BEFORE THE LAND USE COMMISSION

OF THE STATE OF HAWAII

In the Matter of the Petition of OFFICE OF STATE PLANNING, STATE OF HAWAII To Amend the Agricultural and Conservation District Boundary into the Urban District for approximately 2,640 acres at Keahole, North Kona, Island of Hawaii, State of Hawaii, Tax Map Key Nos.: 7-3-09:5 and 8; 7-3-10:2 and 33 (por.)	DOCKET NO. BR92-685 FINDINGS OF FACT, CONCLUSIONS OF LAW, AND DECISION AND ORDER

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FINDINGS OF FACT, CONCLUSIONS OF LAW, AND DECISION AND ORDER

The Office of State Planning, State of Hawaii ("Petitioner"), filed a Petition for Land Use District Boundary Amendment on October 19, 1992, and a First Amended Petition on December 2, 1992, pursuant to Sections 205-4 and 205-18, Hawaii Revised Statutes ("HRS"), and Chapter 15-15, Hawaii Administrative Rules ("H.A.R."), to amend the State land use district boundary by reclassifying approximately 1,400 acres of land in the Conservation Land Use District and approximately 1,200 acres of land in the Agricultural Land Use District situated at Keahole, North Kona, Island of Hawaii, State of Hawaii, identified as Tax Map Key Nos.: 7-3-09:5 and 8 and 7-3-10:2 and 33 (por.) ("Property"), into the Urban Land Use District.

The Land Use Commission of the State of Hawaii ("Commission"), having heard and examined the testimony, evidence and argument of counsel presented during the hearings; Petitioner's Proposed Findings of Fact, Conclusions of Law, and Decision and Order; and the subsequent stipulation and exceptions filed by the County of Hawaii Planning Department, hereby makes the following findings of fact and conclusions of law:

FINDINGS OF FACT

PROCEDURAL MATTERS

1. On October 19, 1992, Petitioner filed a Petition for Land Use District Boundary Amendment ("Petition"). The Petition contained an Environmental Assessment ("EA") pursuant to section 343-5(a)(1) & (7), HRS.

2. On November 12, 1992, Petitioner filed an amended tax map (page 10 of Petitioner's Exhibit 1) showing an additional acreage to be included in the petition area.

3. On November 12, 1992, and by a written Order dated December 21, 1992, the Commission determined that the proposed boundary amendment may have a significant effect on the environment and required Petitioner to prepare an Environmental Impact Statement ("EIS") pursuant to Chapter 11-200, H.A.R.

4. On November 25, 1992, Petitioner filed an amended EA to include an additional approximately 51 acres to the original acreage covered by the Petition for a total petition area of approximately 2,640 acres.

5. On December 1, 1992, Petitioner filed a Motion for Permission to file First Amended Petition for Land Use District Boundary Amendment and to Include the Increased Acreage in the Order to Prepare an Environmental Impact Statement ("Motion") to clarify the acreage sought to be reclassified in the Petition.

6. On December 17, 1992, and by a written Order dated December 21, 1992, the Commission granted Petitioner's Motion.

7. On July 28, 1993, and by a written Order dated August 18, 1993, the Commission accepted the Final EIS pursuant to Chapter 343, HRS, and Chapter 11-200, H.A.R.

8. A prehearing conference on the Petition was held on September 16, 1993, at which time the parties agreed to enter into a written Stipulated Prehearing Order ("Order"), concerning the submission of exhibits, written testimonies, and witness lists to the Commission. Said Order was issued by the Commission on September 29, 1993.

9. By a written Order dated October 6, 1993, the Commission redesignated the docket number of the Petition to Docket Number BR92-685 to reflect that the Petition was filed pursuant to the Five-Year District Boundary Review.

10. The Commission held a hearing on the Petition on October 7, 1993 pursuant to a public notice published in the Hawaii-Tribune Herald, the Honolulu Advertiser, and West Hawaii Today on August 13, 1993.

11. The following individuals testified as public witnesses: Marni Herkes, Clarence Ono, Ralph Horii, Roy S.

Mushrush, Walter Kunitake, Kenneth V. Clewett, Al Kaiokekoa, Lionel Kutner, Bill Stormont, and Kelly Greenwell.

12. The Commission entered into evidence, without objection, letters from Ralph Horii, Walter Kunitake, Roy S. Mushrush, Kenneth V. Clewett, Michael Asam, Wesley Park, Clarence Ono, Janice Palma, and Michael Matsukawa.

13. At the October 7, 1993 hearing, Petitioner filed Exhibit 19a which revised the total acreage comprising the Property to approximately 2,610.11 acres. Exhibit 19a was admitted into evidence without objection.

14. The Commission did not receive any petition for intervention into this proceeding.

DESCRIPTION OF THE PROPERTY

15. The Property consists of approximately 2,610.11 acres of land located directly west of the Kona Palisades and Kona Acres Subdivisions, along with various State of Hawaii and privately-owned parcels, and mauka of the existing Keahole Airport and the Queen Kaahumanu Highway. The Property is bounded by the ahupua'as of Kau to the north and Kohanaiki to the south.

16. The Property slopes gently upward towards the summit of Hualalai Mountain from approximately 80 feet above sea level in the makai portion to approximately 840 feet in elevation in the mauka portion. The Property's topography is characterized as moderately sloping with approximately 90 percent of the Property having gradients of less than 10 percent. Localized

mounds and depressions, characteristic of lava flows, are present throughout the Property.

17. Average annual rainfall in Kailua-Kona is 25 inches per year. Normally, more rain falls in the area during the summer months.

18. The North Kona coast is largely sheltered from the predominant tradewind system by the land masses of Mauna Loa, Mauna Kea, and Hualalai. The prevailing pattern is on-shore winds in the morning and early afternoon, becoming off-shore breezes in the late afternoon and evening. Typical wind velocities range between three and 14 knots. Relative humidity is also generally stable year round, with the daily average ranging from 71 to 77 percent.

19. The United States Department of Soil Conservation Service Soil Survey Report for the Island of Hawaii classifies the soil within the Property as follows:

a. A'a lava (rLV). A'a has been mapped as a miscellaneous land type. This lava has practically no soil covering and is bare of vegetation, except for mosses, lichens, ferns, and a few small ohia trees. It is at an elevation ranging from near sea level to 13,000 feet and receives from 10 to 250 inches of rainfall annually. It is associated with pahoehoe lava flows and many soils.

This lava is rough and broken. It is a mass of clinkery, hard, glassy, sharp pieces piled in tumbled heaps. In areas of high rainfall, its porosity contributes substantially to

the underground water supply and these areas are often used for watersheds.

b. Pahoehoe lava (rLW). Pahoehoe has been mapped as a miscellaneous land type. This lava has a billowy, glassy surface that is relatively smooth. In some areas, however, the surface is rough and broken, and there are hummocks and pressure domes.

Pahoehoe lava has no soil covering and is typically bare of vegetation except for mosses and lichens. In the areas of higher rainfall, however, scattered ohia trees, ohelo berry, and aalii have gained a foothold in cracks and crevices.

This miscellaneous land type is at an elevation from sea level to 13,000 feet. The annual rainfall ranges from 10 inches to more than 140 inches. In areas of higher rainfall, cracks and crevices in the lava contribute to the groundwater supply.

c. Punaluu extremely rocky peat, six to 20 percent slopes (rPYD). This soil is low on the leeward side of Mauna Loa. Rock outcrops occupy 40 to 50 percent of the surface.

In a representative profile the surface layer is black peat approximately four inches thick. It is underlain by pahoehoe lava bedrock. This soil is of medium acidity.

The peat is rapidly permeable. The pahoehoe lava is very slowly permeable, although water moves rapidly through the cracks. Runoff is slow, and the erosion hazard is slight. Roots are matted over the pahoehoe lava. Areas with this soil are used for pasture.

Approximately 80 percent of the Property consists of a'a and pahoehoe lava. The remaining portions of the Property consist of the Punaluu extremely rocky peat series.

20. The University of Hawaii Land Study Bureau's Detailed Land Classification-Island of Hawaii classifies the entire Property as "E," or very poorly suited for agricultural productivity.

21. None of the land within the Property has been identified as Important Agricultural Land under the State Agricultural Land of Importance to the State of Hawaii ("ALISH") system.

22. The County of Hawaii Department of Water Supply ("DWS") maintains a 0.5 million gallon water tank and access road in the northern makai portion of the Property. The Hawaii Electric Light Company ("HELCO") maintains two 69 kilovolt ("kV") transmission line corridors which traverse the northern portion of the Property in both an east-west and north-south direction. In addition, Nansay Hawaii, Inc. has an easement for another utility corridor on the southern boundary of the Property. Other than these uses, the Property is vacant and remains in its natural state, with a landscape consisting of prehistoric lava flows covered by sparse vegetation composed of grasses and scattered shrubs and trees.

23. The Property is susceptible to potential lava flow from Hualalai, one of the five volcanoes comprising the Island of Hawaii and one of the three volcanoes which have been active in

historic times. The Property is within lava flow hazard zone 4, a zone of "medium" threat (the U.S. Geological Survey has identified nine volcanic flow hazard zones on the Island of Hawaii, with "1" being the highest hazard and "9" being the lowest). Zone 4 includes all of Hualalai, where the frequency of eruption is lower than that for Kilauea or Mauna Loa.

24. The U.S. Geological Survey has identified "zones of relative risk" associated with volcanic activity on the Island of Hawaii. The classification system includes six zones, "A" through "F," with risk increasing from "A" to "F." The Property is located in the "DE" zone, indicating a relatively low degree of risk from volcanic action.

25. The entire island is susceptible to earthquakes originating in fault zones under and adjacent to it. Two fault zones have been identified within the Kona region: the Kealakekua and the Kaloko faults, both located in South Kona and well away from the Property. The Big Island is classified as a Zone 3 area for the purpose of structural design. The classification system is based on a scale of 0 to 4, increasing in level of risk due to seismic occurrence and danger.

26. The Federal Emergency Management Agency's Flood Insurance Rate Maps indicate that the Property is within Zone X, which represent areas determined to be outside the 500-year floodplain.

27. The entire Property is owned by the State of Hawaii and identified as "ceded lands."

PROPOSAL FOR RECLASSIFICATION

28. The Petition is based on a recommendation made by Petitioner as part of the State Land Use District Boundary Review (for the Island of Hawaii), which identifies the Property for urban reclassification as a "Priority Area for Action." This is the highest priority category assigned to land recommended for reclassification.

29. The purpose of the Five-Year Boundary Review is to allocate sufficient land for future urban growth and to direct urban growth to appropriate areas. The intent is to provide for long-range planning by designating areas for future urban growth rather than reacting to landowner-initiated petitions. As such, specific land uses or projects have not been identified for reclassification areas.

30. Approximately 500 acres in the northeastern portion of the Property are proposed to be developed as the West Hawaii Campus of the University of Hawaii, as indicated in the County's Keahole to Kailua Development Plan ("K-K Plan").

31. To provide a basis for determining other possible land uses and land allocations, Helber Hastert & Fee, Planners, the planning consultant for Petitioner, conducted a survey of 11 recently developed or planned, large-scale master-planned communities to determine average land use allocations. Projects surveyed included seven from Oahu (Waikele, Royal Kunia, Mililani Mauka, Villages of Kapolei, Ewa Gentry, Waiawa Gentry, and Wahiawa Lands), two from Maui (Maui Lani and Villages of

Lai'opua) and two from Hawaii County (Villages of Le'alii and Queen Liliuokalani Trust). Results from the land use allocation survey provided the overall range in land use allocation and average allocation for the 11 projects. The range and average allocations in terms of percent of the Property are rounded in the following table.

Land Use Allocation Survey Results

Land Use	Range in Allocation (Percent)	Average Allocation (Percent)
Residential	29-75	55
Commercial	0-3	1
Civic	1-10	4
Employment	0-52	6
Light Industrial	0-20	3
Parks	1-4	3
Golf Course	0-26	16
Open Space/Circ.	3-37	11

32. Three land use scenarios were developed to assist in analyzing potential environmental impacts based on the land use survey results. In general, it was assumed that the Property would be well-suited for light industrial and employment uses due to its location within the growing region and its proximity to the Keahole Airport, Queen Kaahumanu Highway, and the proposed University of Hawaii West Hawaii campus. It was also assumed that the Property would have less desirability for residential uses, relative to the master planned communities surveyed, in part due to competitive forces and also due to the higher locational advantages for light industrial and employment generating land uses. Scenario I describes a plan with a

relatively high open space allocation and a correspondingly low residential allocation. Scenario II describes a plan with a higher residential allocation and a high light industrial allocation. Scenario III looks at a high residential allocation, two golf courses, and a medium light industrial component.

Scenario I Land Use Allocation

Land Use	Percent Allocation	Acres	Residential Units
Residential	30.0	642	5,650
Neighborhood Comml	1.2	26	
Civic	4.2	90	
Employment Center	3.0	64	
Light Industrial	14.0	300	
Parks	3.0	64	
Golf Course (one)	9.3	200	
Open Space/Circ	35.2	754	
Subtotal	100	2,140	5,650
University		500	
Total		2,640[1)]	5,650

Scenario II Land Use Allocation

Land Use	Percent Allocation	Acres	Residential Units
Residential	35.0	749	6,591
Neighborhood Comml	1.2	26	
Civic	4.2	90	
Employment Center	9.3	200	
Light Industrial	23.0	500	
Parks	3.0	64	
Golf Course (1)	9.3	200	
Open Space/Circ	14.5	311	
Subtotal	100	2,140	6,591
University		500	
Total		2,640[1)]	6,591

Scenario III Land Use Allocation

Land Use	Percent Allocation	Acres	Residential Units
Residential	40.0	856	7,533
Neighborhood Comml	1.2	26	
Civic	4.2	90	
Employment Center	6.1	131	
Light Industrial	18.7	400	
Parks	3.0	64	
Golf Course (two)	18.7	400	
Open Space/Circ	8.1	174	
Subtotal	100	2,140	7,533
University		500	
Total		2,640[1)]	7,533

33. The three scenarios are hypothetical although realistically based on actual and planned examples of major planned communities. The scenarios provide what appear to be "accurate" depictions of land uses and unit counts. Because no physical land planning has been conducted, it is premature and erroneous to assume that the Property will indeed accommodate one or any of the proposed scenarios. Furthermore, there is no way to analyze the spatial/locational impacts of the various land uses without a comprehensive land use plan. It is recognized that a wide range of land use allocations and associated design solutions exist. Site constraints such as archaeological remains, transmission line easements, circulation requirements, topographic relief, and other site factors must be taken into account to determine actual land use allocations and achievable densities. Additionally, external constraints such as adequacy

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1) Total acreage of Property actually consists of approximately 2,610.11 acres as indicated on Petitioner's Exhibit 19a.

of public facilities and services, market support, and financial feasibility factors will all heavily influence the actual land plan.

34. A development of the scale contemplated will take 15 to 30 years to completely build out, assuming master planning is commenced and necessary entitlements and approvals are secured in the near term. More detailed planning and design will establish several major project phases related to major stages of off-site infrastructure development and market support.

35. Based on existing site accessibility (principally highway access), it is possible that initial phases of the project will be within the lower reaches of the Property, adjacent to the Queen Kaahumanu Highway with successive phases moving upslope. It is also possible that several phases of the project might be constructed simultaneously (i.e., residential and employment center components being constructed simultaneously under separate development agreements). Current access to the Mamalahoa Highway is constrained to Kaimi Nani Drive, and unless another major mauka-makai connector roadway is built (such as the proposed University Drive), primary access will continue to be via the Queen Kaahumanu Highway. The timing of the mid-level roadways proposed in the K-K Plan (and any new mauka-makai connectors with the Mamalahoa Highway) will influence the timing of subsequent phases of the development within the mauka areas of the Property.

36. The 500-acre West Hawaii campus is a long-range proposal which will also be constructed in major development phases. The initial project phase would require construction of the proposed University Parkway, which has been proposed in the K-K Plan, providing direct access to Queen Kaahumanu Highway. The proposed mid-level roadways will provide additional access to the university when constructed.

37. Petitioner has represented that it has initiated discussions with Bishop Estate involving a possible land exchange between some of the lands within the Property and Bishop Estate's parcel at Makalawena.

PETITIONER'S FINANCIAL CAPABILITY TO UNDERTAKE THE PROPOSED DEVELOPMENT

38. Pursuant to section 15-15-50(c)(8), H.A.R., Petitioner is a State agency and is not required to demonstrate financial capability to develop the Property.

STATE AND COUNTY PLANS AND PROGRAMS

39. The Property is located within the State Land Use Agricultural and Conservation Districts as reflected on the Commission's Official Maps, H-2 (Keahole Point) and H-7 (Kailua). Approximately 1,327.93 acres in the western (makai) half of the Property lie within the State Conservation District. The remaining approximately 1,282.18 acres lie within the State Agricultural District.

40. Petitioner published the State Land Use District Boundary Review Hawaii for the County of Hawaii in May 1993. The

urbanization of the Kailua to Keahole area was consistent with the West Hawaii Regional Plan, the K-K Plan, and supported by Petitioner's Five-Year boundary review. The site of the University of Hawaii's West Hawaii campus is included in these State lands.

41. In November 1989, Petitioner published the West Hawaii Regional Plan, a document which is intended to provide policy guidance for the State in order to most effectively meet the region's present and emerging needs. It is also intended to complement the County of Hawaii's General Plan and Community Development Plans. One of the primary assumptions of the plan is the identification of subregional planning areas. Subregional planning areas have been defined "as the areas most probable for future expansion since landowners face similar infrastructure problems."

42. It is the intent of the West Hawaii Regional Plan that future regional urbanization be concentrated in the Subregional Planning Areas. The Property is included in a Subregional Planning Area that stretches from Keahole to Kailua. In this respect, the proposed boundary amendment is consistent with the West Hawaii Regional Plan.

43. The Hawaii County General Plan (Ordinance No. 89-142, as amended) designates the majority of the Property as "Urban Expansion." The urbanization of the Property is generally consistent with the urban expansion designation of the General Plan.

44. The K-K Plan was adopted by the Hawaii County Council on April 3, 1991 (Resolution No. 296). The purpose of the land use plan is to provide a framework for the future growth and development of the Keahole to Kailua area rather than as a master site plan. The plan identifies a 500-acre "University" site in the northeastern portion of the Property. The western (makai) portion of the Property (generally corresponding to the existing Conservation District) is identified as open space and recreation. The southeastern portion of the Property is designated as "Residential Expansion" and an "Educational Center" is identified within this parcel. In addition, three north-south roadways (a mid-level arterial, Waena Drive, and Kealakehe Street Extension) and an east-west roadway (University Drive) are identified as extending into the Property.

45. Approximately 1,327.93 acres, or roughly one-half of the western (makai) portion of the Property, are zoned "Open" under the existing County zoning. The remaining approximately 1,282.18 acres in the eastern (mauka) half of the Property are zoned "Unplanned."

46. The Property does not lie within the Special Management Area, as defined by Hawaii County.

NEED FOR THE PROPOSED DEVELOPMENT

47. The Petition is based on a recommendation made by Petitioner as part of the State Land Use District Boundary Review (for the Island of Hawaii), which identifies the Property for urban reclassification as a "Priority Area for Action." This is

the highest priority category assigned to land recommended for reclassification. The basis for the reclassification is taken directly from the report:

> "The urbanization of the Kailua to Keahole area consistent with the Keahole to Kailua Development Plan and West Hawaii Regional Plan is supported during the boundary review. Of top priority for State-initiated reclassification are State-owned lands consistent with State plans for the area which will be used to develop facilities and allow uses to support the development of the area as the Big Island's Second City. The site of the University of Hawaii's Kona campus is included in these State lands. Reclassification of lands in the K to K area may serve as a catalyst to bring several landowners together to develop infrastructure."
> (Executive Summary, p. 35)

Approximately 500 acres in the northeastern portion of the Property is proposed to be developed as the West Hawaii Campus of the University of Hawaii, as indicated in the County's K-K Plan. Other uses for the remainder of the Property have not been defined and specific acreages and locations have not been determined.

ECONOMIC IMPACTS

48. The urbanization of the Property will provide jobs and housing for the residents of West Hawaii and for others who desire to migrate to the island or region. Within the context of

population projections contained in the County of Hawaii General Plan, the provision of housing and jobs will serve to support projected population increases including in-migration.

49. The urbanization and development of the Property will generate short-term employment during the construction period. In addition, long-term employment opportunities will be created, especially if some of the land uses identified in the K-K Plan are implemented, such as the West Hawaii campus of the University of Hawaii. Not only will such action improve the economic diversification of the West Hawaii economy, but it will also generate increased property, sales, and income taxes.

50. Based on the three scenarios, urbanization of the Property is expected to provide between 9,303 and 16,783 long-term direct jobs at full build-out between 2010 and 2025, representing between 46 and 167 percent of the General Plan Year 2005 projection for the North Kona District.

51. Assuming an overall indirect and induced multiplier of 1.0 (for each direct job there will be 1.0 indirect and induced jobs created), total direct, indirect, and induced jobs could range from 18,600 to 33,560 at full build-out.

SOCIAL IMPACTS

52. Although specific land uses for the Property have not been determined, it is probable that residential uses will comprise a significant percentage of its acreage. The percentage of gross land set aside for residential uses included in the three scenarios ranged between 30 and 40 percent of the Property

(minus the 500-acre University site). These percentages translate into gross acreages ranging from 642 to 856 acres, providing between 5,650 to 7,533 dwelling units at 8.8 dwelling units per acre (average residential density of the 11 master planned communities included in the survey). In this respect, the proposed reclassification could positively affect the provision of needed housing for residents of West Hawaii.

53. Based on the above number of dwelling units, it is anticipated that the Property could accommodate a range of resident population between approximately 16,254 and 21,339 at 2.7 persons per household (including approximately 1,000 students that would board in dormitories at the university campus) at ultimate build out, circa 2010-2025 (Average household size of North Kona District, 1990 Census).

54. A comparison of the ranges for anticipated population increase projected by the County General Plan for 2005 and the three scenarios shows that the urbanization of the Property could account for anywhere from 39 to 102 percent of the General Plan Year 2005 projection for the North Kona District.

55. In addition to the proposed reclassification of the Property, there are two other major residential developments proposed between Keahole and Kailua: the HFDC project at Kealakehe and the Queen Liliuokalani Trust development at Keahuolu. These projects are currently planned to add 4,100 and 2,700 dwelling units, respectively, to the regional housing stock

in the next 20 years, thereby accommodating a combined resident population of approximately 18,000 people. Collectively, the three projects could readily absorb all the population projected for the North Kona District through the year 2005.

56. A number of factors will determine the social impacts associated with the urbanization of the Property. These include the rate of growth in the region; the ability of infrastructure construction to keep pace with growth; and, the demographic characteristics of new in-migrants. Accelerated growth rates could heighten social impacts as residents' perceptions of urban problems such as overcrowding, traffic congestion, competition for recreational resources, and crime increase. In turn, these factors are related to the ability of State and County government to provide necessary public services to keep pace with population increases. These public services include roadways, wastewater treatment, potable water, fire protection, schools, libraries, and health care.

57. It is probable that these in-migrants will come from a number of locations, including East Hawaii, other Hawaiian islands, Pacific Islands, and the continental United States. The degree to which the cultural values and lifestyles of the in-migrants differ from those of existing West Hawaii residents will determine, in great part, the extent of social impacts. While the exact composition of the in-migrant workers cannot be predicted at present, it may be predicted that the projected

growth levels imply some types of very major shifts in the Big Island's population composition in the coming years.

IMPACT UPON RESOURCES OF THE AREA

Agricultural Resources

58. The soils of the Property are dominated by pahoehoe and a'a lava flows. Punaluu Series soils comprise a third soil type found on the Property. Each of these soils types has been categorized as not suited for agriculture use by the U.S. Soil Conservation Service and the University of Hawaii Land Study Bureau. In addition, none of the Property is identified as Important Agricultural Land under the State ALISH system.

59. The State Department of Agriculture ("DOA") has developed the Keahole Agriculture Park, which is situated adjacent to the western portion of the Property, despite the lack of soils suitable for agricultural production. The agricultural park consists of 34 parcels which average approximately five acres in size, and are leased to farmers by the DOA. The parcels that are currently in production grow mostly ornamental flowers or landscape plants.

60. Currently, there are no agricultural activities within the Property. As such, the urbanization of the Property will not remove any agricultural land from production.

61. The DOA has maintained its intent to expand the Keahole Agricultural Park and has requested that 200 acres of the Property, immediately south of the existing agricultural park, be set aside for expansion of the park.

62. Petitioner has proposed that expansion of the Keahole Agricultural Park be undertaken on other State-owned parcels north of the Property, along Mamalahoa Highway.

Flora

63. Char & Associates conducted a botanical survey of the Property in August and September 1992.

64. Prior to conducting field studies, Char & Associates undertook a literature search to prepare a list of threatened and endangered, as well as rare and vulnerable plants, which might occur on the Property. Based on this literature search, an officially listed endangered species, the uhiuhi (Caesalpinia kavaiensis) is found on the adjacent Pu'uhonua Estates Subdivision, at approximately the 720-foot elevation. In addition a Category 1 candidate endangered species, the 'aiea (Nothocestrum breviflorum), is found on the adjacent (north) Kau ahupua'a at approximately the 480-foot elevation.

65. The vegetation on the Property varies from grassland with low, scattered shrubs on the lower elevations to open and closed shrublands on the upper elevation portions of the Property. Native dry, lowland shrubs and trees are found throughout the Property but are more numerous on a'a lava flows; they are a major component of the open and closed shrublands on the Property.

66. Three vegetative types are recognized on the Property: (1) fountain grass grassland; (2) open mixed shrubland; and (3) closed mixed shrubland. The distribution of these

vegetation types is influenced by environmental factors such as substrate type and rainfall gradient. The fountain grass grassland encompasses approximately 70 percent of the Property and occurs on the lower elevation portions of the Property, largely on pahoehoe lava flows. Open mixed shrubland occurs on a'a lava flows from approximately the 400-foot elevation contour upwards, while closed mixed shrubland is found from approximately the 640-foot elevation, generally on more weathered pahoehoe and a'a substrates.

67. One plant of 'aiea (Nothocestrum breviflorum), a Category 1 candidate endangered species, is found on an a'a flow on the northern half of the Property. Only one tree was identified during the survey. This species is known to inhabit dry to mesic forest areas and will reach 15 to 25 feet in height.

68. It is possible that there may be a few more trees of 'aiea on the Property, and, perhaps, uhiuhi, given the limited time spent on the Property and the area covered during field studies. The closed mixed shrubland may also harbor endangered or rare species because the vegetation is dense and visibility is limited.

Fauna

69. Phillip Bruner conducted an avifauna and feral mammal survey of the Property in September and October 1992.

70. No particularly special or unique birds, including threatened or endangered species, were discovered on the Property during the survey. Dry grasslands, open lava flows, and mixed

exotic and native second growth dry forest habitats are abundant at this elevation in West Hawaii. Consequently, it is anticipated that the urbanization of the Property will not have any adverse impacts to avifauna or feral mammals.

Historical and Archaeological Resources

71. Petitioner has worked closely with the Department of Land and Natural Resources, Historic Preservation Division ("DLNR-SHPD"), in preparing scopes of work to provide adequate information about the historical and archaeological resources within the Property.

72. Based on these scopes of work, the project archaeologist, Paul H. Rosendahl, Ph.D., Inc. ("PHRI"), prepared an archaeological assessment study for the entire Property and an inventory survey for the 500-acre university site located in the northeastern section of the Property.

73. The basic purpose of the assessment study was to enable predictions to be made concerning the probable nature and distribution of archaeological resources within the Property. The study was completed as a synthesis of literature review, aerial reconnaissance, and a partial intensive ground surface survey of portions of the Property (approximately 11.5 percent of the Property).

74. Three typical zone-types with similar characteristics have been modelled within the region by various archaeological investigators: the Coastal Zone, the Barren Zone, and the Upland Zone. The Property does not contain any portion

of the Coastal Zone, but does contain portions of the Barren and Upland Zones. It was anticipated that the Barren Zone would extend from the Queen Kaahumanu Highway along the western (makai) boundary of the Property (approximately 80 to 120-foot elevation), inland to approximately the 400-foot elevation. The Upland Zone was expected to begin at approximately the 450-foot contour and continue inland to the easternmost edge of the Property (approximately the 840-foot elevation) and beyond.

75. Sites identified during the ground surface survey were not recorded to inventory level; none of the archaeological remains identified was mapped or extensively recorded, and no subsurface testing was undertaken. The significance of the archaeological remains were, however, tentatively assessed in terms of Federal and State criteria.

76. Of the 42 sites that were newly identified during the ground surface survey, all were tentatively assessed as significant for information value. In addition, seven sites were considered excellent examples of site types. These same seven sites were also tentatively assessed as significant for cultural value. Further data collection is tentatively recommended for all 42 newly identified sites.

Preservation with interpretive development is tentatively recommended for five sites (Site Nos. 18449, 18453, 18458, 18469 and 18470), and preservation "as is" is tentatively recommended for two sites (Site Nos. 18467 and 18473).

For the sites with apparent cultural significance, it is possible that further examination will result in a final recommendation of either preservation "as is," or preservation with interpretive development.

77. DLNR-SHPD has accepted PHRI's findings for the assessment study by letter dated July 19, 1993.

78. The archaeological inventory survey was conducted by PHRI in December 1992 and January 1993 and covered 500 acres in the northeast corner of the Property identified as the site for the future West Hawaii campus of the University of Hawaii.

79. During the inventory survey, 43 sites consisting of 388+ features were identified within the 500-acre university site. Based on Federal and State criteria, 34 of the 43 sites identified during the inventory survey are assessed as significant solely for information content. Nineteen of the 34 sites require no further work. Fifteen of the 34 sites are recommended for further data collection.

Three of the nine remaining sites are assessed as significant for information content and provisionally significant for cultural value, and are recommended for further data collection and possible preservation "as is." Of the three sites, two (Site Nos. 15276 and 15295) will require more detailed recording as well as burial testing. The remaining site (Site No. 15292), also a potential burial, was not tested because it may be outside the Property. This site should be accurately located prior to further data collection.

Three other sites (Site Nos. 15285, 15296, 15302) are assessed as significant for information content and as excellent examples of site types. Further data collection and preservation with interpretive development are recommended for these sites.

Two sites (Site Nos. 15281 and 15304) are evaluated as significant for information content and as excellent examples of site types, and are recommended for preservation with some level of interpretive development. No further archaeological work is recommended at present.

The final site is evaluated as significant for information content and as culturally significant due to the presence of four known human burials (Site No. 15298). Preservation "as is" as well as further data collection is recommended.

80. DLNR-SHPD has accepted PHRI's findings for the inventory survey by letter dated July 19, 1993.

Groundwater Resources

81. Rainfall on the permeable volcanic slopes above an elevation of approximately 2,000 feet is the principal source of Kona's groundwater resources. Most of the rainfall percolates quickly downward into the ground to become groundwater at depth, due to highly permeable, basaltic lava flows which are mostly unweathered and have little soil cover. Groundwater at the Property as well as in the coastal area between Keahole and Kahaluu occurs as a thin, unconfined basal lens of brackish to

fresh water floating on salt water in very permeable Hualalai basalt lava flows. This thin basal aquifer is recharged principally by groundwater discharging seaward from inland bodies of high-level groundwater over and possible through an as yet undefined hydrogeologic boundary that is located approximately two to four miles inland from the coast.

82. The presence of the hydrogeologic boundary is thought to have created high-level groundwater based upon well data and a geophysical survey conducted in the Palani Junction area. The inland and lateral extent of this high-level water and the nature of the confining hydrogeologic structure are not well known at this time, although five wells located south of Kahaluu have discovered high-level groundwater as far south as Keei, some 14 miles south of Keahole. The hydrogeologic boundary between the basal water and inland high-level water apparently lies parallel to the coastline, approximately two miles or more inland. However, because different water levels ranging from 40 to 490 feet above sea level have been encountered, high-level groundwater probably occurs in separate or partially separate bodies.

Recreational Facilities

83. The General Plan for Hawaii County describes the recreational facilities of North Kona as "generally inadequate."

84. The Kona Palisades Estates Community Association has indicated that it has been working with State and County officials to establish a community park within the Property.

85. The urbanization of the Property can serve the resident population and its recreational needs by providing parks and other recreational facilities within the development, However, an increase in population may also increase the stress on existing public recreational facilities that are already determined to be inadequate.

Scenic Resources

86. The existing visual character of the Property can be described from two perspectives: the first includes visual resources accessible from public viewpoints outside of the Property; the second includes visual resources which can be experienced from within the Property.

87. Three major public viewpoints have been identified: (1) mauka views of the Property along Queen Kaahumanu Highway, (2) makai views from Mamalahoa Highway, and (3) mauka views from Keahole Airport.

88. The most significant views of the Property are those experienced from Keahole Airport and along Queen Kaahumanu Highway. Views of the Property from Mamalahoa Highway are transitory at best, lasting less than a second, occurring during breaks in vegetation at streets and private driveways.

89. Hualalai (mauka) and the Pacific Ocean (makai) serve as the two major view objects which are visible from within the Property. These two geographic features serve as major elements in the composition of a mauka/makai view shed experienced from within the Property. The most expansive views

can be experienced from the steeper, higher elevations, most notably at areas above the 500-foot elevation.

90. Future urbanization of the Property will alter the landscape from its predominantly natural state to one of urban uses, thereby reducing irretrievably, the natural open space in the region. Although existing public views of the Property are infrequent and transitory, those that are available will be altered.

ENVIRONMENTAL QUALITY

Noise

91. The Property is currently exposed to relatively low noise levels and is not adversely affected by aircraft operations at the Keahole Airport, according to the Keahole Airport Noise Compatibility Program (November 1987) adopted by the State Department of Transportation ("DOT"), Airports Division.

92. The 55 Ldn contour line runs along the Property's Queen Kaahumanu Highway frontage, with virtually the entire Property exposed to aircraft noise levels less than 55 Ldn. The projected noise levels were recently validated with the measurement of aircraft noise at approximately 50 Ldn in the vicinity of HELCO's Keahole Generating Station.

93. The other source of noise in the vicinity of the Property is the existing Keahole Generating Station, which is adjacent to the northwestern portion of the Property. Noise contours for the existing facilities of the Keahole Generating Station indicate that approximately one acre of the Property is

exposed to generating station noise levels in excess of 62 Ldn. Approximately seven acres and 25 acres lie within the Generating Station's 57 Ldn and 52 Ldn contours, respectively. Noise levels between 57 Ldn and 62 Ldn have been determined to be compatible with commercial, office, and industrial uses.

94. The expansion of the generating station will increase noise impacts in the area immediately surrounding the station. With the exception of a small area (approximately 0.5 acres) north of the generating station, noise levels measured at the HELCO property line will be below the 70 Ldn Noise Contour. Approximately 17 acres of the Property will be exposed to sound levels in excess of 55 Ldn.

95. It is probable that noise generated by vehicular traffic along Queen Kaahumanu Highway and Kaimi Nani Drive will increase, both from construction vehicles and subsequently from vehicle trips by residents, employees, and visitors to the urbanized Property. The degree to which traffic noise increases as a result of vehicular trips associated with the urbanization of the Property cannot be projected because specific uses for the Property have not been determined.

Air Quality

96. Within the region of the Property, the presence of Mauna Kea and Hualalai affect local wind patterns, and hence local air quality. Present air quality in the Property is mostly affected by air pollutants from natural, industrial, agricultural, and/or vehicular sources. Natural sources of air pollution which

may affect the area but cannot be quantified accurately, include the ocean (sea spray), plants (aero-allergens), wind blown dust, and volcanoes. Of these natural sources of pollution, volcanoes are the most significant. This is especially so since the latest eruption phase of the Kilauea volcano, which began in 1983, is on-going. Emissions from this eruption can be seen in the form of volcanic haze (vog) which persistently hangs over the area.

97. The major industrial sources of air pollution in the vicinity include the Keahole Generating Station and the Kailua Landfill, operated by the County of Hawaii.

98. HELCO has operated an air quality monitoring station approximately 0.8 miles southeast of the Keahole Generating Station. Based on the results of this monitoring, existing ambient air quality within the vicinity of the generating station meets both State of Hawaii and Federal air quality standards.

99. According to modelling results conducted for HELCO in conjunction with the proposed expansion of the Keahole Generating Station, no National or State ambient air quality standards would be exceeded as the result of the proposed expansion of the generating station.

100. Emissions from the landfill located approximately three miles south of the Property consist mainly of fugitive dust from heavy equipment operations, smoke, and noxious fumes from underground fires, which have been the subject of numerous complaints from people residing and working nearby. Because the

Property is situated so far away from the landfill, it is not expected to be adversely impacted by emissions from the landfill.

101. Queen Kaahumanu Highway, which borders the Property on the west, is the region's major arterial roadway, and as a result, contributes exhaust from motor vehicles traversing Queen Kaahumanu Highway. It is likely that elevated concentrations of exhaust are confined to limited areas near intersections where and when traffic congestion occurs during poor dispersion conditions.

102. Short-term direct and indirect impacts on air quality could potentially occur due to construction in two ways: (1) fugitive dust from vehicle movement and site excavation; and (2) exhaust emissions from on-site construction equipment. Indirectly, there could also be short-term impacts from slow-moving construction equipment traveling to and from the Property and from a temporary increase in local traffic caused by commuting construction workers.

103. After construction is completed, use of the Property will result in increased motor vehicle traffic on nearby roadways, potentially causing long-term impacts on ambient air quality in the project vicinity. Motor vehicles with gasoline-powered engines are significant sources of carbon monoxide. They also emit nitrogen oxides, and those burning leaded gasoline contribute lead to the atmosphere. As older vehicles continue to disappear from the numbers of those currently operating on the State's roadways, lead emissions are

approaching zero. Thus, lead in the atmosphere is not considered to be a problem anywhere in the State.

Water Quality

104. Groundwater within the Property is not suitable for potable water development, as potable wells are generally developed between elevations of 1,500 feet to 1,800 feet. Most of the Property falls within the 250-2,000 mg/l chlorides category, which indicates that portions of these areas may be suited for the development of brackish wells used for irrigation purposes (a level of less than 1,000 mg/l chlorides is generally required for irrigation purposes, although higher salinity water could be used for more salt tolerant plants).

105. The urbanization of the Property will increase the opportunity for pollutants to enter groundwater via storm runoff or as leachate from materials applied to landscaped areas (fertilizers, pesticides, etc.) Pathways followed by groundwater as it migrates to the ocean are the result of the volcanic origins of the island and its relatively young geologic age, which has created a myriad of subsurface pathways through porous lava to the ocean. Within the region makai of the Property, there is particular concern about maintaining the quality of the groundwater and the nearshore environment because nearshore waters have been classified "AA" by the State Department of Health ("DOH") and because of the proximity to the Natural Energy Laboratory of Hawaii Authority ("NELHA"), which relies on the availability of pristine ocean water.

ADEQUACY OF PUBLIC SERVICES AND FACILITIES

Highway and Roadway Facilities

106. Queen Kaahumanu Highway is the primary arterial highway in the region. This two-lane, Class I State Highway is a limited access highway within a 300-foot right-of-way (fronting the Property) with a posted speed limit of 55 miles per hour. The highway extends 38 miles to connect the towns of Kawaihae and Kailua-Kona. Exclusive left turn and right turn lanes are provided on Queen Kaahumanu Highway at key intersections such as at Keahole Airport Road and Kaimi Nani Drive. Left turn median storage lanes and right turn acceleration lanes are also provided at these intersections. These intersections are currently unsignalized.

107. Mamalahoa Highway was the main road between Kailua-Kona and Waimea prior to the opening of Queen Kaahumanu Highway in 1975. It still provides a major transportation link between Hilo and Kailua-Kona. Kaimi Nani Drive intersects Queen Kaahumanu Highway approximately 0.5 miles south of Keahole Airport Road. The mauka portions of Kaimi Nani Drive provide access to the residential subdivisions mauka of the Property. Until the recent construction of Hina Lani Drive, which is located approximately 3.2 miles south of the Keahole Airport Road intersection, the only connection between the two arterials was Kaimi Nani Drive.

108. A traffic assessment for the Property was prepared by the traffic engineering firm The Traffic Management Consultant

("TMC"), to identify issues and opportunities relative to the probable traffic impacts the reclassification of the Property will have on the region's traffic.

109. The Keahole to Kailua corridor is in the midst of significant changes, and is planned to be the focus of continued growth during the next 20 years. In addition to the Property, developments are planned or underway at the Queen Liliuokalani Trust lands at Keahuolu, the State-owned tract at Kealakehe, private projects at Kohanaiki, and at the NELHA, and the expansion of the Keahole Airport.

110. In recognition of the rapid changes within the region, several transportation studies have either been completed or are underway by State and County agencies to plan for necessary circulation improvements to accommodate growth. These include the K-K Plan, the Queen Kaahumanu Highway Master Plan ("QKHMP"), and the Island of Hawaii Long Range Highway Plan ("HLRHP").

111. The roadway plan proposed in the K-K Plan envisions three north-south collector/arterial roadways which pass through the Property. The lowest elevation roadway (approximately the 400-foot contour) is the "Mid-Level Arterial," which would roughly parallel Queen Kaahumanu Highway and connect with Palani Road to the south and extend out beyond the Property to the north. This arterial is presently planned as a four-lane roadway with a 120-foot right-of-way.

Waena Drive passes through the Property at approximately the 800-foot elevation and is presently planned as a four-lane, undivided roadway with an 80-foot right-of-way. A third north-south roadway, Kealakehe Street Extension, passes through the east portion of the Property at approximately the 1,000-foot elevation.

112. The K-K Plan also shows a mauka-makai roadway (University Drive) intersecting with Queen Kaahumanu Highway at Keahole Airport Access Road to provide access to the northern portion of the Property, including the proposed university site.

113. The QKHMP is a two-phased effort that is expected to result in a long-range plan for the entire highway corridor between Kailua-Kona and Kawaihae. This project is on-going under the direction of the DOT, Highways Division. The first phase of the master plan is expected to include plans to widen the two-lane highway to a four-lane, divided highway between Kailua-Kona and Keahole. Subsequent phases would include extending the four-lane widening to Kawaihae, upgrading the highway to a controlled-access freeway, and the construction of grade separated interchanges and a frontage road system to replace at-grade access along the highway.

114. In addition to interchanges planned at the Keahole Airport Access Road (University Drive) and the Kealakehe Interchange, other potential interchanges could include the recently completed Hina Lani Drive (adjacent to the Kaloko Light Industrial subdivision) and near the proposed development at

Kohanaiki. The latter interchange could provide access to the southern portion of the Property.

115. In May 1991, Parsons Brinckerhoff, Quade and Douglas, Inc., completed the HLRHP, a study for the DOT and the County of Hawaii. The HLRHP estimates that the year 2010 average daily traffic on Queen Kaahumanu Highway would increase to 32,900 vehicles per day between Keahole and Kealakehe. This represents a 9.2 percent annual increase over 1992 conditions. In the HLRHP, the improvement of Queen Kaahumanu Highway, between Keahole Airport and Palani Road, is rated as the highest priority for the Island of Hawaii.

116. The DOT is currently preparing an update to the HLRHP. The updated highway plan would evaluate regional needs, based on Statewide population and employment forecasts and the development projects approved since the 1988 land use forecast. These recent projects are expected to include the HFDC housing project at Kealakehe, the development of the Queen Liliuokalani Trust Lands, and the Property.

117. It is assumed that access to the northern portion of the Property would be provided at the proposed Airport Access Road/University Drive Interchange, via the proposed University Drive. Due to the distance between the southern portion of the Property and the proposed Kealakehe interchange, an additional interchange near 'O'oma 2nd/Kohanaiki could provide needed access to the southern portion of the Property. However, interchange

locations have not been determined by the DOT yet. If an interchange is not provided in this area, then access could be provided by a frontage road along Queen Kaahumanu Highway, the Mid-Level Arterial, Waena Road, and the Kealakehe Street Extension, as identified in the K-K Plan.

118. All the traffic studies that were reviewed by TMC concur that traffic demand on Queen Kaahumanu Highway would exceed the existing two-lane capacity before the year 2000, with or without urbanization of the Property. Several issues relative to the Property need to be addressed by ongoing and future studies:

a. Number and location of interchanges proposed on Queen Kaahumanu Highway, within the vicinity of the Property;

b. Configuration and operation of the frontage road system along Queen Kaahumanu Highway in the vicinity of the Property;

c. Implementation schedule of the proposed north-south arterial/collector roadways; and

d. Traffic impacts and access requirements based upon a development plan for the Property.

Keahole Airport and Harbors

119. It is anticipated that the development of the Property will generate additional air passenger and freight traffic through the Keahole Airport, although increases attributable to its development would not directly necessitate

expansion of airport facilities. The cumulative demand on airport facilities from West Hawaii developments are anticipated to require future terminal expansion and lengthening of the runway to accommodate fully-loaded wide-bodied aircraft, consistent with the Airport Master Plan.

120. It is probable that increases in cargo handling at Kawaihae Harbor and the use of ocean recreational activities offered at the Honokohau and Kailua-Kona Harbors generated by the urbanization of the Property will result in additional job opportunities and increased demand for recreational boat slips. Existing slips are filled, with a waiting list of interested parties.

Water Service

121. Water Resource Associates prepared an overview of water resources in the North Kona Region.

122. Potable water use in the Keahole-Kahaluu area of North Kona is provided by the DWS from its North Kona Water System.

123. Based on Water Resource Associate's calculations, the estimated groundwater recharge in the 10-mile stretch of North Kona between Kalaoa and Kahaluu is approximately 53 million gallons per day ("mgd").

124. The concept of sustainable yield for basal aquifers is not completely applicable to the high level aquifers which have been recently identified in North Kona, because they are not threatened by salt water intrusion.

125. Optimum development of North Kona's groundwater resources would consist of development of the high-level aquifers. Based upon experience with aquifer performance in Honolulu and Pearl Harbor, Water Resource Associates estimates the sustainable yield of the 10-mile stretch of North Kona between Kalaoa and Kahaluu to be approximately 40 mgd.

126. The estimated future water needs of the County's North Kona Water System are approximately 24.8 mgd through the year 2010. This estimate includes projected demand from anticipated private and government development projects in the region. With a current water use of approximately 8.3 mgd for the North Kona Water System, a total of approximately 33.1 mgd is the projected demand for 2010. Given an estimated sustainable yield of approximately 40 mgd in the Kalaoa-Kahaluu area, there is approximately 7.0 mgd of potentially available potable resources.

127. Three development scenarios were employed to estimate order of magnitude impacts associated with the urbanization of the Property. Based on the three scenarios, the estimated demand for potable water as a result of urbanization of the Property ranges from approximately 4.6 mgd to 6.6 mgd (excluding the 0.5 mgd attributable to the 500-acre University site, which is already included in future demand estimates). If these figures are compared to the estimated remaining water budget for the North Kona Water System established by Water

Resource Associates of 7.0 mgd, there could be between 0.4 mgd and 2.3 mgd of developable potable resources available for other users if all estimated demand attributable to the Property is assigned.

128. These estimates are only estimates of future water demand based on the three development scenarios and do not necessarily reflect actual future patterns of development within the Property. They do, nevertheless, provide an order of magnitude estimate for future demand.

Wastewater Disposal

129. There is presently no available municipal wastewater treatment plant that can accommodate wastewater that will be generated by the development of the Property.

130. The recently adopted K-K Plan indicates sewage from this area discharging to a proposed Municipal Treatment Plant No. 2, which will be located approximately two miles north of Keahole Airport. The K-K Plan anticipates this plant will be in service by the year 2005.

131. Based on the use of the three scenarios, the range of anticipated wastewater flows for the urbanized Property is between 2.45 and 3.07 mgd.

132. Assuming that adequate wastewater treatment facilities can be constructed to service the Property, it will then be necessary to dispose of the treated effluent. Portions of the effluent could be used as irrigation for any golf course(s) that are constructed within the Property.

133. The use of effluent for irrigation will not absorb all the wastewater generated by the Property, even if two golf courses are constructed. Other disposal methods, such as underground injection, would be needed for the balance of the wastewater not used for irrigation.

Drainage and Flooding

134. M&E Pacific, Inc., engineering consultant for Petitioner, conducted a drainage study for the Property in October 1992. The existing drainage area affecting the Property covers (both on-site and off-site) approximately 8,336 acres (13.1 square miles), extending from the undeveloped Makaula-O'oma Mauka Tract to Queen Kaahumanu Highway. Existing developments in the vicinity have no continuous underground drainage system.

135. The asphalt concrete roads in the region have side swales with periodic CRM ditch structures and connecting drain pipes, which direct runoff ultimately to open areas and facilitate the rapid percolation of storm water runoff.

136. Along Queen Kaahumanu Highway frontage of the Property, drainage runoff can flow under the highway through a series of 14 corrugated metal pipe culverts, ranging in size from 30 to 96 inches.

137. The existing off-site peak runoff is approximately 3,500 cubic feet per second ("cfs") and the existing on-site peak runoff is 2,300 cfs.

138. Based on general assumptions about future development of the watershed and the Property, it is estimated

that an additional 1,000 cfs of peak discharge will be added to the on-site peak discharge (an increase of 43 percent).

139. Additional runoff can be precluded from entering into downstream properties by installing a system of swales and underground drainage structures, which would channel the runoff into a system of dry wells.

140. The use of unlined channels, wherever possible, would allow infiltration of runoff into the porous lava rock and thus minimize flows at discharge points. In addition, areas could be left in open space (including golf course areas) for drainage infiltration into the ground.

Solid Waste Disposal

141. The Kailua Landfill, which presently serves the North and South Kona Solid Waste District, is expected to close in late 1993. The Kailua Landfill will be replaced by a new landfill at Puu Anahulu, south of Waikoloa. Refuse from the Property would be accepted by the proposed municipal landfill at Puu Anahulu.

142. Based on population projections provided by the three scenarios, it is estimated that between 48 and 64 tons of solid waste could be generated each day as a result of urbanization of the Property. This assumes that there will be no change in the per capita generation of solid waste. If there is a reduction in this value via reuse, recovery and/or recycling, the total amount of solid waste generated by the urbanization of the Property may be less.

Schools and Libraries

143. Current facilities planning projections for the Department of Education do not include population increases within the Property. Although a high school is being planned in Kealakehe to serve the residential community being planned by HFDC, additional enrollment associated with the urbanization of the Property will require new and/or expanded facilities. Land areas for civic uses such as schools were allocated within the Property in the scenario analysis.

Police, Fire, and Emergency Services

144. The increase in population attributable to the development of the Property will increase demand on existing police, fire, and emergency facilities within the region.

Electrical Power and Communication

145. Electrical service to the Property, as well as the entire island, is currently provided by HELCO. HELCO's Keahole generating plant, located adjacent to the western portion of the Property, has a current generating capacity of 30 megawatts ("mW").

146. In an effort to keep up with island-wide, as well as regional electrical demand, HELCO is initiating an expansion of the Keahole generating plant to 86 mW.

147. It is likely that urbanization of the Property would result in an increase of at least 40 mW in electrical demand. This represents approximately 70 percent of the capacity

of the proposed expansion of the Keahole Generating Station. In light of planned load growth in the region, it is probable that urbanization of the Property will require additional capacity beyond that currently planned at the Keahole Generating Station. Since development of the Property would extend beyond the year 2010 (planning horizon for Keahole Generating Plant upgrade), there is time to plan for the addition of generating capacity in the region.

148. Hawaiian Telephone Company ("HTC") serves the Property from its Kailua-Kona Electronic Common Control facilities with trunk cables supported on the HELCO 69 kV poles mauka of Queen Kaahumanu Highway.

149. Based on general assumptions made about the acreage involved in the proposed boundary amendment, HTC would need to add a remote switching office to accommodate development of the Property.

150. Sun Cablevision is licensed to provide cable television service in the Kona-Kohala region. There are presently no cable lines servicing the Property. Therefore, it will be necessary to extend service to the Property once it is developed.

Health Care Facilities

151. The increase in resident population that is probable as a result of the urbanization of the Property will place additional demands on health care services in the region.

Civil Defense Services

152. The Property is not affected by flood hazard and is within lava flow hazard zone 4, a zone of medium threat. Should a natural disaster affect the Property after it has been urbanized, the added population and urban improvements would add to the responsibilities of the various civil defense agencies. The State Department of Defense has indicated that three civil defense sirens would be needed for the Property.

COMMITMENT OF STATE FUNDS AND RESOURCES

153. As development of the Property proceeds, it is probable that additional State funds will be needed for infrastructure development. State funds may also be involved in developing the area for specific cases.

COMPLIANCE TO URBAN DISTRICT STANDARDS

154. The Property is located mauka of the Keahole Airport and contiguous to various residential subdivisions, including Kona Palisades, Kona Highlands, Kona Wonder View Lots, and Kona Coast View Lots. The reclassification of the Property to the Urban District is a logical extension of the Urban District Boundaries in the area.

155. The Property is identified for urban use by a number of State and County land use plans, including: the State Land Use District Boundary Review Report (for the Island of Hawaii), the State West Hawaii Regional Plan, the County General Plan, and the County K-K Plan.

156. The Property is located within seven miles of Kailua-Kona, a major center of trading and employment, and is also proximal to other centers of employment, including the Honokohau Light Industrial Park and the Keahole Airport. In addition, the Property will include the future West Hawaii campus for the University of Hawaii.

157. The Property is located adjacent to Queen Kaahumanu Highway, the primary arterial highway in the region and Keahole Airport, the primary airport serving West Hawaii. The DOT has already commenced studies to improve Queen Kaahumanu Highway to absorb additional traffic volume, and Keahole Airport is in an active phase of expansion, including lengthening of the runway. Other basic services in the region will need to be expanded, including sewer, water, schools, and internal roadways. However, the County of Hawaii's recently adopted K-K Plan recognizes the future development of the region and has identified the need to provide these services in the region. As part of the three development scenarios, Petitioner has allocated land to provide for these services.

158. The Property does not have any adverse topographic constraints which would hinder or endanger occupants of the proposed development, nor is it susceptible to drainage problems, flooding, tsunami, unstable soil conditions, or other adverse environmental effects.

159. The urbanization of the Property does not contribute to scattered spot urban development as it is proximal

to existing urban facilities and is identified for urban uses by adopted State and County land use plans.

CONFORMANCE WITH THE GOALS, OBJECTIVES AND POLICIES OF THE HAWAII STATE PLAN; RELATIONSHIP WITH APPLICABLE PRIORITY GUIDELINES AND FUNCTIONAL PLANS

160. The proposed reclassification of the Property is generally consistent with the objectives, policies, and priorities of the Hawaii State Plan and Functional Plans as follows:

a. The proposed reclassification will assist in providing greater opportunities for Hawaii's people to secure reasonably priced, safe, sanitary, livable homes located in suitable environments that satisfactorily accommodate the needs of families and individuals.

b. The proposed reclassification of the Property will provide greater economic opportunities for businesses and individuals.

c. The proposed reclassification of the Property will provide greater educational opportunities for the residents of Hawaii by accommodating the West Hawaii campus of the University of Hawaii.

CONFORMANCE WITH COASTAL ZONE MANAGEMENT OBJECTIVES AND POLICIES

161. The proposed reclassification of the Property generally conforms to the CZM objectives and policies in that 1) it will not have an adverse impact on coastal resources, nor will it impede existing access to the shoreline; 2) it will not adversely affect the quality of coastal, scenic, and open space

resources; 3) the proposed urbanization of the Property will stimulate the region, County, and State economies; 4) the Property is not subject to tsunamis, storm waves, and stream flooding; and 5) significant archaeological resources will be preserved.

RULING ON PROPOSED FINDINGS OF FACT

Any of the proposed findings of fact submitted by the Petitioner or the other parties not already ruled upon by the Commission by adoption herein, or rejected by clearly contrary findings of fact herein, are hereby denied and rejected.

Any conclusion of law herein improperly designated as a finding of fact shall be deemed or construed as a conclusion of law; any finding of fact herein improperly designated as a conclusion of law shall be deemed or construed as a finding of fact.

CONCLUSIONS OF LAW

Pursuant to chapter 205, HRS, and the Hawaii Land Use Commission Rules under chapter 15-15, H.A.R., and upon consideration of the Land Use Commission decision-making criteria under section 205-17, HRS, this Commission finds upon a clear preponderance of the evidence that the reclassification of the Property consisting of approximately 1,327.93 acres of land in the Conservation Land Use District and approximately 1,282.18 acres of land in the Agricultural Land Use District situated at Keahole, North Kona, Island of Hawaii, State of Hawaii, identified as Tax Map Key Nos.: 7-3-09:5 and 8 and 7-3-10:2 and

33 (por.) into the Urban Land Use District, subject to the conditions hereinafter stated in the Order, is reasonable, nonviolative of section 205-2, HRS, and is consistent with the Hawaii State Plan as set forth in chapter 226, HRS.

ORDER

IT IS HEREBY ORDERED that the Property, being the subject of this Docket No. BR92-685 by Petitioner Office of State Planning, State of Hawaii, consisting of approximately 1,327.93 acres of land in the State Land Use Conservation District and approximately 1,282.18 acres of land in the State Land Use Agricultural District situated at Keahole, North Kona, Island of Hawaii, State of Hawaii, identified as Tax Map Key Nos.: 7-3-09:5 and 8 and 7-3-10:2 and 33 (por.), and approximately shown on Exhibit "A" attached hereto and incorporated by reference herein, is hereby reclassified into the State Land Use Urban District, and that the State Land Use District Boundaries are amended accordingly, subject to the following conditions:

1. The developer and/or landowner of the subject Property shall provide affordable housing opportunities for low, low-moderate, and gap group income residents of the State of Hawaii to the satisfaction of the State Housing Finance and Development Corporation in accordance with the Affordable Housing Guidelines, adopted by the Housing Finance and Development Corporation, effective July 1, 1992, as periodically amended. The location and distribution of the affordable housing or other provisions for affordable housing shall be under such terms as

may be mutually agreeable between the developer and/or landowner of the subject Property and the State Housing Finance and Development Corporation and the County of Hawaii. Agreement by the HFDC on the provision of affordable housing shall be obtained prior to the developer and/or landowner applying for county zoning or prior to the developer and/or landowner applying for county building permits if county rezoning is not required.

2. The developer and/or landowner of the subject Property shall contribute to the development, funding and/or construction of school facilities, on a pro-rata basis, as determined by and to the satisfaction of the Department of Education (DOE). Agreement by DOE on the level of funding and participation shall be obtained prior to the developer and/or landowner applying for county zoning or prior to the developer and/or landowner applying for county building permits if county rezoning is not required.

3. The developer and/or landowner of the subject Property shall prepare a Traffic Impact Analysis Report prior to applying for county zoning or prior to the developer and/or landowner applying for county building permits if county rezoning is not required. The landowner and/or developer shall also participate in the funding and construction of local and regional transportation improvements and programs including dedication of rights-of-way as determined by the State Department of Transportation and the County Department of Public Works. Agreement by the State Department of Transportation on the level

of funding and participation shall be obtained prior to the developer and/or landowner applying for county zoning or prior to the developer and/or landowner applying for county building permits if county rezoning is not required.

4. The developer and/or landowner of the subject Property shall monitor the traffic attributable to the project at on-site and off-site locations and shall undertake subsequent mitigative measures that may be reasonably required. These activities shall be coordinated with and approved by DOT.

5. The developer and/or landowner of the subject Property, at no cost to the State, shall appoint a permanent transportation manager whose function is the formulation, use, and continuation of alternative transportation opportunities that would optimize the use of existing and proposed transportation systems. In the alternative, the developer and/or landowner of the subject Property may participate in a regional program for transportation management with other developers and/or landowners. This program shall address the transportation opportunities that would optimize the use of existing and proposed transportation systems. Either option will continue to be in effect unless otherwise directed by the State Department of Transportation prior to implementation. The transportation manager or developer and/or landowner of the subject Property shall conduct periodic evaluations of the program's effectiveness and shall make reports of these evaluations available to the State Department of Transportation for review.

6. The developer and/or landowner of the subject Property shall participate in the funding and construction of adequate wastewater transmission and disposal facilities, on a pro-rata basis, as determined by the State Department of Health and the County Department of Public Works.

7. The developer and/or landowner of the subject Property shall fund the design and construction of drainage improvements required as a result of the development of the Property to the satisfaction of the appropriate State and County agencies.

8. The developer and/or landowner of the subject Property shall have an archaeological inventory survey conducted for those areas of the Property not already the subject of an inventory survey by a professional archaeologist prior to submitting an application to the County of Hawaii for rezoning or prior to applying for a building permit if county rezoning is not required. The findings of such survey(s) shall be submitted to the State's Historic Preservation Division in report format for adequacy review. The Division must verify that the survey report is acceptable, must approve significance evaluations, and must approve mitigation commitments for significant historic sites prior to the landowner and/or developer submitting an application to the county for rezoning or prior to applying for a building permit if county rezoning is not required.

9. If significant historic sites are present, then the developer and/or landowner of the subject Property shall agree to

develop and execute a detailed historic preservation mitigation plan prior to any ground altering construction in the area. The State's Historic Preservation Division must approve this plan, and that Division must verify in writing to the Land Use Commission that the plan has been successfully executed.

10. Should any human burials or any historic sites such as artifacts, charcoal deposits, or stone platforms, pavings or walls be found, the developer and/or landowner of the subject Property shall stop work in the immediate vicinity and contact the State Historic Preservation Division. The significance of these finds shall then be determined and approved by the Division, and an acceptable mitigation plan shall be approved by the Division (if needed). The Division must verify that the fieldwork portion of the mitigation plan has been successfully executed prior to work proceeding in the immediate vicinity of the find. Burials must be treated under specific provisions of Chapter 6E, Hawaii Revised Statutes.

11. The developer and/or landowner of the subject Property shall conduct a flora survey and prepare and agree to execute a mitigation plan which meets the requirements of the Department of Land and Natural Resources prior to the developer and/or landowner applying for county zoning or prior to the developer and/or landowner applying for county building permits if county rezoning is not required. The Department of Land and Natural Resources must approve the plan, and a copy of the approved plan must be submitted to the Land Use Commission prior

to the developer and/or landowner applying for county zoning or prior to the developer and/or landowner applying for county building permits if county rezoning is not required.

12. The developer and/or landowner of the subject Property shall fund and construct adequate civil defense measures as determined by the County and State Civil Defense agencies.

13. The developer and/or landowner of the subject Property shall not construct residential or condominium units within areas exposed to noise levels of 60 Ldn or greater.

14. The developer and/or landowner of the subject Property shall grant to the State of Hawaii an avigation (right of flight) and noise easement in the form prescribed by the State Department of Transportation on any portion of the Property subject to noise levels exceeding 55 Ldn.

15. The developer and/or landowner of the subject Property shall attenuate the noise in guest (living) suites and other noise sensitive areas within commercial and hotel development areas exposed to exterior noise levels of 60 Ldn (day-night average sound level) by a minimum of 25 decibels (A-weighted).

16. The developer and/or landowner of the subject Property shall participate in an air quality monitoring program as specified by the State Department of Health.

17. The developer and/or landowner of the subject Property shall cooperate with the State Department of Health and the County of Hawaii Department of Public Works to conform to the

program goals and objectives of the Integrated Solid Waste Management Act, Chapter 342G, Hawaii Statutes, and the County's approved integrated solid waste management plans in accordance with a schedule and timeframe satisfactory to the Department of Health.

18. The developer of the subject Property shall maintain, to the extent required by the State Department of Health, on-site facilities to ensure that the nearshore, offshore and deep ocean waters remain in pristine condition. The developer of the subject Property shall also participate in a water quality monitoring program with the Natural Energy Laboratory of Hawaii and the Hawaii Ocean and Science Technology Park. This program shall be submitted for review to the State Department of Health.

19. The developer and/or landowner of the subject Property shall, to the satisfaction of the State Department of Health, keep wastewater ponds holding effluent for irrigation of golf courses at a sufficient distance from residential areas to prevent odor and insect nuisances.

20. If the development of the Property includes a golf course(s), the developer and/or landowner of the Property shall engage the services of a qualified golf course manager to oversee the irrigation of the golf course and application of fertilizers and pesticides to the golf course within the Property and who shall be qualified in the application of fertilizers and pesticides on those areas.

21. If a golf course(s) is included in the development of the Property, the developer and/or landowner of the Property shall comply with the State Department of Health's conditions for new golf course developments.

22. The developer and/or landowner of the Property shall be responsible for implementing sound attenuation measures to bring noise levels from vehicular traffic in the Property down to levels acceptable to the State Department of Health and the State Department of Transportation.

23. The developer and/or landowner of the Property shall notify all prospective buyers of property of the potential odor, noise, and dust pollution resulting from surrounding Agricultural District land.

24. The developer and/or landowner of the Property shall notify all prospective buyers of property that the Hawaii Right-to-Farm Act, Chapter 165, Hawaii Revised Statutes, limits the circumstances under which pre-existing farming activities may be deemed a nuisance.

25. If the future development of the Property includes a golf course, the developer and/or the landowner shall conduct an environmental risk assessment to analyze possible impacts that might occur as the result of the application of pesticides and fertilizers to the course prior to the developer and/or landowner applying for county zoning or prior to the developer and/or landowner applying for county building permits if county rezoning is not required.

26. Once specific land uses for the Property have been identified, the developer and/or landowner shall work closely with HELCO to identify any potential health hazards that might be present as the result of proximity to the transmission lines now found within the Property. The identification of potential health hazards shall be done prior to any application for County zoning or prior to any application for a County building permit.

27. The developer and/or landowner of the subject Property shall establish a buffer zone on the subject Property between the adjacent Keahole Agricultural Park and uses on the subject Property to the satisfaction of the State Department of Agriculture.

28. The Petitioner and/or developer shall comply with all applicable County land use and permitting approvals, including the County's zoning process.

29. The developer and/or landowner of the subject Property shall develop the Property in substantial compliance with the representations made to the Commission. Failure to so develop the Property may result in reversion of the Property to its former classification, or change to a more appropriate classification.

30. The developer and/or landowner of the subject Property shall promptly provide without any prior notice, annual reports to the Land Use Commission, the Office of State Planning, and the County of Hawaii Planning Department in connection with

the status of the subject project and the developer's and/or landowner's progress in complying with the conditions imposed.

31. The Land Use Commission may fully or partially release these conditions as to all or any portion of the Property upon timely motion and upon the provision of adequate assurance of satisfaction of these conditions by the developer and/or landowner of the subject Property.

32. The developer and/or landowner of the subject Property shall give notice to the Commission of any intent to sell, lease, assign, place in trust, or otherwise voluntarily alter the ownership interests in the Property, prior to the completion of the development of the Property.

33. Within 7 days of the issuance of the Commission's Decision and Order for the subject reclassification, Petitioner shall 1) record with the Bureau of Conveyances a statement to the effect that the Property is subject to conditions imposed by the Land Use Commission in the reclassification of the Property; and 2) shall file a copy of such recorded statement with the Commission.

34. Petitioner shall record the conditions imposed by the Commission with the Bureau of Conveyances pursuant to Section 15-15-92, Hawaii Administrative Rules.

Done at Honolulu, Hawaii, this 9th day of December 1993, per motion on December 2, 1993.

LAND USE COMMISSION
STATE OF HAWAII

By _____
JOANN N. MATTSON
Chairperson and Commissioner

By (absent)
KAREN S. AHN
Vice Chairperson and Commissioner

By _____
TRUDY K. SENDA
Vice Chairperson and Commissioner

By _____
ALLEN K. HOE
Commissioner

By _____
LLOYD F. KAWAKAMI
Commissioner

By (absent)
EUSEBIO LAPENIA, JR.
Commissioner

By (absent)
RENTON L. K. NIP
Commissioner

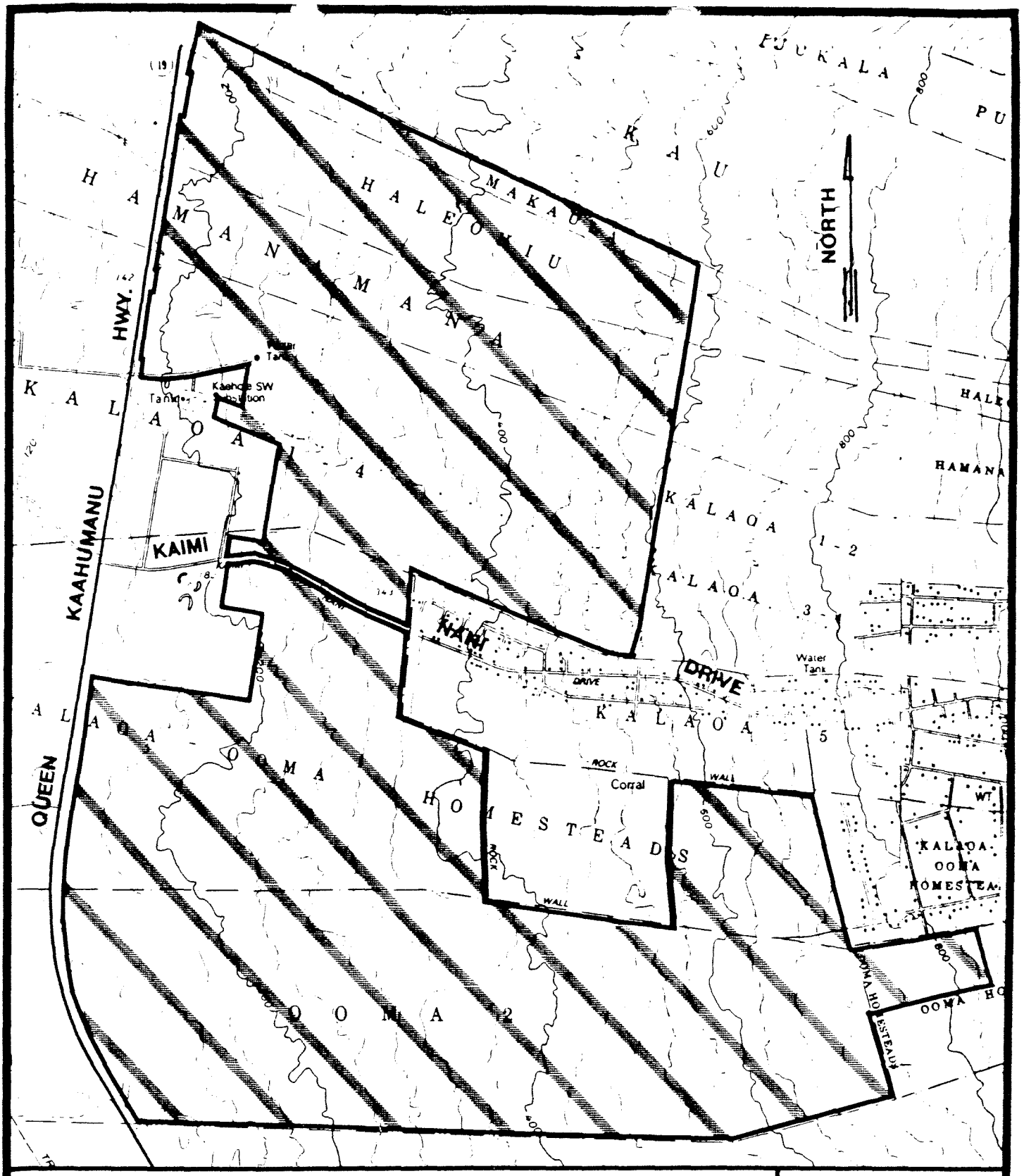
By _____
ELTON WADA
Commissioner

By _____
DELMOND J. H. WON
Commissioner

Filed and effective on
December 9, 1993

Certified by:

_____
Executive Officer



DOCKET NO. BR92-685 / STATE OF HAWAII, OFFICE OF STATE PLANNING

LOCATION MAP

TAX MAP KEY: 7-3-09: 5 & 8; 7-3-10: 2 & por. 33

KAU - OOMA 2nd, NORTH KONA, HAWAII

SCALE: 1" = 2,000 ft. ±

APPROVED AREA

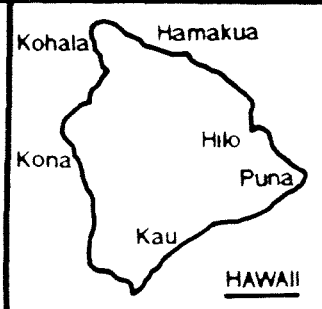


EXHIBIT "A"

BEFORE THE LAND USE COMMISSION

OF THE STATE OF HAWAII

In the Matter of the Petition of OFFICE OF STATE PLANNING, STATE OF HAWAII To Amend the Agricultural and Conservation District Boundary into the Urban District for approximately 2,640 acres at Keahole, North Kona, Island of Hawaii, State of Hawaii, Tax Map Key Nos.: 7-3-09:5 and 8; 7-3-10:2 and 33 (por.)	DOCKET NO. BR92-685 CERTIFICATE OF SERVICE

CERTIFICATE OF SERVICE

I hereby certify that a copy of the Findings of Fact, Conclusions of Law, and Decision and Order was served upon the following by either hand delivery or depositing the same in the U. S. Postal Service by certified mail:

DEL. RICK J. EICHOR, ESQ., Attorney for Petitioner
Deputy Attorney General
Hale Auhau, Third Floor
425 Queen Street
Honolulu, Hawaii 96813

DEL. HAROLD S. MASUMOTO, Director
Office of State Planning
P. O. Box 3540
Honolulu, Hawaii 96811-3540

CERT. VIRGINIA GOLDSTEIN, Planning Director
Planning Department, County of Hawaii
25 Aupuni Street
Hilo, Hawaii 96720

DATED: Honolulu, Hawaii, this 9th day of December 1993.

ESTHER UEDA
Executive Officer