the additional demand generated by new residential development.

Kahuku Intermediate and High School is near capacity, below DOE standards in terms of existing facilities and land area, and has serious drainage problems affecting the existing campus, including the athletic facilities. A master plan was completed in November 1997, pending a number of unresolved issues, including drainage impacts in portions of the proposed expansion area. The master plan is intended to bring the campus to DOE Educational Specification Standards, correct adverse building and site (drainage) conditions, provide facilities for new and existing activities and curricula, and expand the school's capacity for a design enrollment of 2,200 students.

Table 4-1
Public School Enrollment and Capacity, Ko'olau Loa

Facility	1997 Enrollment	1998 Capacity
Elementary		
Sunset	297	511
Ka'a'awa	182	178
Hau'ula	355	530
Lā'ie	821	909
Kahuku	544	534
Intermediate & High School		
Kahuku	1,977	2,019

Source: Department of Education, Facilities and Support Services Branch, 1998.

The union representing operators of heavy equipment, known as Operating Engineers Local 3, is proposing to establish a permanent vocational training facility in Kahuku *mauka* of Kamehameha Highway across from Turtle Bay Golf Course. The union proposes to relocate its existing field training activities from a nearby 15-acre site to a 190-acre site it plans to buy from Campbell Estate. Of the 190 acres, the union proposes to use approximately 30 to 35 acres as follows: 10 to 15 acres for a classroom and office facility, and up to five 4- to 5-acre sites for practical field training. The remainder of the site would be retained in its current "natural" condition. Since the entire site is typified by rolling terrain, the portions of it left undeveloped could buffer its facilities, field training, and other activity areas from adjacent or nearby uses. The proposed use may be appropriate if it does not create erosion or adverse offsite drainage patterns, or adversely impact agricultural policy, coastal waters, natural or cultural resources, adjacent agricultural activity, or other nearby land uses.

4.7.1 GENERAL POLICIES

General policies relating to school facilities are:

- Approve new residential development only after the DOE certifies that adequate school facilities, either at existing schools or at new school sites, will be available when the development is completed.

- Have developers pay their fair share of all costs needed to ensure provisions of adequate school facilities for the children living in their developments.
- Support the implementation of the Kahuku High School Master Plan.

4.7.2 PLANNING PRINCIPLES AND GUIDELINES

The following principles and guidelines should be followed in planning and operating schools in Ko'olau Loa.

- ***Shared Facilities***. Coordinate the development and use of athletic facilities such as playgrounds, playfields and courts, swimming pools, and gymnasiums with the DOE where the joint use of such facilities would maximize utilization and reduce duplication of functions without compromising the schools' athletic programs. (See also Section 3.3.4.2.)

- ***Fair Share Contribution***. Support the DOE's requests for fair share contributions from developersof residential projects to ensure that adequate school facilities are in place at existing schools to meet the needs of residents.

4.8 CIVIC AND PUBLIC SAFETY FACILITIES

The City and County of Honolulu operates 19 Satellite City Halls islandwide. These facilities offer many basic services for residents, including bus pass sales, bicycle registration, and driver's license renewals. There are no permanent Satellite City Hall facilities in Ko'olau Loa. The Satellite City Hall located in Hau'ula was closed as a full-time facility in April of 1996, and it has since been replaced by a mobile Satellite City Hall. The City has no plans to build a permanent facility in Ko'olau Loa, but should a permanent facility be considered, the City should examine appropriate alternative locations, including the existing facility at Hau'ula, or a new one in Lā'ie.

The Honolulu Police Department (HPD) services Ko'olau Loa out of the Kahuku Police Substation. Currently, 27 staff and officers (over three watches) are assigned to the area from Ka'a'awa to Waiale'e Stream.

The Honolulu Fire Department (HFD) operates fire stations in Ka'a'awa, Hau'ula and Kahuku. The Ka'a'awa Fire Station #21 is a new two-story facility equipped with a five-person engine company, an inflatable rescue boat, and two bays that could accommodate an ambulance or other needed equipment in the future. The Hau'ula Station #15 is equipped with a five-person engine company and a one-person tanker truck. The Kahuku station is equipped with a five-person engine. The HFD has previously proposed a new fire station in Kawela as a long-range project, if and when additional growth in the area justifies construction of a new facility. HFD is also currently planning the relocation of the Hau'ula Fire Station out of the flood area. HFD has no other plans for new stations in Ko'olau Loa nor do they anticipate increasing personnel at either of the existing stations.

Emergency care is provided from Kahuku Hospital. The Kahuku Hospital is a non-profit, civic and public safety facility which provides emergency services and a physician base for primary medical services to the Ko'olau Loa community. The hospital is outfitted with modern equipment and facilities, and a medical staff of 15 physicians and 60 employees. The community-owned hospital has received state subsidies and broad community support.

Ko'olau Loa is susceptible to natural hazards such as flooding, tsunami, tropical storms, hurricanes and high surf conditions. In the event of these hazardous conditions, residents need to evacuate to shelter facilities.

There are three shelter facilities in the Ko'olau Loa area, located at Brigham Young University, Kahuku Elementary, and Kahuku High/ Intermediate School. Flooding is the most common and recurring hazard. Under heavy, continuous rain and flooding conditions, OCDA plans are in place to evacuate endangered residents as required, and include additional evacuation options in the event of other emergencies.

There are presently 12 civil defense sirens within Ko'olau Loa, of which seven have been upgraded to new solar powered public address capable sirens. The remaining five will be upgraded as funds become available. There are other areas that need siren coverage which will be installed in the future by either the State or developers of new projects as appropriate.

4.8.1 GENERAL POLICIES

The following general policy pertains to public safety facilities:

- Support adequate staffing and facilities to ensure effective and efficient delivery of basic governmental service, emergency and primary medical services, and protection of public safety.
- Support the development of a regional library for Ko'olau Loa.
- Provide emergency shelters in Ko'olau Loa.

4.8.2 PLANNING PRINCIPLES AND GUIDELINES

- ***Satellite City Hall.*** Consider the establishment of a permanent Satellite City Hall in Ko'olau Loa, using the existing facility in Hau'ula or a new facility in Lā'ie, either of which could serve as a gathering place for activities and services.
- ***Better Utilization of Facilities.*** Support the planning and programming of public facilities to create maximum usage flexibility. In addition, encourage interagency coordination in better utilization of existing facilities to provide a more integrated approach to delivering services in the region. Examples could include using school facilities as emergency shelters, requiring that all new public buildings serve a secondary function as an emergency shelter, and establishing satellite city halls as multi-purpose facilities with expanded hours and services for area residents.
- ***Maintain Police and Fire/Ambulance Stations.*** The only anticipated need for new locations for either police or fire stations is the planned relocation of the Hau'ula Fire Station to relocate it out of the flood plain. A new site will be selected for the Hau'ula Fire Station. Accommodate any other necessary improvements through renovation or minor expansion of existing facilities for fire/ambulance and police protection. There is a need for a new ambulance in Ka'a'awa.
- ***Adequate Police and Fire/Ambulance Protection.*** Provide adequate staffing and facilities for fire/ambulance and police protection as required to support new developments.
- ***Emergency and Primary Medical Services.*** Support adequate staffing and facilities to ensure the continued operation and maintenance of Kahuku Hospital. Allow for the possible development of other health related facilities that will support the continued viability of Kahuku Hospital and provide critical complimentary health services for the community.

- ***Creation of Safe Environments.*** Promote the creation of safe, crime-deterrent public and private environments by encouraging the use of crime-preventive principles in the planning and design of communities, open spaces, circulation networks, and buildings.

- ***Civil Defense Sirens.*** Install civil defense sirens as needed to provide advance warning systems for the people residing and working in Ko'olau Loa communities.

5. IMPLEMENTATION

Implementation of the City's revised Development and *Sustainable* Communities Plans will be a major challenge for the City's planners, engineers, and other technical and policy-level personnel, as well as elected officials who determine the allocation of City resources. In contrast to previous Development Plans, which functioned primarily as regulatory guides and a prerequisite for City zoning of parcels proposed for development, the revised plans are oriented toward implementation on a broader scale. They now seek to implement a vision for the future by providing wider guidance for decisions and actions related to land use, public facilities, and infrastructure as well as for zoning matters. As a result, many of their provisions reflect the consultations which occurred throughout the planning process with pertinent implementing agencies and community representatives.

Many other city, county, and town jurisdictions on the U.S. mainland have instituted comprehensive planning programs that emphasize a proactive community-based planning and implementation process. These local governments seek to establish a strong link between planning policies and guidelines, and specific organization, funding, and actions needed to implement a variety of public and private projects and programs. The following sections of this Chapter are intended to strengthen the linkage to implementation to realize the vision of the future presented in this plan.

Implementation of the Ko'olau Loa *Sustainable* Communities Plan will be accomplished by:

- Initiating zoning map and development code amendments to achieve consistency with the policies, principles, and guidelines of the *Sustainable* Communities Plan;

- Guiding public investment in infrastructure through functional plans which support the vision of the *Sustainable* Communities Plan;

- Recommending approval, approval with modifications or denial of developments seeking zoning and other development approvals based on how well they support the vision for Ko'olau Loa;

- Incorporating *Sustainable* Communities Plan priorities through the Public Infrastructure Map and the City's annual budget process; and

- Conducting a review of the vision, policies, principles, guidelines, and CIP priority investments of the Ko'olau Loa *Sustainable* Communities Plan every five years and recommending revisions as necessary.

5.1 PUBLIC FACILITY INVESTMENT PRIORITIES

The vision for Ko'olau Loa requires the cooperation of both public and private agencies in planning, financing, and constructing infrastructure. The City must take an active role in working with the State, private landowners, and the community in planning infrastructure improvements. The priority public facility

investments include: drainage improvements in Kahuku, Lāʻie and Punaluʻu; highway safety improvements along Kamehameha Highway; and development of neighborhood parks in the region.

5.2 DEVELOPMENT PRIORITIES

Projects to receive priority in the approval process are those which:

- Involve publicly funded improvements that are consistent with the *Sustainable* Communities Plan vision, general policies, and planning principles.
- Involve applications for zoning and other regulatory approvals which are consistent with the *Sustainable* Communities Plan vision, general policies, and planning principles.
- Are located on vacant usable parcels within the Rural Community Boundary and are consistent with the *Sustainable* Communities Plan Land Use Map in Appendix A.

5.3 SPECIAL AREA PLANS

For areas requiring particular attention, Special Area Plans provide more detailed policies, principles, and guidelines than the *Sustainable* Communities Plans. The form and content of Special Area Plans depend on what characteristics and issues need to be addressed in greater detail in planning and guiding development or use of the Special Area.

Special Area Plans can be used to guide land use development and infrastructure investment in Special Districts, Redevelopment Districts, or Resource Areas. Plans for Special Districts would provide guidance for development and infrastructure investment in areas with distinct historic or design character or significant public views. Plans for Redevelopment Districts would provide strategies for the revitalization or redevelopment of an area. Plans for Resource Areas would provide resource management strategies for areas with particular natural or cultural resource values.

A coastal wilderness park is being considered for the lands along the Kahuku shoreline from Kahuku Point to Mālaekahana Bay. Planning for this park could be addressed through a Special Area Plan, with particular natural and cultural resource values.

5.4 FUNCTIONAL PLANNING

Functional planning is the process through which various City agencies determine needs, assign priorities, establish timing and phasing, and propose financing for projects within their areas of responsibility that will further the implementation of the vision articulated in the *Sustainable* Communities Plan. This process may take a variety of forms, depending upon the missions of the various agencies involved, as well as upon requirements imposed from outside the City structure, such as federal requirements for wastewater management planning. Typically, functional planning occurs as a continuous or iterative activity within each agency.

The functional planning process involves annual reviews of existing functional planning documents and programs by the City agencies responsible for developing and maintaining infrastructure and public facilities or for provision of City services. As a result of these reviews, the agencies then update, if required, existing

plans or prepare new long-range functional planning documents that address facilities and service system needs. Updates of functional planning documents are also conducted to assure that agency plans will serve to further implement the *Sustainable* Communities Plan as well as to provide adequate opportunity for coordination of plans and programs among the various agencies.

The number and types of functional planning documents will vary from agency to agency, as will the emphases and contents of those documents. A typical agency may develop a set of core documents such as:

- A resource-constrained long-range capital improvement program. A "resource-constrained" program is one which identifies the fiscal resources that can be reasonably expected to be available to finance the improvements.

- A long-range financing plan, with identification of necessary new revenue measures or opportunities.

- A development schedule with top priority to areas designated for earliest development.

- Service and facility design standards, including level of service guidelines for determining adequacy.

Other documents may also be developed as part of an agency's functional planning activities, such as master plans for provision of services to a specific region of the island. In some cases, functional planning activities will be undertaken in cooperation with agencies outside the City structure, such as transportation planning activities that are conducted in association with the O'ahu Metropolitan Planning Organization.

Functional planning is intended to be a proactive public involvement process which provides public access to information about infrastructure and public facility needs assessments, alternatives evaluation, and financing. Outreach activities should involve the Neighborhood Boards, community organizations, landowners, and other parties who may be significantly affected by the public facilities and infrastructure projects or programs to be developed.

The functional planning process should be characterized by opportunities for early and continuing public involvement, timely public notice, public access to information used in the evaluation of priorities, and the opportunity for the public to suggest alternatives and to express preferences. The functional planning process provides the technical background for the Capital Improvements Program and related public policy proposals which are subject to review and approval by the City Council.

5.5 REVIEW OF ZONING AND OTHER DEVELOPMENT APPLICATIONS

A primary way in which the vision for the Ko'olauloa *Sustainable* Communities Plan will guide land use is through the review of applications for zone change and other development approvals. Approval for development projects should be based on the extent to which the project supports the vision and policies, and the planning principles and guidelines of the *Sustainable* Communities Plan.

Projects which do not involve significant zone changes will be reviewed by the Department of Planning and Permitting for consistency with the vision, policies, principles, and guidelines of the Ko'olauloa *Sustainable* Communities Plan during the Zone Change Application process. Those projects requiring environmental assessment shall follow the provisions of Hawai'i Revised Statutes, Chapter 343. Projects involving significant zone changes will require an Environmental Assessment.

5.5.1 ADEQUATE FACILITIES REQUIREMENT

All projects requesting zone changes will be reviewed to determine if adequate public facilities and infrastructure are or will be available to meet the needs created as a result of the development. Level of Service Guidelines to define adequate public facilities and infrastructure requirements are established as part of the Capital Improvements Program process.

In order to guide development and growth in an orderly manner as required by the City's General Plan, zoning and other development approvals for new developments should be approved only if the responsible City and State agencies indicate that adequate public facilities and utilities will be available at the time of occupancy, or if conditions the functional agency indicates are necessary to assure adequacy are otherwise sufficiently addressed.

The Department of Planning and Permitting will review the project for consistency with the Ko'olauloa *Sustainable* Communities Plan vision, and summarize any individual agency's findings regarding public facilities and utilities adequacy which are raised as part of the EA/EIS process. The Department will address these findings and any additional agency comments submitted as part of the agency review of the zone change application and recommend conditions that should be included in the Unilateral Agreement or Development Agreement to insure adequacy of facilities.

5.6 FIVE-YEAR *SUSTAINABLE* COMMUNITIES PLAN REVIEW

The Department of Planning and Permitting shall conduct a comprehensive review of the Ko'olau Loa *Sustainable* Communities Plan and report its findings and recommended revisions to the Planning Commission and the City Council five years after adoption and every five years thereafter. It is intended that the Rural Community, Agricultural and Preservation boundaries will remain fixed through the 2020 planning horizon.

5.7 TRANSITION FROM THE CURRENT SYSTEM

This section discusses the transition from the former Development Plan to this revised *Sustainable* Communities Plan, including its independence from Development Plan Common Provisions, its relationship to the General Plan guidelines, and the need for review and revision of development codes, standards, and regulations.

5.7.1 DEVELOPMENT PLAN COMMON PROVISIONS AND EXISTING LAND USE APPROVALS

This *Sustainable* Communities Plan will go into effect upon adoption by ordinance. At that time, the revised *Sustainable* Communities Plan will become a self-contained document, not reliant on the Development Plan Common Provisions which formerly applied to the Ko'olau Loa Development Plan as well as all the other Development Plans.

Land use approvals granted under existing zoning, Unilateral Agreements, and approved Urban Design Plans will remain in force and guide entitlement decisions until any new zoning action to further implement the vision and policies of the Ko'olau Loa *Sustainable* Communities Plan is initiated. If an Environmental Assessment or Environmental Impact Statement (EA/EIS) was accepted in the course of a Development Plan land use approval for a project, it should be acceptable to meet the requirement for an initial project EA/EIS when zone

change applications are submitted for subsequent phases of the project, unless the project scope and land uses are being significantly changed from that described in the initial EA/EIS.

5.7.2 RELATION TO GENERAL PLAN POPULATION GUIDELINES

The Ko'olauloa *Sustainable* Communities Plan implements the General Plan population policies (in Population Objective C) as follows:

- The total potential population in the Ko'olauloa *Sustainable* Communities Plan Area will account for 1.5 percent of O'ahu's total population in 2010. This relatively small share of the islandwide population is one tenth of one percent higher than the 1.3% - 1.4% share stated in Population Objective C, Policy 1 and Policy 2. It represents a declining growth rate from 1.7% of the islandwide population in 1990 to 1.6% in 1995, and 1.5% in 2010. Ko'olauloa's declining proportion of islandwide share is expected to continue, and it is projected that by the year 2020, Ko'olauloa's population will account for 1.4 percent of O'ahu's total population, which is consistent with the General Plan's population distribution policies.

- Ko'olauloa's total potential share of islandwide population in 2010 implements Population Objective C, Policy 3, which is to manage physical growth and development in the urban-fringe and rural areas so that an undesirable spreading of development is prevented and that the suburban and country character of these outlying areas can be maintained.

- The General Plan population share for Ko'olauloa in 2010 according to Population Objective C, Policy 4, should be between 1.3% and 1.4% of O'ahu's total in 2010. The estimated residential development capacity (i.e., assuming all planned and zoned lands are fully developed) for Ko'olauloa in 2010 is 1.5% of the capacity for all of O'ahu, or slightly higher than this range. However, much of this capacity consists of small, scattered parcels that have been zoned for residential use for years but have not been developed due to market and/or physical constraints. Full development of these areas by 2020 is highly unlikely, and it is anticipated that the actual pace of future development in Ko'olauloa will be consistent with implementing the General Plan population guideline.

Under the new Ko'olauloa *Sustainable* Communities Plan, projects will be evaluated against how well they fulfill the vision for Ko'olauloa set forth in the *Sustainable* Communities Plan and how closely they meet the policies, principles, and guidelines selected to implement the vision.

5.7.3 REVIEW AND REVISION OF DEVELOPMENT CODES

Upon completion of the Development Plan Revision Program, current regulatory codes and standards should be reviewed and revised, as necessary, to maintain their consistency and effectiveness as standards to guide attainment of the objectives and policies envisioned for all Development Plan or *Sustainable* Communities Plan areas. At the time such reviews are conducted, the following regulatory codes and standards may warrant further review and revision to ensure achievement of the vision for the Ko'olau Loa region, as identified in this Plan, as well as consistency with its policies, principles and guidelines.

- ***Land Use Ordinance.*** (Chapter 21, Revised Ordinances of Honolulu). Zoning code standards and the zoning map for Ko'olau Loa need to be revised to further implement the policies, principles, and guidelines in the *Sustainable* Communities Plan.

- ***Subdivision Rules and Regulations.*** (Department of Planning and Permitting, pursuant to Chapter 22, Revised Ordinances of Honolulu). Public right-of-way standards used for subdivision and consolidation of land need to be revised with community input to reflect rural development standards consistent with the transportation policies, principles, and guidelines in the *Sustainable* Communities Plan.

- ***Traffic Standards Manual.*** (Department of Transportation Services, July 1976, as revised). Standards which are applied to local and most collector streets need to be revised to reflect transportation policies, principles, guidelines in the *Sustainable* Communities Plan.

- ***State Highways Division Procedures Manual***, Vol. 8, Chapter 5, Section 4 (State Department of Transportation). These State highway standards need to be reviewed to identify provisions which may conflict with the transportation policies, principles, and guidelines in the *Sustainable* Communities Plan.

- ***Standard Details for Public Works Construction*** (Department of Planning and Permitting). Engineering standards for the dedication of public works construction need to be revised to reflect *Sustainable* Communities principles and guidelines.

- ***Storm Drainage Standards*** (Department of Planning and Permitting). Standards for the dedication of drainage systems to incorporate retention basins and the use of v-shaped bottom channels, rip-rap boulder lining of stream banks, and streamside vegetation into the design need to be created to further implement the *Sustainable* Communities Plan policies, principles, and guidelines.

- ***Wastewater Management Design Standards*** (Department of Design and Construction) and the 1990 Revised Ordinances of Honolulu, Chapter 14 (relating to sewer services). These standards and ordinances may require review to further implement *Sustainable* Communities Plan policies and guidelines, in accordance with established public health and safety standards.

APPENDIX A: OPEN SPACE, LAND USE, AND PUBLIC FACILITIES MAP

The Ko'olau Loa *Sustainable* Communities Plan includes three color maps:

- Open Space Map
- Land Use Map
- Public Facilities Map

These maps illustrate the long-range vision of the future of the plan area and the major land use, open space, and public facility policies that are articulated in the plan. In examining them the reader should keep in mind that:

- These maps are general and conceptual.
- They are illustrative of the plan's policy statements, presented in the text of this report.

These policy statements, which appear in the preceding chapters, are considered to be the most important elements of the plan. The maps are considered illustrations of the policies. However, it is recognized that the maps may be more accessible and more interesting than the written policies. This section of the plan, therefore, presents a brief explanation of the contents of each of these maps.

Elements common to each of the three maps include organizing boundaries and four land use designations: "Preservation," "Agriculture," "Parks," and "Military." They are presented below. Common information particular to each map is presented under each map topic.

The maps which follow display Rural Community Boundaries, Agriculture Boundaries, and Preservation Boundaries. These maps are not parcel-specific, but illustrate generalized categories or group of land uses within the region.

Because they are not parcel-specific, the lines depicted by these boundaries do not indicate precise or abrupt demarcations. Rather, the extent of permissible or appropriate uses within these boundaries should be evaluated and determined in concert with relevant sections of the plan's text and specific site characteristics. Summary descriptions of each boundary category follow below.

Rural Community Boundary

The Rural Community Boundary defines, protects, and contains the intended extent of the "built-up" or "settled" areas of rural communities. Its purposes are to provide adequate lands to support established communities, to protect such communities from more intense forms of development, and to protect lands outside the boundary for agriculture or other resource or open space values. Areas within this boundary characteristically consist of relatively small, dispersed residential communities and towns. In Ko'olau Loa, the Rural Community Boundary includes the built areas of Kahuku, Lā'ie, Hau'ula, Punalu'u, Kahana, and Ka'a'awa.

Agriculture Boundary

The Agriculture Boundary is to protect important agriculture lands for their economic and open space values, and for their value in helping to give a region its identifiable character. The boundary is not displayed as a discreet boundary on the Open Space, Land Use and Public Facilities maps. It is implied rather, by the agricultural land use designations outside the Rural Community Boundary. They include agriculturally important lands designated by ALISH as "Prime," "Unique," or "Other."

Preservation Boundary

The primary purpose of the Preservation Boundary is to protect lands which are not valued primarily for agriculture, but which form an important part of a region's open space fabric for their natural, cultural, or scenic resource values. The boundary generally circumscribes undeveloped lands outside the Rural Community and Agricultural Boundaries that are designated as Preservation on the Open Space, Land Use, and Public Facilities maps.

Preservation

Preservation lands include those lands not valued primarily for agriculture, but which form an important part of a region's open space fabric. They possess natural, cultural, or scenic resource values, and include important wildlife habitat, cultural sites, significant landforms, views, or hazard areas. They include the following types of land:

- Land necessary for protecting watersheds, water resources and water supplies.
- Lands necessary for the conservation, preservation and enhancement of sites with scenic, historic, archeologic or ecologic significance.

- Lands necessary for providing and preserving park lands, wilderness and beach reserves, and for conserving natural ecosystems of endemic plants, fish and wildlife, for forestry, and other related activities to these uses.

- Lands having an elevation below the maximum inland line of the zone of wave action, and marine waters, fish ponds and tide pools of O'ahu unless otherwise designated on the land use map.

- All offshore and outlying islands of O'ahu unless otherwise classified.

- 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.

- Lands with general slopes of 20 percent or more which provide for open space amenities and/or scenic values.

- Lands susceptible to floods and soil erosion, lands undergoing major erosion damage and requiring corrective attention by the State or Federal Government, and lands necessary to the protection of the health, safety and welfare of the public by reason of soil instability or the lands' susceptibility to landslides and/or inundation by tsunami and flooding.

- Lands used for national, state or city parks.

- Lands suitable for growing of commercial timber, grazing, hunting, and recreation uses, including facilities accessory to such uses when said facilities are compatible with the natural physical environment.

Agriculture

Lands with agricultural value by virtue of current agricultural use or high value for future agricultural use, including those areas identified as Prime, Unique, or Other Important lands on the Agricultural Lands Important to the State of Hawai'i (ALISH) maps. "Agriculture" includes lands suitable for crop growing, grazing and livestock raising, flower cultivation, nurseries, orchards, aquaculture, or similar activities.

Parks

Public and private parks and recreational facilities, including beach parks, playgrounds, playfields, district parks, botanical gardens, zoos, and golf courses.

Military

Lands for military and military support purposes.

OPEN SPACE MAP

The Open Space Map is intended to illustrate the region's major open space patterns and resources as outlined in Chapter 3. It highlights major open space elements and resources, including agricultural and preservation lands, major recreational facilities, important "panoramic" views, natural stream corridors and drainageways, and important boundaries.

Ahupua'a boundaries, based on the traditional ahupua'a method of land organization, have been adopted for use and displayed in the plan as a method of organizing land uses and enhancing community definition within the region.

LAND USE MAP

This map illustrates the desired long-range land use pattern for the Ko'olau Loa region. It supports the plan's vision and policies. The map includes the following terms:

Rural Residential

Single-family homes in country settings on medium-sized to large lots, on which rural development standards are employed and provisions for pedestrian circulation, landscaping, and open space are emphasized. Rural Residential also contains minor pockets of existing apartments in Punalu'u and the previously approved but unbuilt apartment district in Lā'ie. These apartment areas are not mapped but cited and elaborated on in the text.

Country Town

A small-scale, low-rise, mixed-use center of commerce and community activity in rural character and setting in which principal establishments are oriented on the street. Land use mixtures may include retail, office, and dining establishments, compatible service businesses and light industry, and residential uses. Commercial activity is concentrated along street frontages in typically "Mainstreet" settings.

Rural Regional Commercial Center

A consolidated cluster of small-scale, low-rise retail, office, and dining establishments that serve the immediate and nearby communities. Its primary visual appearance is rural, pedestrian circulation and amenities are emphasized throughout the complex, and structures are compatible in scale and form with adjacent residential areas. While supermarkets are encouraged, "big box" retail is not.

Rural Community Commercial Center

A small cluster of small-scale, low-rise commercial and service businesses which serve primarily the immediate community. Its primary visual appearance is rural. Buildings are generally compatible in scale and form with adjacent residential areas.

Resort

Principally full-service or specialty hotels and apartments, with accessory or supporting uses which enhance the viability of the principal use.

Visitor Facilities

Entertainment-oriented visitor attractions with no overnight accommodations.

Technology Park

High Tech Park is an area intended for light technology and science-oriented industries and businesses in a campus-like setting. Development intensity is low, while open space and landscaping are the predominant visual and physical elements.

Industrial

Facilities for processing, construction, manufacturing, transportation, wholesaling, storage, or similar economic activities, and supporting facilities which directly enhance their viability.

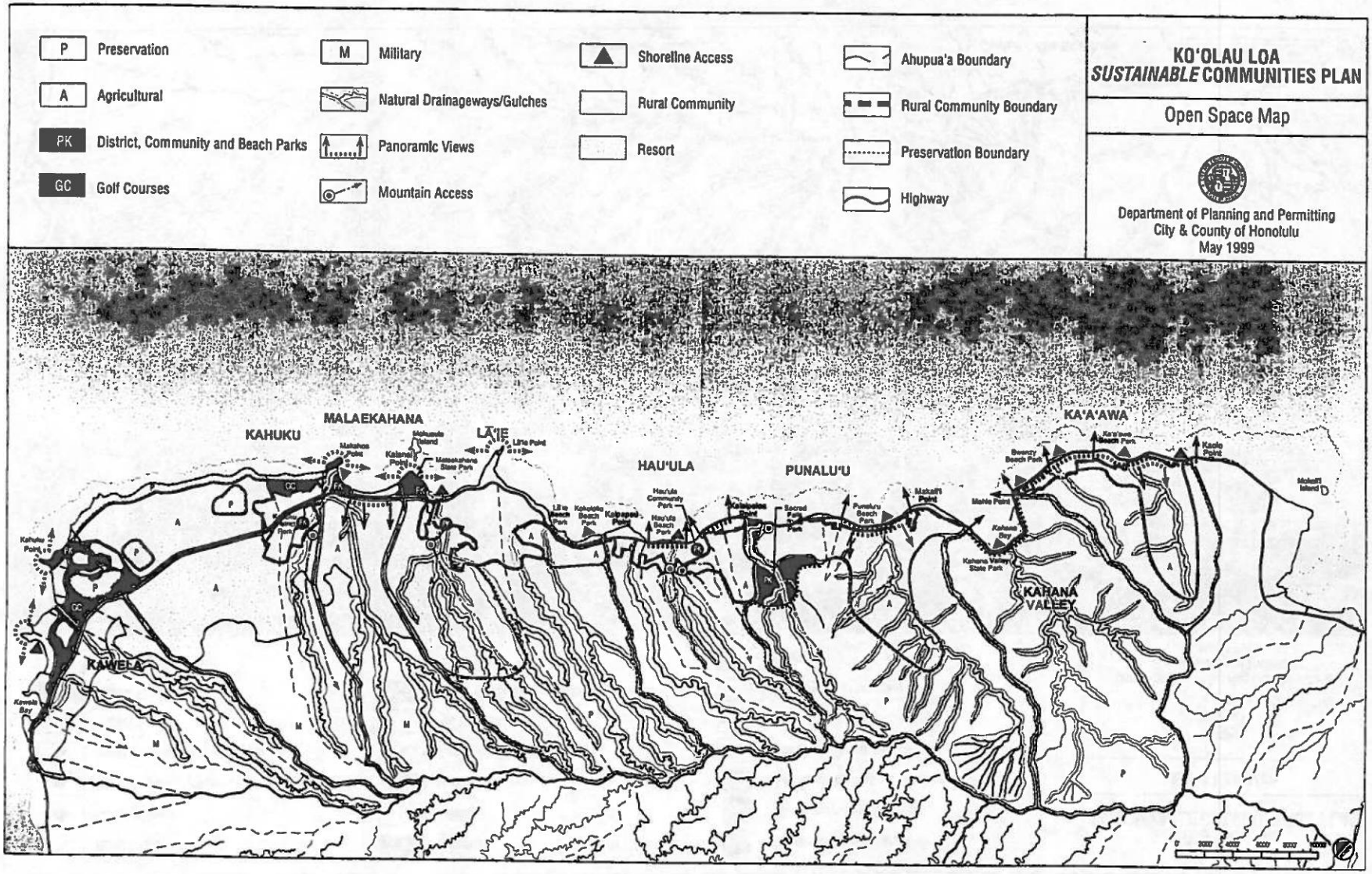
Institutional

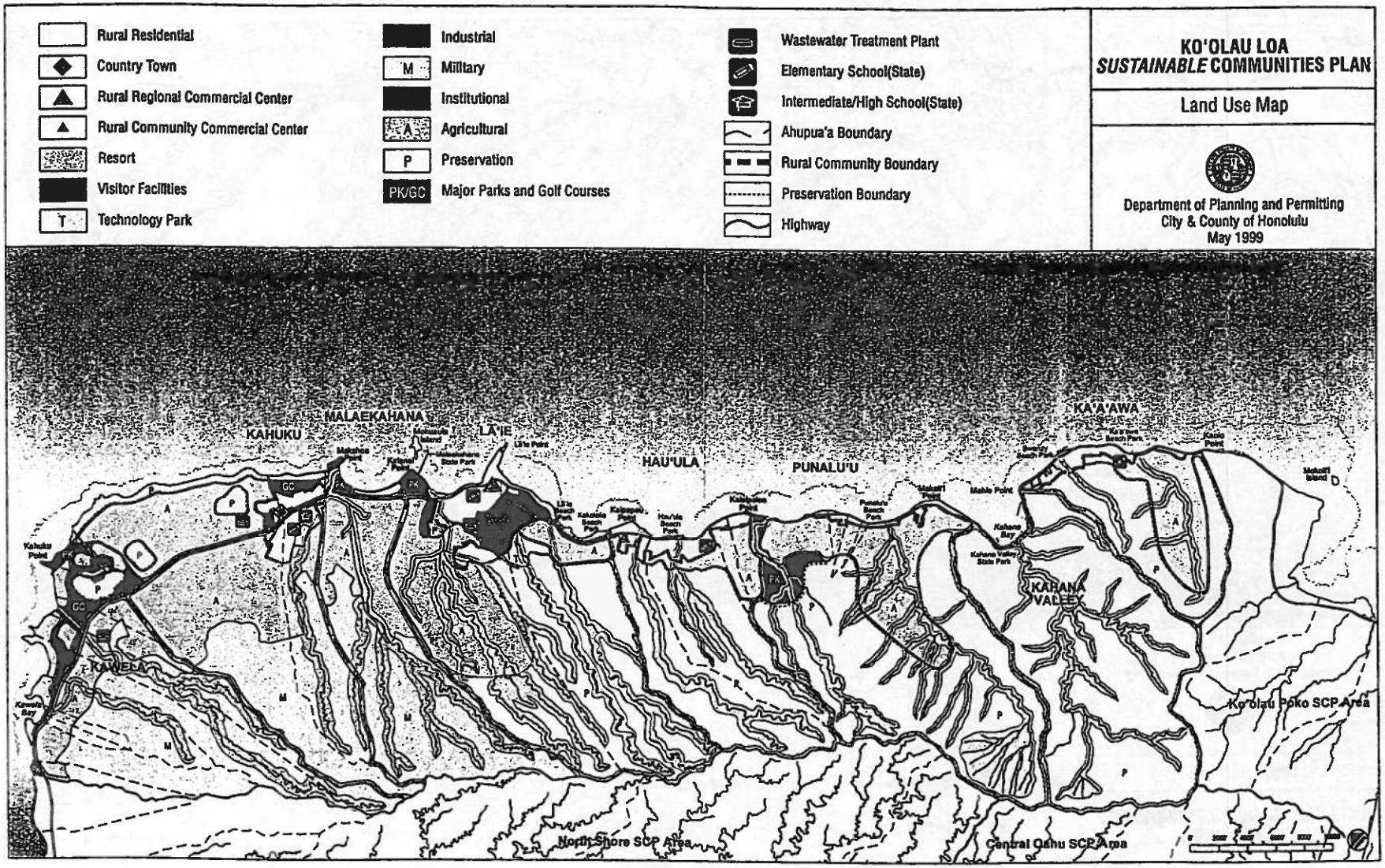
Facilities for public use or benefit, including schools, churches, hospitals, group living establishments, utilities and infrastructure production or support facilities, civic, public, and social services facilities, and government facilities.

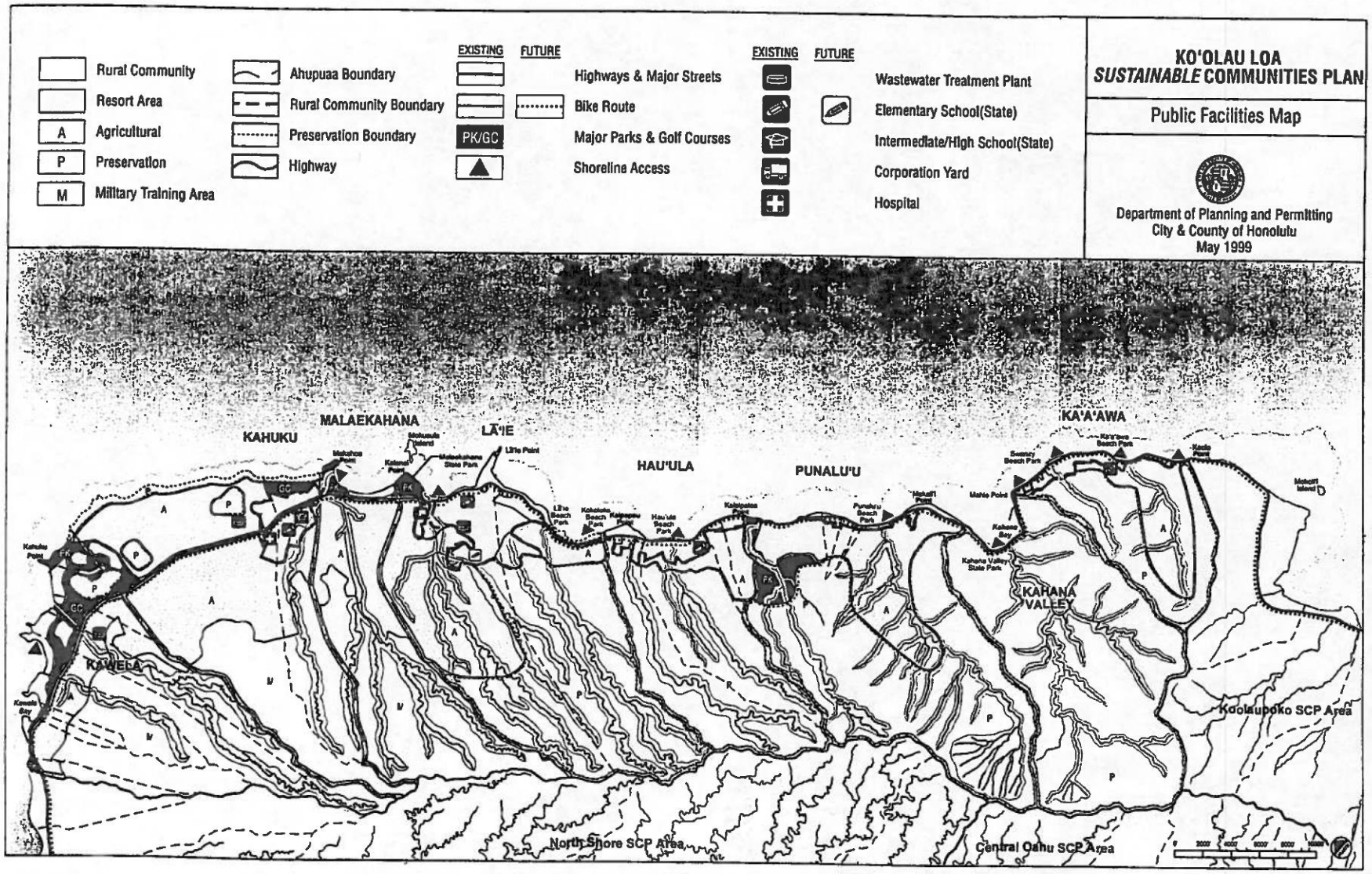
PUBLIC FACILITIES MAP

The Public Facilities Map illustrates major existing and future public facilities and privately owned facilities for public use. Its purpose is to display the public resources or assets available in the region. When the plan is adopted, a separate "Public Infrastructure Map," which will focus on and display facilities eligible for City Capital Improvements Program funding, will also be developed.

For the Ko'olau Loa region, the following types of facilities are displayed: highways, major streets and bike routes; wastewater treatment facilities; elementary, intermediate and high schools; the city corporation yard; and Kahuku Hospital.


P Preservation
A Agricultural
PK District, Community and Beach Parks
GC Golf Courses
M Military
Natural Drainageways/Gulches
Panoramic Views
Mountain Access
Shoreline Access
Rural Community
Resort
Ahupua'a Boundary
Rural Community Boundary
Preservation Boundary
Highway
KO'OLAU LOA
SUSTAINABLE COMMUNITIES PLAN
Open Space Map
Department of Planning and Permitting
City & County of Honolulu
May 1999
KAHUKU
MALAEKAHANA
LA'IE
HAU'ULA
PUNALU'U
KA'A'AWA
KAHANA VALLEY
KAWELA


Rural Residential
Country Town
Rural Regional Commercial Center
Rural Community Commercial Center
Resort
Visitor Facilities
Technology Park
Industrial
Military
Institutional
Agricultural
Preservation
Major Parks and Golf Courses
Wastewater Treatment Plant
Elementary School(State)
Intermediate/High School(State)
Ahupua'a Boundary
Rural Community Boundary
Preservation Boundary
Highway
KO'OLAU LOA
SUSTAINABLE COMMUNITIES PLAN
Land Use Map
Department of Planning and Permitting
City & County of Honolulu
May 1999
KAHUKU
MALAEKAHANA
LA'IE
HAU'ULA
PUNALU'U
KA'A'AWA
KAHANA VALLEY
KAWELA
Ko'olau Poko SCP Area
North Shore SCP Area
Central Oahu SCP Area


KO'OLAU LOA
SUSTAINABLE COMMUNITIES PLAN
Public Facilities Map
Department of Planning and Permitting
City & County of Honolulu
May 1999
Rural Community
Resort Area
Agricultural
Preservation
Military Training Area
Ahupuaa Boundary
Rural Community Boundary
Preservation Boundary
Highway
EXISTING
FUTURE
Highways & Major Streets
Bike Route
Major Parks & Golf Courses
Shoreline Access
Wastewater Treatment Plant
Elementary School(State)
Intermediate/High School(State)
Corporation Yard
Hospital
KAHUKU
MALAEKAHANA
LA'IE
HAU'ULA
PUNALU'U
KA'A'AWA
KAWELA
KAHANA VALLEY
Koolaupoko SCP Area
North Shore SCP Area
Central Oahu SCP Area