

**COUNTY OF HAWAII PLANNING DEPARTMENT**  
**BACKGROUND REPORT**

**OCEANSIDE 1250**  
**CHANGE OF ZONE APPLICATION 93-5**  
**USE PERMIT APPLICATION 93-2**  
**SPECIAL MANAGEMENT AREA USE PERMIT APPLICATION 93-1**

OCEANSIDE 1250 is requesting the following:

- (a) **Change of Zone** from Agricultural-5 acres (A-5a) and Unplanned (U) to Agricultural-1 acre (A-1a);
- (b) **Use Permit** to allow the construction of a 27-hole golf course, golf clubhouse, driving range and related improvements; and
- (c) **Special Management Area (SMA) Use Permit** to allow the construction of a 27-hole golf course, driving range, public shoreline access and related improvements.

Approximately 1,540 acres are master planned as a residential and recreational community known as the *Villages at Hokukano*. The property is located makai of the Mamalahoa Highway, makai of Kealakekua Village, Halekii, Keekee, North and South Kona, TMK: 7-9-6: Portion of 1; 7-9-12: Portions of 3, 4, 5 & 11; and 8-1-4: Portion of 3.

**GENERAL INFORMATION**

**Relevant History**

1. **April 1975 thru May 1993** - five separate consolidation and re-subdivision actions occurred on the affected properties which resulted in various reconfigurations of the parcels (Subd. Nos. 3569, 3734, 4849, 6068 & 6275).

- 2. October 24, 1984** - The Planning Commission approves a request by Red Hill Joint Venture for a Special Management Area (SMA) Use Permit (SMA No. 214) to allow the development of a portion of a 98-lot subdivision, consisting of lots ranging from 5- to 10-acres in size, within a portion of the project site identified by TMK: 7-9-12: 3. Within the 98-lot subdivision, only 29 lots are located within the SMA. Of the 29 lots, two were located within the SMA and were to be maintained in their natural state. Approval of SMA Use Permit No. 214 was subject to, in part, conditions of approval requiring:

  - a) the provision of a water source to support the proposed development;
  - b) the approval of an intensive archaeological survey of the SMA and implementation of its recommended mitigative measures; and
  - c) the approval of a public access plan and the securing of relevant approvals to implement its recommendations.
- 3. October 18, 1985** - Red Hill Joint Venture requests an extension of time to submit a public access plan as required by SMA Use Permit No. 214. Archaeological studies, the preparation of engineering drawings and financial delays were reasons stated for non-compliance.
- 4. April 1, 1986** - TMK: 7-9-12: 3 is sold to Lyle Anderson. Planning Department defers action on time extension request until such time Mr. Anderson decides on the future development of the parcel.
- 5. November 17, 1986** - Time extension request withdrawn by Mr. Anderson and, at his request, SMA Use Permit No. 214 was nullified.

## Landownership

6. **Landownership:** The Applicant owns TMK: 7-9-12: 3 and 8-1-04: 3 in fee simple. The remaining parcels are owned by Ackerman Ranch, Inc., and leased to Lyle Anderson, President of 1250 Oceanside Partners (dba Oceanside 1250). The State of Hawaii and/or the County of Hawaii has probable cause for claiming ownership of a public road right-of-way which traverses over and across Grant No. 1651 and is encumbered as a road easement. This road easement is identified as the "Old Government Road" and reflected within the subject applications as the "King's Trail".

## MASTER PLANNED DEVELOPMENT

7. **Development Theme:** The proposed "*Villages at Hokukano*" development consists of approximately 1,540 acres and is envisioned by the Applicant as a "master planned low density community focused on a 27-hole Jack Nicklaus designed golf course." According to a preliminary development plan, the "*Villages at Hokukano*" would consist of the following components:
  - a. a maximum of approximately 1,440 predominantly single family residential units ranging in density from 5 units per acre to 1 unit per 3 acres;
  - b. a 27-hole golf course, golf clubhouse, driving range and 100-unit members lodge;
  - c. an historic park area located within the State Land Use Conservation District. Public shoreline access, parking and hiking trails will be

integrated with a program for historical interpretation of the many archaeological features within the Conservation District area and the project site.

8. **Development Schedule & Phasing:** The Villages at Hokukano will be developed in two phases. *Phase I* includes the development of approximately 367 single family residential/agricultural lots ranging in size from 1 to 3 acres within the mauka portion of the project site and a 27-hole golf course, golf clubhouse, driving range and related facilities within the makai portion. *Phase II*, consisting of approximately 1,073 predominantly single family residential units and a 100-unit golf members' lodge, will be developed as market forces dictate.

## **APPLICANT'S REQUEST**

### **Change of Zone**

9. **Request:** The Applicant is requesting a change of zone for approximately 637 acres of land from an Agricultural-5 acres (A-5a) and Unplanned (U) to an Agricultural-1 acre (A-1a) zoned district. The proposed change of zone would affect the mauka half of the 1,540-acre project site (See **Exhibit B**).
10. **Proposed Development:** The change of zone, should it be approved, would allow the development of a 367-lot agricultural/residential subdivision consisting of lot ranging in size from 1 acre to 3 acres. Development of the residential-agricultural subdivision is anticipated to begin in 1995 and be

completed within 10 to 15 years, when build-out of the approximately 367 residences is anticipated.

11. **Parcels Affected:** TMK's: 7-9-06: Portion of 1; 7-9-12: 3, 4, & 5; and 8-1-04: Portion of 3.

Use Permit

12. **Request:** The Applicant is requesting a Use Permit to allow the construction of a 27-hole golf course, golf clubhouse, driving range and related improvements. The proposed golf course, clubhouse and driving range will be located immediately makai of the proposed agricultural/residential subdivision and mauka of coastal lands located within the State Land Use Conservation District (See **Exhibit C**).

13. **Parcels Affected:** TMK's: 7-9-12: Portion of 3, 5 & 11; 8-1-04: Portion of 3.

14. **Project Specifications for Golf Course:**

*Design:* The 27-hole golf course will encumber approximately 346 acres of land of which approximately 150 acres will be incorporated in fairway areas. The golf course will be engineered with a tile drainage system designed to collect runoff and infiltration from rainfall for collection in retention ponds for reuse as irrigation. The proposed golf course will also incorporate a "Reduced Turf" design concept which, by decreasing the turf area, reduces the irrigation and chemical application requirements. To accomplish this, much of the natural landform and vegetation in the area between the tee boxes and the fairways will be retained. Additionally, the Applicant will implement an

Integrated Golf Course Management Program (IGCMP) to employ specific procedures and responsible management practices aimed at limiting the application of chemicals required to maintain a healthy landscape. The IGCMP will incorporate a Water Quality and Marine Life Monitoring and Mitigation Plan to detect the presence of chemicals in the leachate passing through the soil layer and to implement appropriate mitigation measure to protect groundwater and marine water quality.

*Operation:* The golf course would operate between the hours of 7:00 a.m. and 9:00 p.m., daily. The Applicant is currently evaluating options for public play at the proposed golf course, which, if implemented, is anticipated to be roughly half of the cost of regular play.

**15. Project Specifications for Golf Clubhouse:**

*Operation:* The proposed golf clubhouse facility is intended to be a private operation with facilities available to residents within The Villages at Hokukano or to those who obtain golf course memberships. 1,000 to 1,500 memberships are anticipated to be made available, ranging in price from \$100,000 to \$500,000. Preliminary studies indicate that 35% of these members would be from in-state and 65% from out-of-state individuals. All clubhouse uses will be available from approximately 6:00 a.m. to 10:00 p.m., daily, for members' privileges.

*Design:* The proposed clubhouse will be a two-story structure consisting of approximately 21,000 square feet. The clubhouse will consist of a reception lobby, bar & lounge, dining area, pro shop, locker rooms, cart storage and

equipment maintenance area (See Exhibits D & E). A minimum 132-stall parking area will be located in the immediate vicinity of the golf clubhouse.

*Construction:* Construction of the golf course and golf clubhouse is anticipated to begin in 1995 with its completion by 1996.

Special Management Area (SMA) Use Permit

16. **Affected Area:** The makai portion of the project site is located within the County's Special Management Area (See Exhibit F). The SMA encumbers approximately 415 acres along the coastal portion of the project site, exclusive of lands located within the State Land Use Conservation District.
17. **Purpose:** The Applicant is requesting an SMA Use Permit to allow the construction of portions of the golf course and related infrastructure and facilities within the SMA.
18. **Specific Improvements within SMA:**
  - a) Construction of portions of the proposed 27-hole golf course, driving range and related facilities. According to plans, all or portions of 14 holes and roughly half of the driving range will be located within the SMA.
  - b) Construction of golf course-related infrastructural improvements such as roadways, water, sewer, drainage, electrical and communication systems.
  - c) Construction of roadway and parking improvements associated with access to the coastal portions of the project site located within the State Land Use Conservation District. An interior access roadway within the

northern half of the project site will be extended makai to the Conservation District boundary to an area between the proposed 8th and 9th holes of the golf course. No improvements are being proposed within the Conservation District at this time.

**APPLICANT'S STATEMENT**

19. In support of the request, the applicant submitted, in part, the following:

Refer To Applicant's *Change of Zone, Use and Special Management Area Use Permit Applications and Villages at Hokukano FINAL ENVIRONMENTAL IMPACT STATEMENT* previously transmitted to the Planning Commission.

**COUNTY AND STATE PLANS**

20. **General Plan Land Use Pattern Allocation Guide (LUPAG) Map:** The Hawaii County General Plan LUPAG Map designates the project site for Extensive Agricultural and Orchard uses, with the exception of the coastal area which is designated for Open Space. Orchard-designated lands are located within the northern and southern portions of the project site and Extensive Agricultural-designated lands running mauka-makai through the middle.
21. **State Land Use Classification:** The project site is located within an area designated as Agricultural by the State Land Use Commission, with the exception of approximately 140 acres of land along the coastal portion of the project site, which is located within the State Land Use Conservation District.



22. **County Zoning:** The extreme mauka portion of the project site, above the 700 to 750-foot elevation, is zoned Agricultural-5 acres (A-5a). The remainder of the project site is zoned Unplanned (U).
23. **Special Management Area (SMA):** A portion of the project site is located within the County's SMA. The mauka boundary of the SMA is delineated by the general alignment of the Old Government Road which traverses the entire project site.
24. **Chapter 343, Hawaii Revised Statutes (HRS):** The proposed development of the Villages at Hokukano is subject to the requirements of Chapter 343, HRS, regarding Environmental Impact Statements. Compliance with Chapter 343, HRS was met with a Draft Environmental Impact Statement published in the June 23 and July 8 & 23, 1993, OEQC Bulletin. A Final Environmental Impact Statement was published in the October 8, 1993, OEQC Bulletin. Copies of the Draft and Final Environmental Impact Statement for the Villages at Hokukano were provided to the Planning Commission.

#### **DESCRIPTION OF THE PROPERTY AND SURROUNDING AREA**

25. **Topography:** The project site lies at an elevation of between 20 to 1,250 feet above mean sea level. The average slope of the property is 10 percent, with steeper slopes exceeding 15 percent associated with gullies and rock outcroppings.
26. **Temperature:** The mean annual temperature for the subject area is 74 degrees.

27. **Wind:** Wind velocities range from 7 to 8 miles per hour with diurnal wind patterns prevailing onshore in the morning and early afternoon, and offshore in the late afternoon and evening.
28. **Rainfall:** The affected region has a mean annual rainfall of about 50 inches.
29. **Soil Conservation Service Soil Survey Report:** The Soil Survey Report classifies soils within the project site as:
- a) **Kainaliu very stony silty clay loam (KDD),** 12 to 20 percent slopes. Within the project site, this soil is located immediately mauka of Red Hill as well as along the project site's southern boundary. This soil consist of well-drained, silty clay loams that formed in volcanic ash. Permeability is rapid, runoff is slow and the erosion hazard is slight. This soil generally follows the long narrow patterns of lava flows, but can be isolated and surrounded by more recent flows. This soil type is generally used for coffee, macadamia nuts and pasture.
  - b) **Waiaha extremely stony silt loam (WHC),** 6 to 12 percent slopes. This soil is used for pasture and are the predominant soils within the project site. This soil consists of well-drained silt loams that formed in volcanic ash. Permeability is moderately rapid, runoff is slow and the erosion hazard is slight.
  - c) **Kaimu extremely stony peat (rKED),** 6 to 20 percent slopes. This soil, which is confined to the northeastern corner of the project site, consists of well-drained, thin organic soil over A'a Lava. Permeability is rapid, runoff is slow, and the erosion hazard slight. This soil is not

suitable for cultivation, however, some small areas can be used for pasture, macadamia nuts, papaya, and citrus fruits.

- d) **Pahoehoe lava (rLW), a "miscellaneous land type".** This soil occupies the middle of the project site in a mauka-makai direction from sealevel to about the 800-foot elevation. Although this lava often has a billowy, glassy surface, it can also be rough and broken. There is no soil covering and is typically bare of vegetation except for mosses and lichens.
- e) **Punaluu extremely rocky peat (rPYD), 6 to 20 percent slopes.** This soil is located within the mauka-most extension of the project site above the 800-foot elevation with a small, isolated area located along the northeastern corner. This soil consists of well-drained, thin organic soils over pahoehoe lava bedrock and characteristically has rock outcrops occupying approximately 40 to 50 percent of the surface. The peat portions of the soil are rapidly permeable while the pahoehoe lava is very slowly permeable, although water moves rapidly through the cracks. Runoff is slow and the erosion hazard is slight.
- f) **Kainaliu extremely stony silty clay loam (KEC), 12 to 20 percent slopes.** This soil, which occupies a very small area along the northeastern corner of the project site, consists of well-drained, extremely stony, silty clay loams that formed in volcanic ash and underlain by fragmental A'a Lava. Permeability is rapid, runoff is

slow and the erosion hazard is slight. This soil type is used for coffee, macadamia nuts and pasture.

- 30. Flood Insurance Rate Map (FIRM):** The majority of the project site is located within an area located outside of the 500-year flood plain (Zone X). However, areas subject to the 100-year frequency flood (Zones A and AE) are located within the project site. An area defined as Zone A (base flood elevation not determined) runs along the northern boundary of the project site. Another area designated Zone A traverses the project site near the southern project site boundary. Areas designated as Flood Zone AE (base flood elevations determined) traverses midway into the southern half of the project site with another area running along the southern property line. All of these flood areas run through the project site in a mauka-makai direction.
- 31. Surrounding Land Uses:** To the north and south of the project site are vacant lands and agricultural uses on lands zoned Agricultural-5 acres (A-5a) and Unplanned (U). To the east (mauka) are Kona Scenic Subdivision and Keekee Estates, both of which are single family residential subdivisions on lands zoned Single Family Residential (RS-10, RS-15) by the County. The town of Kealahou is also located mauka of the project site along the Mamalahou Highway with Kealahou Bay located approximately 6,200 feet to the south.

## IMPACTS TO RESOURCES AND PROPOSED MITIGATION

### Agricultural Resources

32. **Land Study Bureau's Detailed Land Classification System:** Lands within the project site are classified as "B", "C", "D" and "E" or "Good", "Fair", "Poor" and "Very Poor", respectively. Lands within the northern and southern portions of the project site are predominantly classified as "D". Soils within the middle portion of the project site comprising predominantly of lava flows are classified as "E". At the extreme mauka portion of the project site on lands currently zoned A-5a are "B" and "C" soils.
33. **Agricultural Lands of Importance to the State of Hawaii (ALISH) system:** The majority of the project site is unclassified by the ALISH system. There are isolated pockets of lands designated as "Other Important Agricultural Lands" within the northeast corner of the project site, within an area immediately mauka of Red Hill, and along the southern boundary. "Other Important Agricultural Lands" are lands other than "Prime" or "Unique" agricultural lands which are also of statewide or local importance for agricultural uses.
34. **Mitigation Measures:** According to the Applicant's Final Environmental Impact Statement (FEIS), "the developer plans to implement a program for integrating appropriate agricultural activities on portions of the larger one to three acre agricultural zoned lots in a manner that would . . . allow for an efficient management operation for select crops and/or orchard uses through proper planning and by providing the necessary capital, infrastructure and site

preparation needed to support agricultural activity in this area. In total, the developer plans to add approximately 75 acres of land that is not in agriculture at this time to productive agricultural use."

#### Natural Hazards

35. **Lava Flow Hazard:** The project site is located within Lava Flow Hazard Zone 3 on a scale of 1 (most hazardous) to 9 (least hazardous). Zone 3 defines areas of which less than 5 percent have been covered by lava since 1800 but more than 75 percent in the last 750 years.
36. **Seismic Hazard:** The entire island of Hawaii is within earthquake Zone 3, which is the zone of highest seismic occurrence and danger.
37. **Tsunami Hazard:** While coastal areas are subject to potential tsunami inundation (Zones AE and VE), the project site should not be impacted due to its location roughly 300 feet from the shoreline and at an elevation of approximately 20 feet above mean sea level.

#### Floral and Faunal Resources

38. **Botanical:** A "Botanical Survey Report of the Hokukano Lands" (See Appendix I-I of FEIS) was performed by Evangeline J. Funk, PhD. during November of 1991. *No proposed or listed candidate of rare, threatened or endangered plant species were found within the project site.* The survey found five vegetation types: (A) Prosopis/Mixed Grass Understory, (B) Koa Haole/Prosopis Scrub, (C) Kukui Scrub, (D) Lantana/Schinus Scrub, and (D) Planted Monkeypods. The Prosopis/Mixed Grass Understory, the most common vegetation type within the project site, consist primarily of the

Prosopis tree, African grass, buffelgrass, sandbur grass and other grass species which occur from coastal areas to an elevation of about 700 feet. The Koa Haole/Prosopis Scrub is the second most common vegetation type occurring in the central part of the project site. Within this area were found three wili wili trees and the only native plant species, a colony of the native Euphorb and 'Akoko (*Chamaesyce celastroides*) within an area mauka of Pu'u Ohau at the 470 foot elevation. Within this colony was found a single individual of Maiapilo or Hawaiian Caper (*Capparis sandwichiana* DC). From approximately the 850 foot elevation to the 1,100 foot elevation are the Kukui Scrub vegetation type consisting of Kukui trees, mulberry, coffee, noni and Kakalaioa (gray and yellow knickers) trees. From about 1,150-foot elevation to the mauka boundary of the project site is dominated in Lantana/Schinus scrub. Mixed within this area are Mango, avacado, guava and papaya trees. The upper elevations, especially its southern areas, are large monkeypod trees.

- 39. Mitigative Measures:** While no endemic or endangered species of plants were located within the project site, the Applicant has noted that the existing flora will be impacted by site preparation activities associated with residential and golf course development and its associated infrastructure. The Applicant proposes that "To offset the loss of existing vegetation, the use of native plant material for landscaping in and around the golf course will be considered, whenever practicable. The native species, such as the Euphorbs, Wiliwili trees, and the single Capparis, would be preserved or propagated and used in the landscaping plan to the furthest extent practical. Many of the Prosopis

tress could also be saved and moved to places where they will provide quick shade."

- 40. Faunal:** A "Survey of the Avifaunal and Feral Mammals at Hokukano" (See Appendix I-2 of FEIS) was prepared by Phillip L. Bruner in October 1991. According to the survey, existing fauna typically consists of introduced species that are transient in nature. In addition, no unique wildlife habitat was discovered within the project site. While no endemic species of fauna was found, introduced species consisted of mongoose, cardinal, barred dove, mynah bird, golden plover; feral dogs, cats and pigs; and rodents. Endemic birds, such as the short-eared owl or Pueo and the Hawaiian Hawk or I'o may forage within this region.
- 41. Mitigative Measures:** The Applicant acknowledges that development of the project site will disrupt wildlife use of the site. The Applicant anticipates that completion of the proposed development will "contribute to increased habitat diversity necessary for the fauna which are present or frequent the area" due to the availability of formal open landscaping and water features associated with the golf course.

#### Nearshore Marine Environment

- 42. A Quantitative Assessment of the Marine Communities and Water Quality** was completed in April 1992 (See Appendix I-3). The Study concluded that "In general the marine communities resident to the waters fronting the Hokukano project site are diverse and the fish communities do not show the declines in abundance that have been encountered in many other Hawaiian



coastal settings in recent years. No unusual marine species or communities were noted in the study area." "No threatened or endangered species were encountered within the study area, however several humpback whales were noted well offshore of the project site during a March 1992 field effort. Despite not seeing green turtles (a threatened species), it is expected that turtles must, at a minimum, pass through the waters fronting the project site."

43. **Coastal water quality characteristics** were examined at 24 sites. Only one of these sampled a brackish water pool, the remaining stations sampled marine waters. Based on this analysis, "the waters fronting the project site are typical of well-flushed, undeveloped West Hawaii coastal settings."
44. **Mitigative Measures:** The Study concluded that impact to the marine communities is greatest during the construction phase of the proposed development. Operation of the development could later change the groundwater chemistry which may impact the marine biota. However, based on long-term water quality studies conducted along the coast at Waikoloa, groundwater chemistry changes involve increases in the concentration of inorganic nutrients while pesticides and herbicides were not detected in water, sediment or in organisms. These long-term studies have been unable to detect any quantifiable change in the aquatic biota resident to the Waikoloa area. The Study recommends that if prudent construction techniques be used (i.e., removing vegetation only as immediately needed, use of temporary settlement basins, etc.), the opportunity for negative impact due to sedimentation would

be low. According to the Use Permit Application, the Applicant will implement the following to mitigate any impact to ground or coastal waters:

- \* Incorporating a "Reduced Turf" golf course design, which reduces fairway areas and requirements for water, fertilizers and chemicals;
- \* Engineering the golf course with a drainage system designed to collect stormwater runoff or irrigation water passing through the soil layer and conducting this to the irrigation pond for reuse on the course;
- \* Implementing an Integrated Golf Course Management Program aimed at minimizing the use of chemicals for golf course maintenance and ensuring safe handling and storage of all chemicals;
- \* Adopting proven bio-rational pest control methods when appropriate; and
- \* Implementing a Water Quality Monitoring and Mitigation Program to ensure monitoring of soil and coastal water conditions for chemicals used in golf course landscaping and implementing appropriate mitigative measures when such chemicals are detected.

#### Air Quality

45. An "Air Quality Study" dated December 1992 by B. D. Neal & Associates (See Appendix I-5 of FEIS) concluded that "proper implementation of the project will not cause the exceedance of state or federal air quality standards, although there are certain minor impacts that may be realized." Short-term impacts from fugitive dust during project construction phases will likely occur. Uncontrolled fugitive dust emissions are estimated to amount to 1.2 tons per acre per month. To a lesser extent, emissions from engine exhausts will also occur during project construction phases from both stationary and mobile construction equipment, vehicles used by construction workers, and from the disruption of traffic.

46. **Mitigation measures:** The Study recommended that an effective dust control program be established during construction phases, which could include watering of active work sites and unpaved roads, the use of wind screens, covering of open bodied trucks, limiting area to be disturbed at any given time and/or the mulching or chemically stabilizing inactive areas, among other control measures. Potential long-term air pollution impacts could potentially occur indirectly from increased motor vehicle traffic associated with the project. An air quality modeling study was conducted to estimate current maximum ambient concentrations of carbon monoxide along roadways leading to and from the project site as well as predicting future levels (Years 2005 and 2010) of carbon monoxide emissions with or without the project. The modeling found that emissions would remain within national ambient air quality standards with or without the proposed development. However, there is the potential that State standards for carbon monoxide, which are much stricter than Federal standards, may be exceeded at some point in the future near the proposed Mamalahoa Highway By-Pass/Kuakini Highway intersection. However, the Study noted that due to such low levels, the State standard may be currently exceeded at many intersections throughout the State that have even moderate traffic volumes. Emissions from the electrical power and solid waste requirements of the proposed development are anticipated to be small. Energy conservation and recycling measures within the project may reduce any impacts. The use of pesticides on golf courses should comply with safety guidelines for the spraying of chemicals. The Applicant intends to

utilize shrouded spray equipment fitted with computerized flow controllers, establish a 100-foot buffer between target spray areas and populated locations, and the planting of vegetation screens along golf course perimeter. This should mitigate potential air quality impacts from this activity.

#### Cultural/Historical Resources

**47. An "Archaeological Inventory Survey and Limited Subsurface Testing"**

(See Appendices III-1 and III-2 of FEIS) of the entire project site was conducted by Cultural Surveys Hawaii from August 20, 1991 to January 17, 1992, with a survey report completed in July 1992. Within the affected properties, 807 structural and non-structural features were identified and subsequently organized into 485 sites and site complexes. Of this total, 179 sites are recommended for preservation of which 17 sites are recommended for selective preservation, and 289 sites are recommended for data recovery. Their findings were supported by limited subsurface testing conducted at nine probable and possible burial sites, one agricultural mound complex, and within two extensive lava tube systems.

**48. Specific Archaeological Features:** The Survey located evidence of features associated with the Kona Field System, primarily the rectangular walled fields formed by kua'iwi walls. Other features associated with the walled fields consist of intermittent mound concentrations, terraces and modified outcrops. The Survey noted that historic and modern land modifications, such as chain-dragging, bulldozing and other activities associated with cattle ranching, sugar cane and urban activities have apparently destroyed much of the field system

within the area. Fourteen sites within the project area were interpreted to be possible heiau or shrine structures, with one major structure known as "Ukanipo".

- 49. Mitigation Measures:** The Applicant will implement one of two forms of mitigation: a) preservation, or b) data recovery. Those sites which are recommended for selective preservation include the Kuakini Wall, distinguishable portions of the King's Trail/Ala Loa, the railroad bed and the ahupua'a boundary walls. Preservation is recommended for all confirmed burial sites, all confirmed and probable heiaus, and all major lava tubes. The Applicant intends to preserve the King's Trail/Ala Loa in its present location, with slight modifications if necessary. In areas where there is no evidence of the trail, it will be re-established in the general area where it was believed to be located based on existing map information, historical references and compatibility with the proposed development. Where the trail intersects with project roadways, appropriate signage and alternative road pavement treatment could be used. Possible burials, if not preserved "as is", will be treated in a manner as prescribed by the State Department of Land and Natural Resources (DLNR)-Historic Preservation Division. Mitigative measures as recommended by the consulting archaeologist will be subject to the approval of the DLNR and will be adhered to by the Applicant.

#### Water Resources

- 50. "An Evaluation of Water Resources for Hokukano Project"** was conducted by Waimea Water Services, Inc. in December 1992. Hydrological studies

based on an exploratory well constructed on-site near the 800-foot elevation indicates that groundwater flow through the subject properties to the sea is estimated to be in the range of 4 to 6 million gallons per day (mgd) with total chloride levels of about 340 milligrams per liter (mg/l). The Study concludes that the "estimated groundwater flow and quality appears more than adequate to support the irrigation water needs of the [entire Villages at Hokukano] project."

51. **Potable water** from an on-site well is most probable near the 1,200-foot elevation or approximately 1.75 miles from the shoreline. At this elevation, the basal water level should stand at an elevation in excess of 4 feet above sea level. The Study also cites a possibility that high level groundwater, which is present at wells located mauka of the Mamalahoa Highway, also extends makai of the highway at the upper elevations within the project site.

#### Drainage Systems

52. **A "Preliminary Engineering Study for Sewage and Drainage Infrastructure System"** (See Appendix II-4 of FEIS) was performed by R. M. Towill Corporation in January 1992. According to the FEIS and the Study, on-site drainage systems will consist primarily of drywells to dispose of runoff generated from roads and golf course retention/infiltration basins. Siltation basins will be constructed as required to control runoff water quality. Runoff generated from rainfall on the golf course will be retained by bowl-shaped fairways and tile drainage system to direct water into irrigation holding ponds for reuse as irrigation.

## **SOCIO-ECONOMIC IMPACT**

### **Employment**

53. An "Economic and Fiscal Impact Assessment for the Villages at Hokukano" was prepared by KPMG Peat Marwick in March 1993. The Study concludes that direct construction employment created by the development of the golf course and golf clubhouse would result in approximately 180 full-time equivalent (FTE) positions. Direct operational employment created by the golf course/clubhouse operations would result in approximately 60 FTE positions. Specific figures relating to direct construction employment generated by the development of the residential-agricultural subdivision were not available.
54. **Mitigation Measures:** The FEIS concludes that most construction and operational employment is expected to be filled by the resident population commuting from the North and South Kona Districts.

### **Housing**

55. **Housing** requirements generated by the construction and operation of the residential-agricultural subdivision and golf course facilities were not available. However, the FEIS concludes that *full build-out* of the Villages at Hokukano project would result in the need for approximately 70 additional homes to accommodate direct operational employees and 30 to 140 rental units to house the in-migrant population associated with construction activities.
56. **Mitigation Measures:** The FEIS concludes that since most construction and operational employment is expected to be filled by the resident population

from North and South Kona, "the overall impact to regional housing conditions as a result of the proposed project is generally positive and, therefore, additional mitigation measures are not warranted." However, the FEIS does recognize that "the project will be expected to provide provisions for affordable housing meeting the State and County affordable housing requirements."

## **PUBLIC FACILITIES AND SERVICES**

### **Access**

57. Access to the project site from the Mamalahoa Highway is currently provided off of Haleki'i Street, which has a pavement width of approximately 34 feet with gutters and sidewalks within an 80-foot wide right-of-way. At its intersection with the Mamalahoa Highway, Haleki'i Street is channelized as a "T" intersection with separate left and right turn lanes.
58. A Traffic Impact Study was prepared by Parsons Brinkerhoff Quade & Douglas, Inc. in January 1993 (See Appendix II-I of FEIS). According to the Study, current Level Of Service (LOS) for left turns onto the Mamalahoa Highway from Haleki'i Street is LOS E during the A.M. and P.M. peak traffic hours. Right turns are at LOS A during the A.M. and LOS B during the P.M. hours. Traffic along portions of the Mamalahoa Highway north and south of Haleki'i Street operate at LOS E during both the A.M. and P.M. hours. The Study concludes that the traffic signal warrant for this intersection has been marginally met based on existing traffic volumes. The Study



estimates that the golf course will generate approximately 69 "in-trips" and 19 "out-trips during the A.M. hours and 23 "in-trips" and 85 "out-trips" during the P.M. hours.

59. **A Mamalahoa Highway By-Pass** is being proposed by the Applicant which would traverse the mauka portion of the project site near the 800-foot elevation (See **Exhibit G**). According to the FEIS, the proposed Mamalahoa Highway ByPass (ByPass) alignment would begin north of Honalo at Kuakini Highway and terminate at the Napo'opo'o Road intersection by tying back into the existing highway. According to a letter from the Applicant's representative to Planning Director Virginia Goldstein dated September 10, 1993 (Section 7.2-FEIS), *"the developer proposes to construct a portion of the bypass road from Kuakini Highway to the project site to serve as the project's primary access. This portion of the bypass road between Kuakini Highway and the Villages at Hokukano would be constructed before homes are occupied within the project site."* The proposed Bypass Highway, to be initially a two-lane roadway with sufficient right-of-way to accommodate four-lanes, is intended to divert through traffic from the Mamalahoa Highway and relieve the current congestion at peak traffic hours within Kealakekua. The Study anticipates that the proposed development (Phase I) will generate 297 additional trips during the A.M. peak hour and 412 additional trips during the P.M. peak hour. The Study concludes that the Bypass Highway will reduce traffic volumes along the Mamalahoa Highway, thereby improving operating conditions at the existing Haleki'i Street-Mamalahoa Highway intersection. The Study further concludes

that if forecasted conditions are realized, improving the Bypass Highway to a four-lane road is recommended by the year 2005, and signalization of the Haleki'i Street-Bypass Highway intersection may be warranted to facilitate left-turn movements. All approaches to the Halekii Street-ByPass Highway intersection are recommended to have separate through and turn lanes.

60. **The Hawaii County General Plan Facilities Map** reflects a road which would traverse the project site in a mauka-makai direction from Haleki'i Street, then turning north as a "mid-level" road which proceeds beyond the project site's northern boundaries to eventually tie-in with the proposed Alii Highway alignment (See **Exhibit H**). For the lack of a better definition, this Alii Highway-Haleki'i Street alignment is emmulated by the Applicant's main project access road.

#### Water

61. **Potable water** to support the proposed Phase I development will be provided by the existing County of Hawaii North Kona Water System through the issuance of 499 water commitments under the Kealakekua Water Source Agreement. An 8-inch transmission line is located along Halekii Street and the Mamalahoa Highway and is fed by a 0.25 million gallon reservoir above Kealakekua.
62. **Non-Potable Water:** The Applicant is exploring several water source development alternatives for non-potable/irrigation water. A test well has been drilled at the 800-foot elevation within the project site and is intended to serve as a brackish irrigation source. Chloride levels were found to be about

340 mg/l, exceeding the desirable 250 mg/l maximum chloride level for potable water. With the provision of on-site retention basins and storage reservoirs within the golf course, the Applicant is exploring the potential to mix brackish water with surface runoff, treated sewage effluent, and any excess surface water collected within the golf course fairways and roughs for use as irrigation water. Additional irrigation well development is also being pursued. According to the Applicant, the proposed golf course is anticipated to require approximately 900,000 gallons of irrigation water per day.

#### Wastewater Treatment and Disposal

63. Wastewater generated by the proposed development will be accommodated within a wastewater collection, treatment and disposal system meeting with the approval of the State Department of Health. Alternatives being considered by the Applicant include an on-site central sewage collection/treatment system which could be built in increments or the construction of a similar collection system with the treatment of effluent to be handled at the existing Heeia Wastewater Treatment Plant.

#### Solid Waste

64. Solid waste generated by the project will be disposed of at the new County Puuanahulu landfill. Transfer stations are located at Keauhou and Napo'opo'o. The Applicant is investigating the possibility of establishing a recycling program for the proposed development, in concert with the surrounding community.

### Other Public Utilities and Services

65. **Electrical power** will be supplied by HELCO via an 69 KV overhead transmission line located along the Mamalahoa Highway. A substation may be required. The projected electrical demand for the proposed development will require approximately 5.6 megawatts.
66. **Police services** are located in Captain Cook through its Captain Cook substation located less than 3 miles to the south of the project site.
67. **Fire protection services** are provided by the Captain Cook fire station also located less than 3 miles south from the project site.
68. **Konawaena Elementary School and High School** are both located in Kealahou. A new elementary school is also being planned for the general area, although specific details about its development are uncertain at this time.
69. **Medical services** are provided at Kona Hospital, located less than one-half mile mauka of the project site in Kealahou. Acute and emergency care are provided at the facility. Ambulance service is provided at the Captain Cook fire station.
70. **Recreational facilities** are provided at Kealahou Bay Historic Park, which is located approximately seven miles to the south of the project site. Swimming, snorkeling, hiking activities and picnic facilities are available.
71. **All other essential utilities and services** are or will be made available to the project site.

## AGENCIES' COMMENTS

**72. Department of Transportation:**

"Our position expressed in our letter (STP 8.5123-copy attached) dated March 31, 1993, for the Use Permit Application for the golf course development is still applicable. As indicated by the Change of Zone Application report, the proposed Mamalahoa Highway Bypass should be implemented before any further development of the Villages at Hokukano project (beyond the golf course facilities) is allowed. In this regard, the applicant will be required to participate in the planning, design, and construction of the highway bypass along with other landowners and the State.

"The bypass project will not be in place by the anticipated 1995 start date of the development. We are in the process of updating the prioritization and schedules for our future highway projects and will be able to provide a more definitive date when this effort is completed."

**73. Department of Transportation: (March 31, 1993 letter)**

"We have no objections to the development of a 27-hole golf course, clubhouse, driving range, and related improvements since our transportation facilities will not be adversely affected. However, the future implementation of the entire master-planned Villages of (sic) Hokukano development will require fair share developer participation for highway improvements as determined by our department."

**74. Office of State Planning:**

- "1. The proposal should be clarified. The number of lots varies within the document. For example, page five of the County zoning application form states that the County has committed to provide water for 'up to 499 units, sufficient to meet the project requirements'. On page one of the Project Description, approximately 367 one to three acre residential/agricultural lots are proposed for the project's first phase.
- "2. On pages six and seven, we note that a botanical study was completed for the entire property on November 1991. However, due to the recent experience with a rare plant in Kealakekua, the applicant should be certain that rare plants are not present on the property prior to approval of permits.
- "3. The document does not clearly state the applicant's plans for the golf course. Will the course be a private membership golf course?

"4. Finally, since the applicant is proposing a 100-unit lodge, 27-hole golf course and clubhouse, and 1,440 dwelling units at buildout, it could be described as a small resort. The Office of State Planning's West Hawaii Regional Plan does not encourage resort development at the project site."

**75. Department of Health:**

(See attached letters dated April 1, April 28 and May 25, 1993.)

**76. Department of Education:**

"We have reviewed the subject application and have determined that the proposed development will have a severe enrollment impact on the public schools in the area. The 367 residential lots in this phase of development will generate a projected 37 students for grades K-5, 7 students for grades 6-8, and 11 students for grades 9-12.

"Both Konawaena Elementary and Konawaena High Schools are operating far beyond their capacities. The Department of Education cannot assure the availability of classrooms to accommodate the 55 students projected from this development.

"We will request that the county require the developer to contribute a pro rata share for the construction of needed school facilities to accommodate such an increase in student enrollment."

**77. Real Property Tax Division:**

"The majority of parcel 7-9-13-3 and just less than half of parcel 8-1-4-3 are in our agricultural use program. Both parcels are currently receiving a speacial (sic) tax assessment for pasture use and are subject to a deferred tax in the event of a subdivision into parcels of five acres or less in size.

"The other three parcels are part of a 1972 agricultural dedication. There is a possibility of a rollback tax on these parcels; however, since the initial term of the dedication is fulfilled a rollback tax can be avoided if the owners were to cancel the dedication.

"The taxes are current on all five parcels."

**78. Police Department (March 9, 1993 memo):**

"We forsee (sic) an increase in traffic and calls for services should the application be granted."

79. **Police Department** (May 17, 1993 memo):  
"We foresee the need to ensure proper ingress/egress from the intersection of Mamalahoa Highway/Halekii Street, especially during morning and late afternoon hours. We recommend installation of either traffic control devices or merging lanes."
80. **Department of Land and Natural Resources:**  
(See attached letter dated May 25, 1993.)
81. **Department of Agriculture:**  
(See attached memorandum dated July 12, 1993.)
82. **Department of Public Works:**  
(See attached memoranda dated April 5 and May 26, 1993.)
83. **Applicant's Response to Department of Public Works' comments:**  
(See attached letter dated June 7, 1993.)
84. **Department of Water Supply:**  
(See attached letter dated May 26, 1993.)
85. **Soil Conservation Service** had no objections to the subject applications.
86. **Office of Housing and Community Development, Department of Parks and Recreation, Fire Department, Civil Defense and HELCO** did not respond the Department's request for comments.