

HANNIBAL TAVARES
Mayor



CHRISTOPHER L. HART
Planning Director
RALPH N. MASUDA
Deputy Planning Director

RECEIVED

COUNTY OF MAUI
PLANNING DEPARTMENT

'90 JUN 25 A10:15

200 S. HIGH STREET
WAILUKU, MAUI, HAWAII 96793

June 18, 1990

OFFICE OF ENVIRONMENTAL
QUALITY CONTROL

Dr. Marvin Miura, Director
Office of Environmental Quality Control
465 S. King Street #104
Honolulu, Hawaii 96813-2910

Dear Dr. Miura:

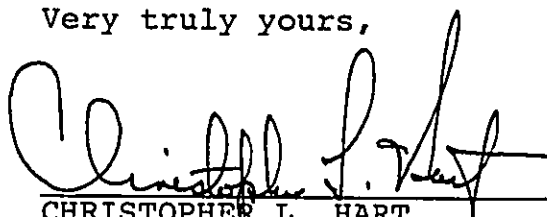
Re: Notice of Determination

Mr. Thomas C. Leppert, Vice President, Lanai Co./Castle & Cooke, Inc., requesting an Environmental Assessment Determination for an Amendment to the Lanai Community Plan and Koele Project District to expand the Koele Project District boundaries, TMK:4-9-02:por. 1 and 4-9-01:02 Koele, Lanai.

Please find attached the Notice of Determination and four (4) copies of the environmental assessment relative to the subject matter. The Maui Planning Commission at its May 22, 1990 meeting determined a Negative Declaration for the proposed project.

Should you have any questions on this matter, please contact Mr. Philip Ohta of my staff.

Very truly yours,


CHRISTOPHER L. HART
Planning Director

PO:tb

Attachment

cc: Mr. Tom Leppert

1990-07-08-LA-PEA

FILE COPY

MAUI PLANNING COMMISSION
COUNTY OF MAUI
STATE OF HAWAII

In the Matter of the request of)
)
MR. THOMAS C. LEPPERT,)
Vice President, Lanai Co./)
Castle & Cooke, Inc.,)
)
Requesting an Environmental)
Assessment Determination for)
an Amendment to the Lanai)
Community Plan to expand the)
Koele Project District boundaries)
TMK: 4-9-01: 02 and 4-9-02: por. 1)
Koele, Lanai.)

Docket No. 90/CPA-003
Mr. Thomas C. Leppert,
Vice President, Lanai
Co./Castle & Cooke, Inc.

OFFICE OF ENVIRONMENTAL
QUALITY CONTROL

90 JUN 25 10:15

RECEIVED

DIRECTOR'S REPORT

May 22, 1990

Planning Department
County of Maui
200 S. High Street
Wailuku, Hawaii 96761

MAUI PLANNING COMMISSION
COUNTY OF MAUI
STATE OF HAWAII

In the Matter of the request of)
)
MR. THOMAS C. LEPPERT,)
Vice President, Lanai Co./) Docket No. 90/CPA-003
Castle & Cooke, Inc.,) Mr. Thomas C. Leppert,
) Vice President, Lanai
) Co./Castle & Cooke, Inc.
Requesting an Environmental)
Assessment Determination for)
an Amendment to the Lanai)
Community Plan to expand the)
Koele Project District boundaries,)
TMK: 4-9-01: 02 and 4-9-02: por. 1)
Koele, Lanai.)

DIRECTOR'S REPORT

Pursuant to HRS Chapter 343, a determination as to whether an Environmental Impact Statement (EIS) shall be required for an amendment to the Lanai Community Plan to expand the Koele Project District boundaries for property located at TMK;4-9-02:POR. 1, AND 4-9-01:02, Koele, Lanai.

Location and Description of the Proposed Project Sites

1. The subject property located on TMK 4-9-02: por. 1 is comprised of one (1) Parcel which measures approximately 86 acres and is classified in the State Agricultural District (hereinafter "Petition Area 1"). (Exhibit A)
2. The subject properties located in TMK 4-9-01:2 are comprised of two parcels: approximately 62 acres are classified in the State Agricultural District and approximately 6 acres are classified in the State Conservation District (hereinafter "Petition Area 2"). (Exhibit A)
3. The subject parcels are owned in fee simple by Castle & Cooke, Inc.
4. The present Koele Project District is located at the foot of Lanai hale on the northeast side of Lanai City. The site rises from the 1,600 ft. to 1,900 foot elevation and is comprised of relatively flat pineapple and pastoral lands cut by gulches and rough, rock lands. the major gulches are the Kaiholena and Kapano Gulches.

5. The proposed additions have similar characteristics to portions of the present Koele Project District.
 - a. Petition Area 1 is a pastoral site cut by gulches. Development of the site will be done mainly on flat pastoral areas.
 - b. Petition Area 2 includes remnant pineapple fields on the eastside on the present Project District and portions of the existing Eucalyptus forest. The pineapple fields are relatively flat and easy for development. The forest areas are more rugged and will require some grading. It is the applicant's intent to keep the forest area intact as possible.

Infrastructure services are or will be made available to the Petition Areas.

6. The existing Project District is composed of Kalae silty clay at the Lanai City edge; Waihuna clay in the central area; and Koele-badland complex (KRL) at the mauka edge (Soil Conservation Service, 1972).
7. Petition Areas 1 and 2 are characterized by Koele soil types in the flatter areas with rough broken lands in the gulch and mountainous areas.
8. The detailed Land Classification of the Land Study Bureau rates the majority of the Petition Areas "D" and "E" as to the overall productivity potential. The remaining portions are rated "C".
9. Petition Area 1 is located in the hills immediately behind Koele Lodge. The site is situated on a large, relatively flat plateau and includes steep slope portions to the east and west. Elevations ranges from approximately 1800 ft. to 2030 ft.
10. Petition Area 2 involves a parcel of land between approximately 1800 ft. and 1925 ft. elevation mauka of Lanai City . It is a narrow strip immediately mauka (east) of the present Koele Project District and extends the length of the pineapple field behind Lanai City.

Description of the Proposed Project

11. A clubhouse, driving range and holes 1-7 are proposed to be constructed in Petition Area 1.

12. The entry driveway to the golf course parking lot will be located to the southeast of the Lodge at Koele. A hill-a-vator will be utilized to transport customers to the clubhouse. An entry driveway to the clubhouse will be located to the northeast of the lodge.
13. In Petition Area 2, the Petitioner is proposing to revise its residential lot layout for Koele as part of the proposed golf course improvements. The revisions improves the lot orientation to the golf course and provides larger lots than originally proposed. The proposed action will not increase the residential lot count, but it does propose adding about 68 acres on the eastside of the Koele Project District.
14. The Petitioner will need to petition the State Land Use Commission to urbanize these areas in Petition Area 2. As part of the petition, the Petitioner proposes placing a 13 acres gulch area presently in the State Agricultural District into the State Conservation District.
15. Access to the proposed residential areas will be via a new collector road that extends from Sixth Street, this arrangement with two ingress/egress points allows for better access into the Project District as compared to an earlier; layout and allows the existing Cavendish course to remain unaffected.

Assessment

Flora and Fauna

16. Natural vegetation of the pastoral and woodland area of Petition Area 1 consists in part of molassesgrass perennial foxtail, partridge pea, and Christmas berry. Swamp mohogany, red ironbark, ironwood and Cook pine, Jamaica vervain, and pukiaawe grown in the higher elevations. According to Kenneth M. Nagata, Biologist, in his Biological Report for the Koele Expansion, no native plant communities were found. The few remaining native species are common to all the main islands of Hawaii and represent an insignificant portion of the vegetation in the site. In summary, Mr. Nagata stated that the proposed development will in no way compromise any native ecosystems or any rare or endangered plant.

17. According to Kenneth M. Nagata's Biological Report for the Koele East Boundary Extension (Petition Area 2) the vegetation in the major site was found to be almost entirely secondary in nature, consisting predominantly of planted species, agricultural weeds and other exotic ("alien" or non-native) species. Two distinct vegetation types were recognized: abandoned pineapple fields and eucalyptus forest.
18. The abandoned pineapple fields behind Lanai City extends into the makai portion of the present project area. These fields have been fallowed for several years and although pineapples are still present, they are now overgrown primarily by sourgrass, balloon flower, hairy horseweed, and Vasey grass up to 5 ft. tall. Numerous common weeds are present including star-bur, molasses grass, ageratum, Boston fern and Hilo grass. Many others are found but in small to only moderate numbers. A section of the fields at the Koele end has been recently grubbed and is now barren.
19. The Eucalyptus Forest continues into the mauka portion of the project site. It is a closed-canopied forest of planted red iron bark and swamp mahogany 50-75 ft. tall. Except along the makai edge, the understory is generally open with a poorly developed shrub layer consisting mostly of strawberry guava. The understory at the Koele end, however, is extremely dense with Christmas berry up to 12' tall. Hilo grass, Christmas berry, strawberry guava and Jamaica vervain are common along the makai edge of the forest. A powerline/pipeline corridor has been cut through the south end of the community. This exposed site is characterized by molasses grass, bracken fern and regenerating eucalyptus.
20. In summary, Mr. Nagata stated that the vegetation in the project site is almost entirely secondary. Only twelve (12) common native species were observed and in very small numbers. No native ecosystems are present. The proposed project will in no way compromise any native plant community or ecosystem nor will it impact the native flora in general.
21. According to Mr. Nagata's Biological Report, Axis deer and birds of introduced species are common in the woodland general areas (Petition Area 1), such as the Kentucky Cardinal, rice birds, doves, sparrows and mynahs. Turkeys, francolins and barn owls are also probable residents. Mr. Nagata stated that the proposed development will in no way compromise any rare or endangered animal species.

22. Within Petition Area 2, Mr. Nagata reported that only four (4) birds were seen or heard during the survey. This smaller number was due in part to the progressive loss of habitat because of grading and grubbing makai of the site, and the constant construction noise. The only birds heard were the Kentucky cardinal and Japanese white-eye. White-eyes and rice birds were seen in the abandoned pineapple fields but none were actually observed in the Eucalyptus Forest. There is every reason to believe that other birds such as the lace-necked dove and barred dove are also present in the area. Deer trails and droppings are present throughout the Eucalyptus Forest and droppings and browed plants were common in the abandoned pineapple fields. Axis deer is clearly still found in the region despite construction activities field mice and one or more species of rats are also present in the site.

Mr. Nagata summarized that no native ecosystems and no native animals are present; and the proposed project will in no way compromise any native ecosystem.

Archaeological Resources

23. According to an Archaeological Reconnaissance Survey performed by Dr. Hallett H. Hammatt, PH.D. and Mr. Douglas Borthwick, B.A., there are no prehistoric sites in Petition Area 1. Basalt flakes and some volcanic glass material were found in the project parcels investigated. The golf course area pointed out ranching era features and a volcanic glass source.
24. A total of six (6) archaeological sites were identified in the Koele Golf Course site. None of these sites are located in Petition Area 1.
25. In his Addendum Report for Additional Archaeological Survey at Petition Area 2, Dr. Hammatt reported only one (1) archaeological site was encountered within the survey area.

According to Dr. Hammatt, the site is an eroded ditch which hugs the southeast side of Kaiholena Gulch and extends up the gulch for over 600 feet. A feature of this ditch site is a charcoal deposit observed on the upslope southwest wall of the ditch at the lower end of Kaiholena Gulch where the gulch empties into Iwiolo Gulch. The charcoal layer was sampled by selective excavation.

Dr Hammatt stated that the archaeological site is considered important for its information content, of which has already been gathered. Therefore, no further archaeological investigation has been recommended.

Water Usage

26. The sustainable yield for groundwater has been estimated by different hydrologists in the past. Recent works of John Mink and Keith Anderson have independently proposed virtually the same estimate for the sustainable yield at 6.0 million gallons per day (mgd). Anderson derived his estimate by evaluating the hydrologic budget. Mink used hydraulic models for the equilibrium conditions of groundwater flow.
27. The current and future projected water demand for the island of Lanai are as follows:

<u>Year</u>	<u>Project</u>	<u>Potable</u>	<u>Alternate</u>
1988	Lanai City	0.40	
	Dole Plantation	1.80	
1989	Koele Lodge	0.18	
	Lalakoa Beach	0.09	
	Hulapoe Beach	0.07	
	Central Service Facility	0.03	
	Community Landscaping		
	Lanai City Apts.	0.02	
1990	Koele Golf Course	0.40	
	Lower Waialua	0.07	
	Waialua Multi-Family	0.07	
	Manele Bay Hotel	0.23	
	Manele Golf Course		1.00
	Other Landscaping	0.03	0.40
	Commercial Area	0.25	
	Koele SFR	0.02	
	Lalakoa (Additional)	0.08	
<u>Year</u>	<u>Project</u>	<u>Potable</u>	<u>Alternate</u>
1991	Manele Residential	0.25	
	Koele Residential	0.20	
Total:		4.22	1.40

These figures were obtained from the Commission on Water Resource Management through Castle & Cooke, Inc. The Commission has noted that if withdrawal exceeds 4.30 mgd and evaluation will be triggered for water management area designation.

28. Average annual rainfall in the Petition Areas amount to 37 inches per year. Normally 60 percent of the total annual rainfall occurs during the months of November to March. There is only sparse rainfall during the summer months from May to August.
29. The estimated irrigation need is 0.4 mgd in dry years and 0.25 mgd during average conditions. Irrigation needs during the summer months will probably approach the higher range of usage (0.4 mgd). In the winter months rainfall is heavy and fog drip is significant while evapotranspiration is low. Except during drought conditions, daily irrigation of the entire course is not anticipated in the winter months.

Drainage and Sediment Runoff

30. The proposed golf course is being designed for storm water retention and rain catchment for supplemental irrigation water. A natural depression in the area has provided flood storage over the past decades. A similar function is being designed into golf course lakes and water features to not only dampen storm runoff rates, but to store rainwater as a supplemental irrigation source. This will also serve as features or aesthetic enhancement of the golf course.
31. The proposed grading plan would create sumps and ponds within the three main areas. Within the Kaiholena Gulch existing retention basin would be filled and a sump located in the proposed project site would be built. A 24 inch drainage pipe would be constructed to continue runoff down Kaiholena Gulch. A 4 foot deep pond is also proposed for this area. Overflow from this area would continue down Kaiholena Gulch. Gulch 1 would have similar sumps and ponds to retain runoff. Ponds would be fed via 12 inch drainlines that are connected to several sumps. Overflow and excess runoff would collect via sheet flow or pipes into a swale which empties into Kaiholena Gulch. A temporary drainage ditch would be built to divert excess runoff into the Kapano Gulch.
32. The ponds in the golf course are designated to serve three functions:
 1. Storm water retention.
 2. Aesthetic enhancement.
 3. Catchment for irrigation water.

Certain ponds would serve as sedimentation basins before allowing storm flows to discharge into the main lake. Additional ponds off the fairways would be incorporate where necessary for storm water retention and rain catchment.

33. Mosquito control would be maintained by introduction of small fishes in the perennial lakes and ponds.
34. The drainage infrastructure for the residential lots in the Koele Project District would discharge to the golf course storm water retention ponds.
35. Sediment runoff to offsite areas would be minimal. Sedimentation traps would be an inherent part of the flood storage basins and rain catchment ponds.
36. Sedimentation would occur otherwise, in the downstream reaches of Kaiholena Gulch below the Koele Lodge. Ultimately the excess storm flow would drain to the pineapple fields below the Waiialua subdivision as they naturally have done over the decades.

Water Quality

37. The use of chemicals as fertilizers and biocides will pose a potential for ground water contamination. Mitigating factors are the following:
 - a. The choice of chemicals for their low half-lives, low toxicity, and high retardation factor.
 - b. The choice of domestic water sources in the upgradient locations. These are the existing Wells 2, 3, 4, and 5. Well 6 is close to the boundary of the golf course, but the soil mantle and the choice of chemicals are effective mitigating factors. Future wells to be drilled would be located in generally downgradient sites, but these wells are intended to supply the irrigation water requirements while reducing the demand on the existing well sources, which are upgradient and away from the influence of potential contamination.
38. The Department of Health's "Eight (8) conditions applicable to Golf Course Development" would be complied by the Petitioner. (Exhibit B)

Sewage Disposal

39. The Lanai sewer system has recently been expanded to allow for the future developments of Castle & Cooke, Inc. The proposed golf course would not substantially increase flow to the sewer system; and the residential unit count is not increased from what was previously proposed during the establishment of the Koele Project District.

Traffic

40. The traffic volume anticipated within the area would not be different from the projections made earlier at the establishment of the Koele Project District. Traffic volumes should not change. The traffic network in Lanai City should not experience major problems. With an increase in population, traffic volumes would be noticeable, but would not create major delays and traffic hazards.

State and County Land Classifications

41. The State Land Use Classifications for Petition Areas 1 is the Agricultural District; Petition Area 2 comprises approximately 62 acres in the Agricultural District and approximately 6 acres in the Conservation District.
42. The Lanai Community Plan designates Petition Area 1 as Rural for approximately 38.7 acres, Agricultural for approximately 45 acres and Conservation for approximately 2.2 acres. Petition Area 2 designates approximately 62 acres in Agriculture and approximately 6 acres in Conservation.

Significance Criteria

43. Section 11-200-12 Environmental Impact Statement Rules specifies criteria for determining whether an action may have significant effects on the environment. The proposed action relates to these criteria, as follows:

- a. Involves an irrevocable commitment to loss or destruction of any natural or cultural resources.

The proposed additions to the existing Project District do not involve an irrevocable loss or destruction of any natural or cultural resources. The lands involve mostly agricultural designated lands.

These are largely vacant acres or abandoned pineapple fields whose use for residential and golf course use would not substantially impact natural or cultural resources. The majority of the Petition Areas are rated "D" and "E" as to the overall productivity potential.

Where the development infringes into woodland areas, e.g. the east boundary addition, the development would strive to preserve trees, where possible, as part of the residential environment.

Mr. Kenneth Nagata, in his Biological Reports for both Petition Areas, stated that the proposed project will in no way comprise any native plant community or ecosystem nor will it impact the native flora in general. Mr. Nagata also summarized that no native ecosystems and no native animals are present; and the proposed project will in no way comprise any native ecosystem.

Dr. Hallett H. Hammatt, in his Archaeological Reports, reported that only one (1) archaeological site was encountered within the Petition Areas; and that the site is considered important for its information content, of which has already been gathered. The Department of Land and Natural Resources, Historic Preservation Program, concurs with Dr. Hammatt's findings, but also recommends the following conditions for the approval of the Community Plan Amendment request:

- 1) A qualified archaeologist shall monitor the initial grubbing and grading activities in the residential areas. A report on the monitoring shall be submitted to the State Historic Preservation Program.
- 2) A copy of an acceptable final report shall be submitted to the State Historic Preservation Program documenting the findings and negative results for review and comments.
- 3) A copy of an acceptable final report on the data recovery work in the golf course area shall be submitted to the State Historic Preservation Program as final verification of the full execution of the mitigation plan for this project.

b. Curtails the range of beneficial uses of the environment.

The proposed additions would provide beneficial uses of the environment in the form of open space/recreational activities and residential uses. The pasturelands in the north boundary addition are in "E" rated agricultural lands while the abandoned pineapple fields in the east boundary addition are isolated from the main pineapple fields.

The proposed additions include wooded areas and come State Conservation District areas. These areas, however, constitute only a small portion of the total wooded areas on Lanai. The proposed development within these areas would strive to preserve trees in this area where appropriate and possible.

Existing trails will also be configured into the golf course development and remain open for public use.

c. Conflicts with the State's long-term environmental policies or goals and guidelines as expressed in Chapter 343 HRS, and any revisions thereof and amendments thereto, court decisions or executive orders.

The policies of the Environmental Policy Act encourage the State to conserve the natural resources, enhance the quality of life with population limits, diverse economic opportunities, well designed communities, and a commitment to protect and enhance the environment. The Act establishes guidelines based on concerns such as population; natural resources; flora and fauna; parks, recreation and open space; economic development; and community participation.

The proposed additions are consistent with the policies and guidelines of the State Environmental Policy Act. The proposed additions and revisions to the Koele Project District will not change the number of residential and lodge units that were established as part of the Lanai Community Plan planning process. This unit count was established by the County as part of an extensive planning and community participation process and this is consistent with the State policies and guidelines. The Koele Project District amendment process will provide additional opportunities for community participation.

The proposed addition is a logical extension of the existing Project District area to allow for a slightly lower residential density and a better designed golf course and overall land plan. It also provides for the preservation of a community golf course which will be improved and made available to residents free of charge. Improvements and maintenance are funded by Lanai Company. The proposed additions along with the existing Project District provides Lanai with a means to diversify the island's economy beyond its agricultural base. A large portion of the proposed addition is for golf course and open areas which provide both recreation and open space amenities to Lanai.

d. Substantially affects the economic or social welfare of the community or the State.

The Lanai Community Plan emphasizes the urgent need to diversify the economy of the island and not rely totally on pineapple. This project is consistent with that goal. The entire project, if successful, will provide substantial employment. The golf course is a crucial element and without it the Koele Lodge can not be effectively marketed. This project does not increase the number of units in the Project District. As part of the entire development, significant resources have been dedicated to improve housing and public services. Castle and Cooke has committed \$60 million to affordable housing, land for additional housing, police and fire facilities, community services, etc., and improvement of the infrastructure for the island.

e. Substantially affects public health.

The Koele Lodge is served by the existing system located at the edge of Lanai City. Further expansion of the sewer system and additional treatment ponds would allow additional development within the Koele Project District.

Mosquito control would be maintained by introduction of small fishes in the perennial lakes and ponds in the golf course.

The Petitioner would also be required to address the Department of Health's "Eight (8) Conditions Applicable to Golf Course Development".

- f. Involves substantially secondary impacts, such as population change or affects public facilities.

The proposed additions and revisions to the Koele Project District will not affect the number of residential and lodge units approved for the Koele Project District. These unit counts have been approved as part of Koele Project District Ordinance. The changes allow for the preservation of key public facilities (e.g. the Cavendish Community Golf Course). Substantial secondary impacts due to the proposed additions and revisions to the Koele Project District plan are not expected.

- g. Involves substantial degradation of environmental quality.

The proposed additions and revisions would largely affect lands that have been designated in the past for agricultural or rural use. Use of these areas, therefore, for residential or golf course use should not degrade the environment. Golf course use will maintain much of the open space character of the area.

Portions of the proposed additional areas are in wooded areas. These areas, however, consist of introduced trees which are neither rare nor endangered. Moreover, the development intent is to create a residential and golf course environment that preserves trees where it is appropriate and possible.

Also, the Petitioner has listed mitigating factors for the use of chemicals as fertilizers and biocides that may pose as a potential for groundwater contamination. The Petitioner will also be required to address the Department of Health's "Eight (8) Conditions Applicable to Golf Course Development".

- h. Is individually limited but cumulatively has considerable effect upon the environment or involves a commitment for large actions.

The proposed new areas will not increase the number of residential or lodge units already approved in the existing Koele Project District Ordinance.

- i. Substantially affects a rare, threatened or endangered species, or its habitat.

Biological surveys of the proposed additional areas to the Koele Project District indicate that no rare, threatened or endangered species or habitat will be affected.

- j. Detrimentally affects air or water quality or ambient noise levels.

The proposed additions and revisions to the existing Koele Project District will maintain the number of units already approved for the Koele Project District. Consequently, the proposed changes to the plan are not expected to cause any increase in air emissions or ambient noise levels. Reduced densities should be positive in these areas.

The Department of Health's "Eight (8) Conditions Applicable to Golf Course Development" will monitor the water quality from potential groundwater contaminants, such as, fertilizers, biocides, sewage effluent, etc.

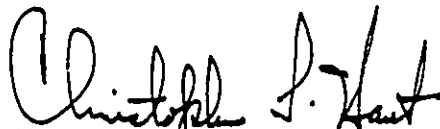
- k. Affects an environmentally sensitive area such as a flood plain, tsunami zone, erosion-prone area, geologically hazardous land, estuary, fresh water or coastal waters.

The Petition areas do not abut the shoreline. These areas have not been designated as an environmentally sensitive area by the Lanai Community Plan or the Department of Land and Natural Resources.

44. The following government agencies were requested to review and comment on the proposed action:

- a. Department of Public Works
- b. Department of Water Supply
- c. Department of Land and Natural Resources
- d. Department of Health
- e. Department of Agriculture

Dated this 22nd day of May, 1990, Wailuku, Maui, Hawaii.



Christopher L. Hart
Planning Director

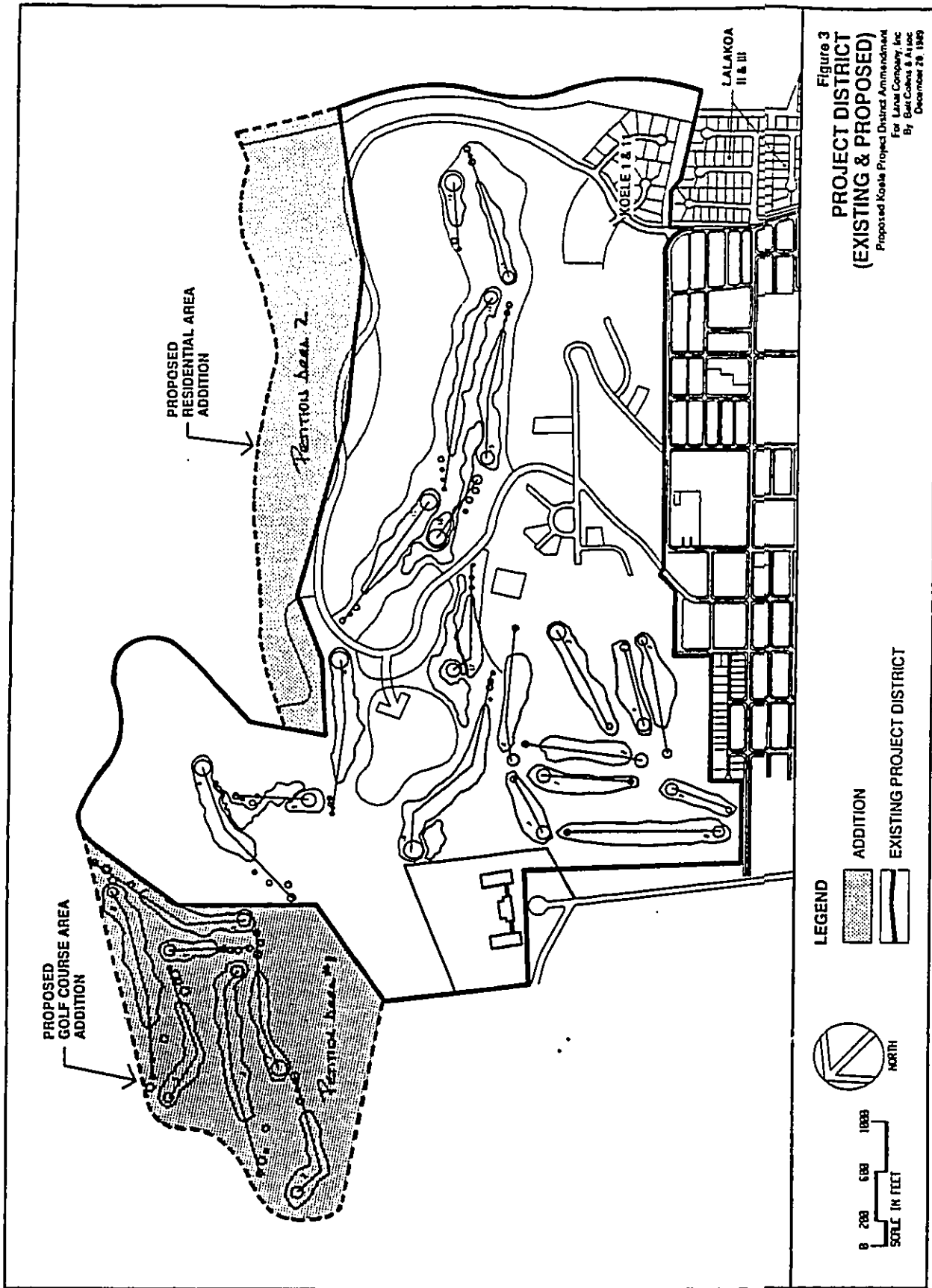


Figure 3
**PROJECT DISTRICT
 (EXISTING & PROPOSED)**
 Proposed Koala Project District Amendment
 For Lual Company, Inc.
 By Galt Collins & Associates
 December 28, 1989

EXHIBIT A

April 7, 1989

EIGHT (8) CONDITIONS APPLICABLE TO THIS NEW GOLF COURSE DEVELOPMENT

Conditions:

1. The owner/developer and all subsequent owners shall establish a groundwater monitoring plan and system which shall be presented to the State Department of Health for its approval. The groundwater monitoring plan and system shall minimally describe the following components:
 - a. A system of monitoring wells constructed throughout the site. These monitoring wells shall extend approximately ten (10) feet below the water table.
 - b. A routine groundwater monitoring schedule of at least once every six (6) months and more frequently, as required by the State Department of Health, in the event that the monitoring data indicates a need for more frequent monitoring.
 - c. A list of compounds which shall be tested for as agreed to by the State Department of Health. This list may include, but not be limited to the following: total dissolved solids; chlorides; PH; nitrogen; phosphorus; or any other compounds associated with fertilizers, biocides or effluent irrigation.
2. A baseline groundwater data shall be established as described in this paragraph. Once the test well sites and list of compounds to be monitored for have been determined and approved by the State Department of Health, the owner/developer shall contract with an independent third-party professional (approved by the State Department of Health) to have the groundwater sampled and its data reported to the State Department of Health. Testing of the groundwater shall be done by a certified laboratory.
3. If the data from the monitoring wells indicate the presence of the measured compound and/or the increased level of such compound, the State Department of Health can require the owner/developer or subsequent owner to take immediate mitigating action to stop the cause of the contamination. Subsequently, the developer/owner or subsequent owner shall mitigate any adverse effects caused by the contamination.
4. Owner/developer shall provide sewage disposal by means of connection to the public sewer system; or by means of a wastewater treatment works providing treatment to a secondary level with chlorination. Effluent from this wastewater treatment works may be used for golf course irrigation, subject to Condition #3. The entire system shall be approved by the State Department of Health in conformance with Administrative Rules Title 11, Chapter 62, Wastewater Treatment Systems, effective December 10, 1988.

EXHIBIT 13

5. If a wastewater treatment works with effluent reuse becomes the choice of wastewater disposal, then the owner/developer and all subsequent owners shall develop and adhere to a Wastewater Reuse Plan which shall address as a minimum, the following items:
- a. Management Responsibility. The managers of the irrigation system using reclaiming wastewater shall be aware of the possible hazards and shall evaluate their system for public health, safety, and efficiency. They must recognize that contact with the reclaimed wastewater from treated domestic sewage poses potential exposure to pathogenic organisms which commonly cause infectious diseases (bacteria, viruses, protozoa, and helminths or worms).
 - b. General Recommendations
 - 1) Irrigated areas should be no closer than 500 feet from potable water wells and reservoirs.
 - 2) Irrigated areas should be no closer than 100 feet from any private residence.
 - 3) Application rates should be controlled to minimize ponding. Excess irrigation tailwater in the reclaimed wastewater irrigation area shall be contained and properly disposed. An assessment should be made of the acceptable time and rate of application based on factors such as type of vegetation, soil, topography, climate and seasonal variations.
 - 4) Effluent holding/mixing ponds shall be designed to prevent the infiltration of the wastewater into the subsurface. The holding/mixing ponds shall be made impervious.
 - 5) Irrigation shall be scheduled such that the public is not in the vicinity and the soil is sufficiently dry to accept the irrigation water.
 - 6) Permanent fencing or barriers shall be erected around polishing or holding ponds to prevent public entry or stray feral and tame animals from gaining access to the ponds.
 - 7) Adequate irrigation records shall be maintained. Records should include dates when the fields are irrigated, rate of application, total application and climatic conditions. Records should also include any operational problems, diversions to emergency storage or safe disposal and corrective or preventive action taken.
 - 8) The holding/mixing ponds shall be periodically monitored for the purpose of detecting leakage into the subsurface. If leakage is detected, corrective action shall be immediately taken.
 - c. Adequate Notice. Appropriate means of notification shall be provided to inform the employees and public that reclaimed wastewater is being used for irrigation on the site.

- 1) Posting of conspicuous signs with sufficient letter size for clear visibility with proper wording should be distributed around the use areas.
 - 2) Signs shall be securely fastened. Periodic surveillance shall be conducted to assure permanent posting at all times. Immediate replacements shall be made when necessitated by deterioration, vandalism or misuse.
- d. Adequate Employee Education. Employees or users should be cautioned and warned of the potential health hazards associated with the ingestion of reclaimed wastewater being used at the site.
- 1) Employees should be warned that the ingestion of reclaimed wastewater is unsafe.
 - 2) Employees should be protected from direct contact of the reclaimed wastewater. If necessary, protective clothing should be provided.
 - 3) Employees should be informed of the following:
 - o The irrigation water is unsafe for drinking or washing.
 - o Avoid contact of the water or soil with any open cuts or wounds.
 - o Avoid touching the mouth, nose, ear or eyes with soiled hands, clothes or any other contaminated objects.
 - o Be aware that inanimate objects such as clothes or tools can transport pathogenic organisms.
 - o Always wear shoes or boots to protect feet from the pathogenic organisms in the soil or irrigation water.
6. Use of electrical golf carts is recommended. It is recognized that underground storage tank(s) to store gasoline for gas driven golf carts will impose potential risks to the groundwater. If gasoline-driven golf carts are to be utilized, the developer/owner must meet all federal requirements in the installation of any underground storage tank.
7. Buildings designated to house the fertilizer and biocides shall be bermed to a height sufficient to contain a catastrophic leak of all fluid containers. It is also recommended that the floor of this room be made waterproof so that all leaks can be contained within the structure for cleanup.
8. A golf course maintenance plan and program will be established based on "Best Management Practices (BMP)" in regards to utilization of fertilizers and biocides as well as the irrigation schedule. BMP's will be revised as an ongoing measure. The golf course maintenance plan will be reviewed by the State Department of Health prior to implementation.

If there are any questions regarding the eight (8) conditions mentioned here, please contact Mr. James K. Ikeda at 548-6455. We ask your cooperation in the protection of Hawaii's valuable groundwater resource.