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DEPARTMENT OF LAND AND NATURAL RESOURCES

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WATER AND LAND DEVELOPMENT

MAY 26 1993

FILE NO.: OA-2604
DOC. NO.: 2820

MEMORANDUM

TO: Mr. Brian Choy, Director
Office of Environmental Quality Control

FROM: Keith W. Ahue, Chairperson *KA*
Department of Land and Natural Resources

SUBJECT: Negative Declaration for the Olomana Golf Course Expansion
at Waimanalo, Oahu (TMK: 4-1-13: 11)

The Department of Land and Natural Resources has reviewed the comments received during the 30-day public comment period which began on March 23, 1993. We have determined that this project will not have a significant environmental effect and have issued a negative declaration. Please publish this notice in the OEQC Bulletin as soon as possible.

We have enclosed a completed OEQC Bulletin Publication Form and four copies of the final EA. Please contact Cathy Tilton of our Office of Conservation and Environmental Affairs at 587-0377, if you have any questions.

Enclosure

1993-06-23-0A-PEA-Olomana Golf Course Expansion

JUN 23 1993

PLANNER'S COPY

**FINAL
ENVIRONMENTAL ASSESSMENT**

for the

**OLOMANA GOLF COURSE
EXPANSION**

Waimanalo, Oahu, Hawaii

Prepared for:

OLOMANA GOLF LINKS, INC.

Prepared by:

WILSON OKAMOTO & ASSOCIATES, INC.

May 1993

FINAL
ENVIRONMENTAL ASSESSMENT
FOR THE
OLOMANA GOLF COURSE EXPANSION
WAIMANALO, OAHU, HAWAII

Prepared for:

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May 1993

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PROJECT SUMMARY AND DETERMINATION

This Final Environmental Assessment (EA) was prepared in support of a Conservation District Use Application to assess the environmental consequences of a proposed expansion of the Olomana Golf Links in Waimanalo, Oahu. Olomana Golf Links is an existing 18-hole golf course which is privately owned and developed but fully open to play to the general public. The golf course was constructed in 1967 and operates on land under a long term lease from the State of Hawaii. The golf course caters primarily to local residents and is popular with local golfers and golf clubs.

Situated on approximately 130 acres of land, the present Olomana golf course plays to a relatively short par-72 length and is periodically subject to flooding problems. In order to provide for a championship golf course as well as to help alleviate drainage problems, Olomana Golf Links proposes an expansion of the existing golf course onto approximately 12 acres of adjacent land. The expansion area would support up to three golf holes and allow a reconfiguration of the existing course to lengthen some holes and provide additional ponding areas for the retention of storm waters.

Short-term impacts of the proposed action include temporary construction-related impacts of air quality, noise and traffic. These impacts may be mitigated, however, and pose no significant adverse effects on the project site or surrounding area. Clearing and grading would replace existing vegetation with golf course landscaping, but there are no threatened or endangered species of flora and fauna. Portions of an abandoned ditch irrigation system are on the project site which could yield some information on sugar irrigation practices in the early 1900's, but otherwise there are no archaeological resources on the project site. The project site does not overlie any aquifer used for potable water, and environmentally safe management practices will be employed in the application of fertilizers and pesticides. In the long term, the existing golf course's drainage and flooding conditions are expected to improve as a result of course realignment and expansion.

Agencies consulted in the preparation of this Final Environmental Assessment include the Department of Land and Natural Resources (Office of Conservation and Environmental Affairs, Division of Land Management, State Historic Preservation Division), Department of Health, University of Hawaii Environmental Center, City Department of Land Utilization, Department of General Planning, Board of Water Supply, and the U.S. Army Corps of Engineers.

Based on this Final Environmental Assessment which has found no significant adverse impacts associated with the proposed action, a negative declaration is anticipated.

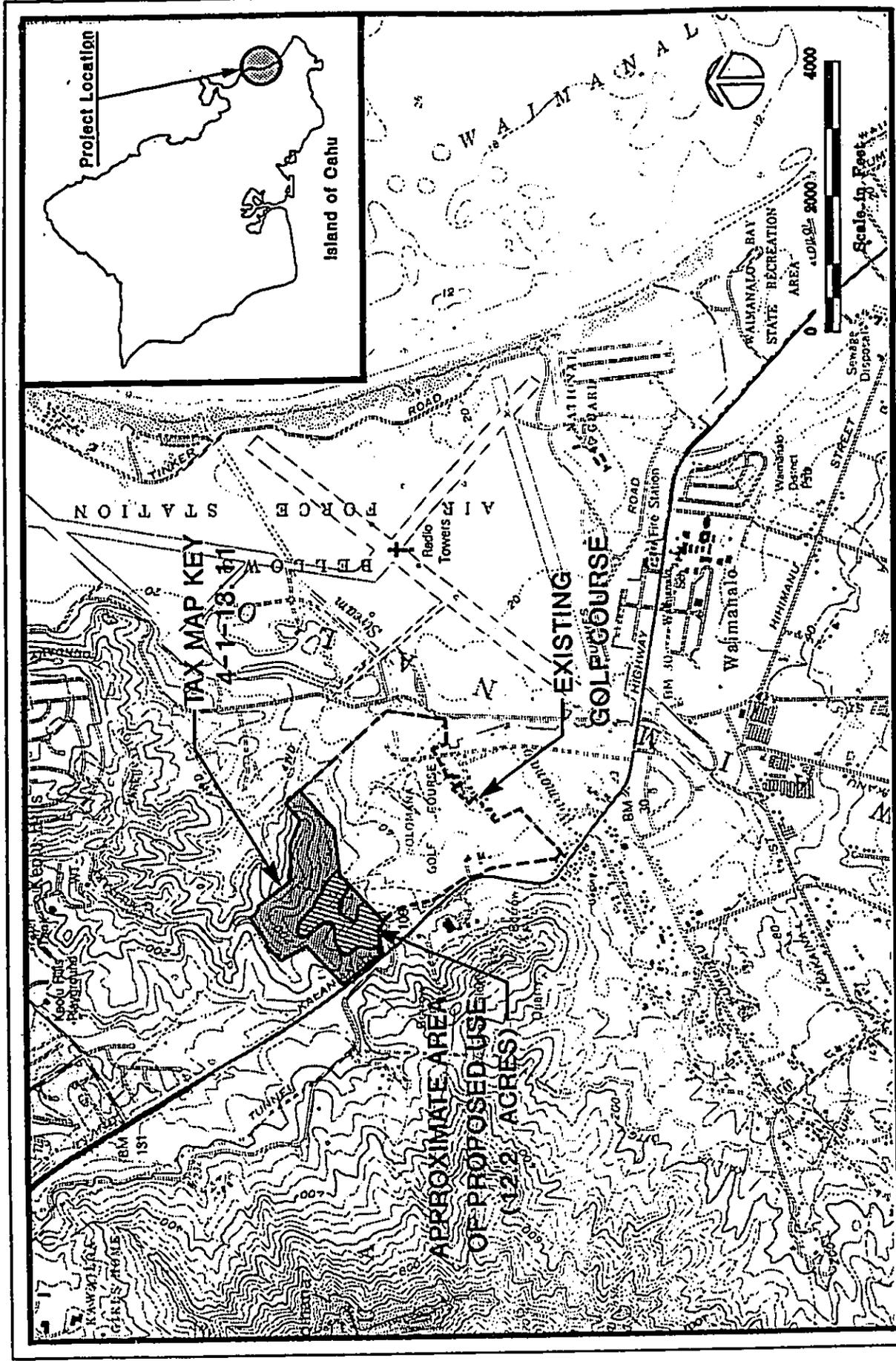
SUMMARY SHEET

Applicant: Olomana Golf Links, Inc.
Landowner: State of Hawaii
Accepting Agency: Department of Land and Natural Resources
Project Location: Waimanalo, Oahu, Hawaii
Tax Map Key: 4-1-13: portion of 11
Parcel Area: Approximately 56 acres
Area of Proposed Use: Approximately 12.2 acres
State Land Use District: Conservation District
Conservation Subzone: General Subzone
Development Plan Land Use Map Designation: Preservation
Zoning Designation: Restricted Preservation (P-1)
Existing Use: Undeveloped
Proposed Use: Golf course expansion

SECTION 1 - INTRODUCTION

Olomana Golf Links, Inc. proposes to undertake an expansion of its existing golf course in Waimanalo, Oahu within approximately 12.2 acres of adjacent land within the Conservation District (See Figure 1-1). The expansion area would be used to support up to three golf holes and enable the reconfiguration of the existing 18-hole golf course to lengthen and improve the course layout and improve drainage patterns.

This Final EA has been prepared in accordance with Chapter 343, Hawaii Revised Statutes, and Chapter 11-200, Administrative Rules of the Department of Health. The preparation of this Final EA arises from the location of the project site within the State Conservation District. This Final EA is intended to satisfy the environmental requirements of a Conservation District Use Application (CDUA) and is subject to acceptance by the Department of Land and Natural Resources (DLNR).



**OLOMANA
GOLF COURSE
EXPANSION**

Fig. 1-1
LOCATION MAP

Prepared for :
OLOMANA GOLF LINKS, INC.
Prepared by :
Wilson Okamoto & Associates, Inc.

SECTION 2 - PROJECT DESCRIPTION

2.1 Location and Ownership

The project site is located in Waimanalo in the Development Plan district of Koolaupoko in Windward Oahu (See Figure 1-1). The site is identified by Tax Map Key (TMK) 4-1-13:11 and includes a portion of a 56-acre parcel adjacent and west of Olomana Golf Links and makai of Kalaniana'ole Highway. The 56-acre parcel is owned by the State of Hawaii and is currently occupied by Mr. Thomas Noa under a revocable permit for purposes of his residence and trucking business, Noa's Enterprises. A few acres of the 56-acre parcel makai of Kalaniana'ole Highway have been cleared and graded for a corral, Mr. Noa residence, stables and trucks.

The remainder of the parcel is undeveloped and characterized by a steep ridge and vegetation consisting mostly of introduced trees and plant species. Approximately 12.2 acres of land adjacent to the golf course are proposed for use.

2.2. Surrounding Uses

Adjacent and east of the project site, Olomana Golf Links is an 18-hole, par 72 golf course on approximately 130 acres of land. Associated facilities include a clubhouse/restaurant facility, pro shop, driving range, parking lot, nursery, sod farm and maintenance facility. Access to the golf course is off of Kalaniana'ole Highway. Olomana Golf Links, Inc. occupies the State-owned parcel under a long term lease agreement with the State of Hawaii which expires in 2007. The State derives rent from a percentage of golf course revenues and the golf course green fees are subject to DLNR approval.

Adjacent and south of the project site is a four-acre parcel also bounding the existing golf course. The parcel is being used under a revocable permit from the State of Hawaii for two private residences, horse paddocks, a tackroom, and corral.

To the east and makai of the project site, Bellows Air Force Station (BAFS) occupies approximately 909 acres of lands. The station was established by presidential order in 1917 as Waimanalo Military Reservation, and was later named Bellows Field in 1933. In 1948 it was redesignated Bellows Air Force Base. Flying activities from the base were terminated in 1958.

The station accommodates Detachment 1, 15th Air Base Wing, and Operating Location A, 1957th Communications Group, and serves as a joint services recreation center, global transmitting antenna complex, and training area for all branches of service, primarily the

Marine Corps based at Marine Corps Air Station, Kaneohe Bay. Two dormitories house unaccompanied personnel and six homes are available for families stationed at BASF. A portion of BASF has been developed into an Air Force Recreation Center, with 105 furnished beach cottages. The recreation center also includes a beach club, golf driving range, library, miniature golf course, exchange, gas station, tennis courts, and water sports center.

On the Kailua side of the project site are several single-family residential communities. Kailua Heights neighbors the project site to the northwest on Kalaniana'ole Highway, while Keolu Hills, Pohakupu, Enchanted Lakes and Lanikai are situated about 0.4 mile to 0.6 miles from the project site to the north and northwest. A steep ridge rising up to approximately 280 feet high extends west and makai of Kalaniana'ole Highway. This ridge separates the project site from neighboring residential communities. The Waimanalo residential area is located about 0.5 miles southeast of the project site on Kalaniana'ole Highway.

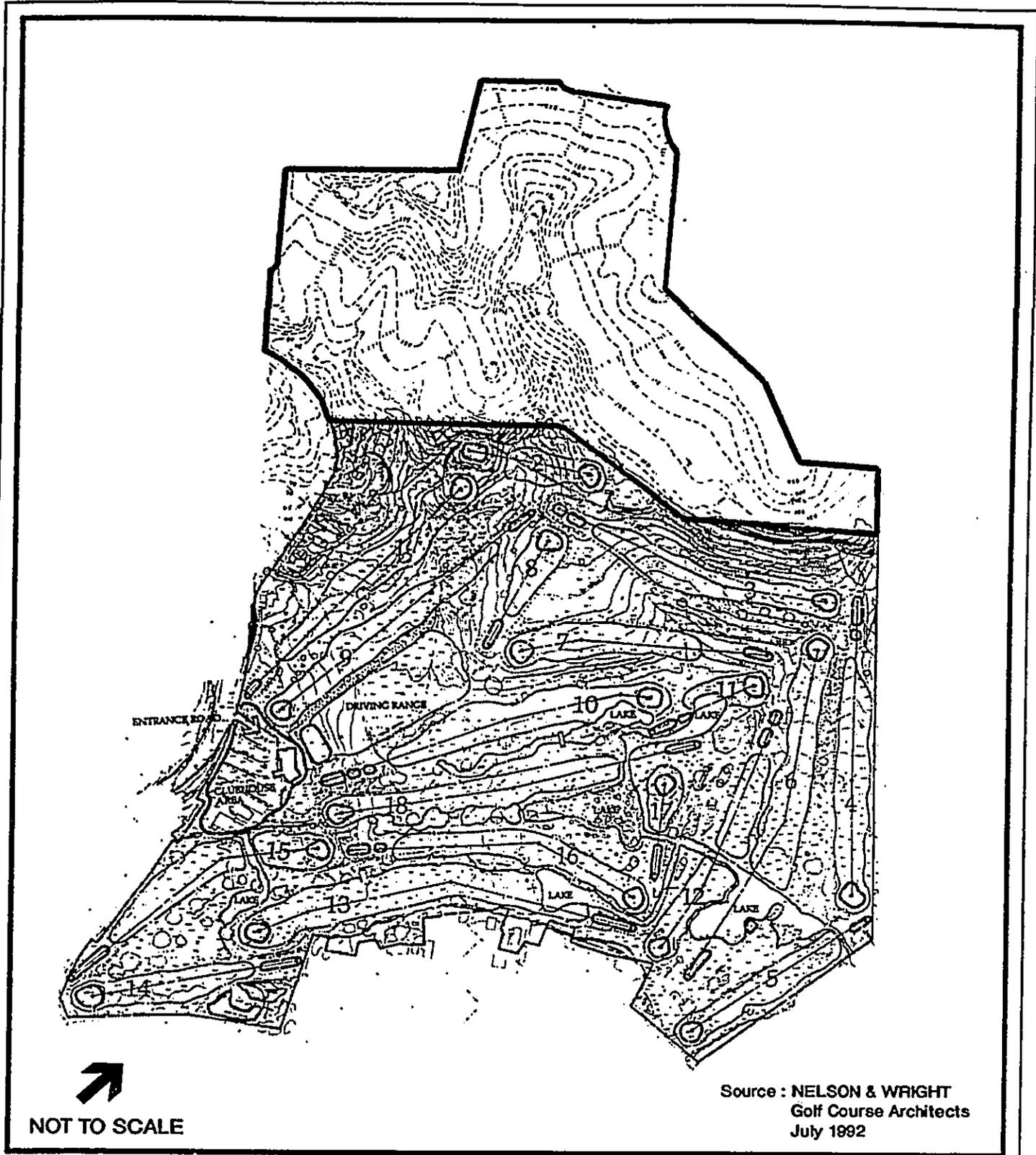
2.3. Proposed Improvements

Olomana Golf Links, Inc. proposes to use a portion of the adjoining 56-acre parcel to undertake a realignment and extension of its present golf course. Up to three golf holes would be placed in this expansion area, and the existing course would be reconfigured to lengthen some holes and provide additional ponding areas. The area of proposed use within the Conservation District is approximately 12.2 acres.

Specific improvements within the Conservation District include clearing, grading and landscaping to provide grassing for tees, fairways, and greens, and provisions for a golf cart path and irrigation system. As much as practicable, grading activities would be limited to that necessary to establish the tees, fairways and greens, with other areas maintaining the existing slopes and contours of the land. Areas along the steep ridges will be avoided, and no permanent structures are planned within the proposed expansion area. Beyond the improved areas of the subject parcel, the lands and vegetation will remain in their existing natural condition.

2.4 Alternative Concept Plans

To implement the proposed expansion of the golf course, several preliminary concept plans have been developed showing potential alternative realignment schemes. Figures 2-1 to 2-4 show the existing golf course routing and the proposed preliminary concept plans. Each of the concept alternatives would result in increasing the existing course's playing length as well as improving drainage for the entire course. A preferred development alternative has not been selected at this time.



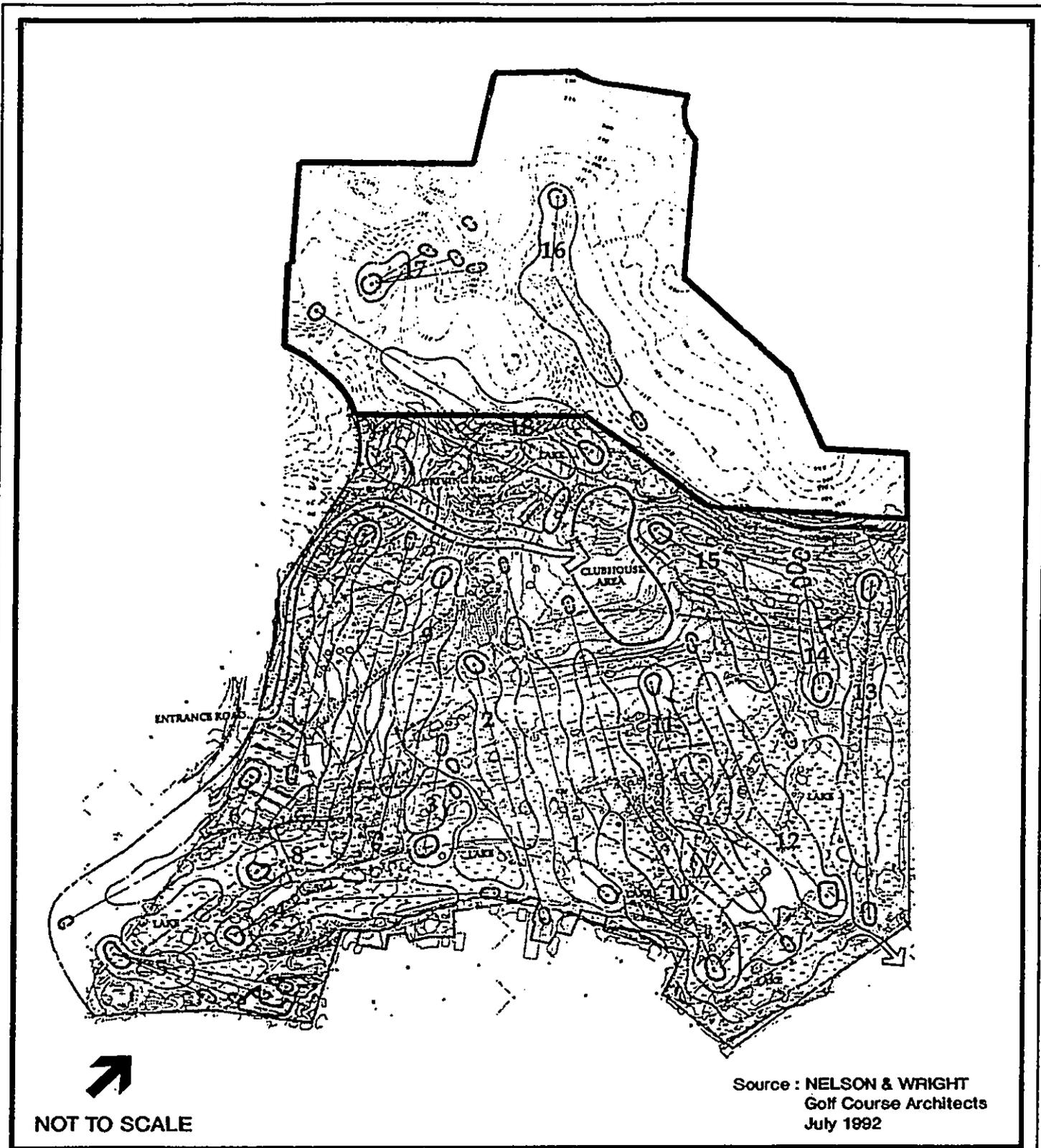
**OLOMANA
GOLF COURSE
EXPANSION**

EXISTING GOLF COURSE ROUTING

Fig. 2-1

Prepared for :
OLOMANA GOLF LINKS, INC.

Prepared by :
Wilson Okamoto & Associates, Inc.



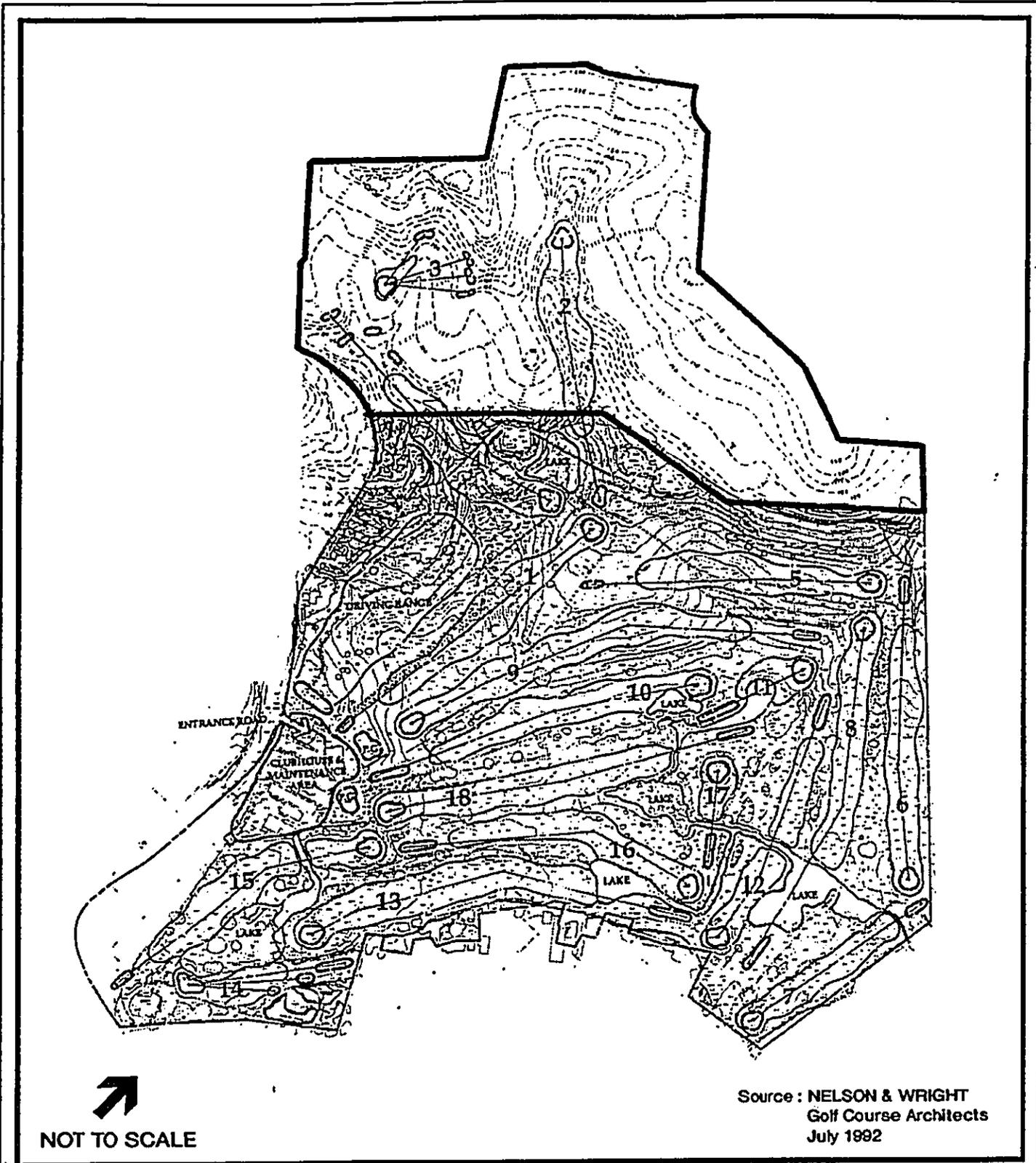
**OLOMANA
GOLF COURSE
EXPANSION**

PRELIMINARY CONCEPT PLAN A

Fig. 2-2

Prepared for :
OLOMANA GOLF LINKS, INC.

Prepared by :
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**OLOMANA
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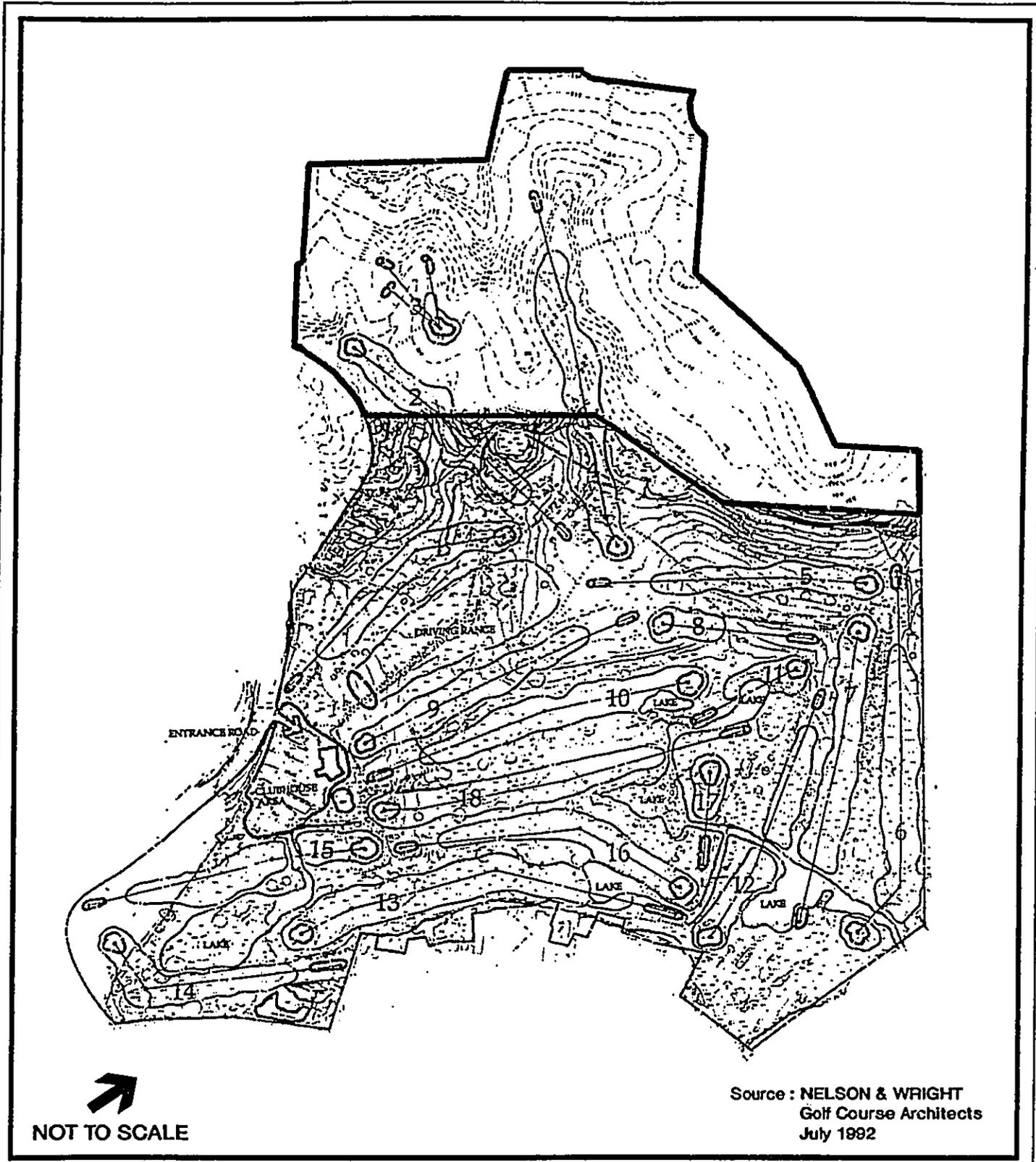
PRELIMINARY CONCEPT PLAN B

Fig. 2-3

Prepared for :
OLOMANA GOLF LINKS, INC.

Prepared by :
Wilson Okamoto & Associates, Inc.

Source : NELSON & WRIGHT
Golf Course Architects
July 1992



NOT TO SCALE

Source : NELSON & WRIGHT
Golf Course Architects
July 1982

OLOMANA GOLF COURSE EXPANSION

PRELIMINARY CONCEPT PLAN C

Prepared for :
OLOMANA GOLF LINKS, INC.

Prepared by :
Wilson Okamoto & Associates, Inc.

Fig. 2-4

Alternative A shows a realignment based on the relocation of the golf clubhouse to the west end of the golf course. Most of the holes would be oriented in an east-west direction. A new water feature would be added near the western end of the existing golf course. Overall, an increase of 69 percent (5.2 acres) of additional open water areas would be added to help improve golf course drainage and increase storage capacities.

Alternative B shows the realignment of the golf course with relatively minor changes. The driving range would be relocated, and golf holes No. 2, 3 and a small portion of No. 4 would be in the Conservation District. A new water feature would be added near the western end of the existing course and water features expanded in other areas of the course. An estimated 23 percent (1.7 acres) of surface water area would be added to the existing golf course area to help improve drainage capacities.

Alternative C shows a realignment scheme with relatively minor changes to the existing configuration. Hole No. 3 and portions of Holes No. 2 and 4 would be in the Conservation District. To mitigate the adverse impacts of flooding on playing conditions, one of the holes on the northeastern end of the present course (Hole No. 5) which is more susceptible to flooding would be eliminated. This alternative would create an additional 19 percent (1.4 acres) of water area within the existing golf course.

2.5 Purpose and Need

Olomana Golf Links caters primarily to local residents and offers green fees at slightly below market rates. An estimated 90 percent of all golf course rounds are played by local residents. The golf course facilities, landscaping and maintenance have undergone substantial improvements and upgrading in recent years. However, the limited land area available for the existing course and recurring drainage problems prevents the facility from realizing its full potential.

One of the golf course's major shortcomings is the course length (playing yardage distance from tee to green). In comparison with other golf courses, Olomana is a relatively short course. From the men's regular tees, the course length is 5,890 yards, whereas most other golf courses play to well over 6,000 yards (the nearby municipal Pali Golf Course is 6,490 yards in playing length). The existing course length precludes the site from consideration for any significant golf tournaments and championship play.

A second limiting factor is the poor drainage conditions of the golf course. Much of the golf course site sits at a low-lying elevation and receives storm runoff from Waimanalo, the highway, and mauka areas. The golf course is susceptible to flooding and drains poorly during heavy rains. During major storms, ponding occurs within substantial portions of the golf course, necessitating its temporary closure. Following the New Year's Eve storm in 1987, large areas outside the clubhouse were inundated under 20 to 30 feet of water, and

resulted in a 4-week closure of the golf course. After a recent rainstorm in March 1991, much of the back nine area was flooded and it was necessary to close the golf course for four days.

SECTION 3 - DESCRIPTION OF THE EXISTING ENVIRONMENT

3.1 Physical Environment

3.1.1 Climate

Waimanalo's climate is generally typical of Windward Oahu, with monthly temperatures averaging from 70°F in January to 78°F in August. The average annual temperature is 74°F. Average annual rainfall varies with elevation. At the shoreline, rainfall averages approximately 30 inches annually, while the average annual rainfall is approximately 100 inches in the Koolau Mountain Range. In the vicinity of the project site, median annual rainfall is approximately 45 inches (DLNR, 1986). There is a seasonal variation in rainfall, with heavier rainfall occurring from November through April.

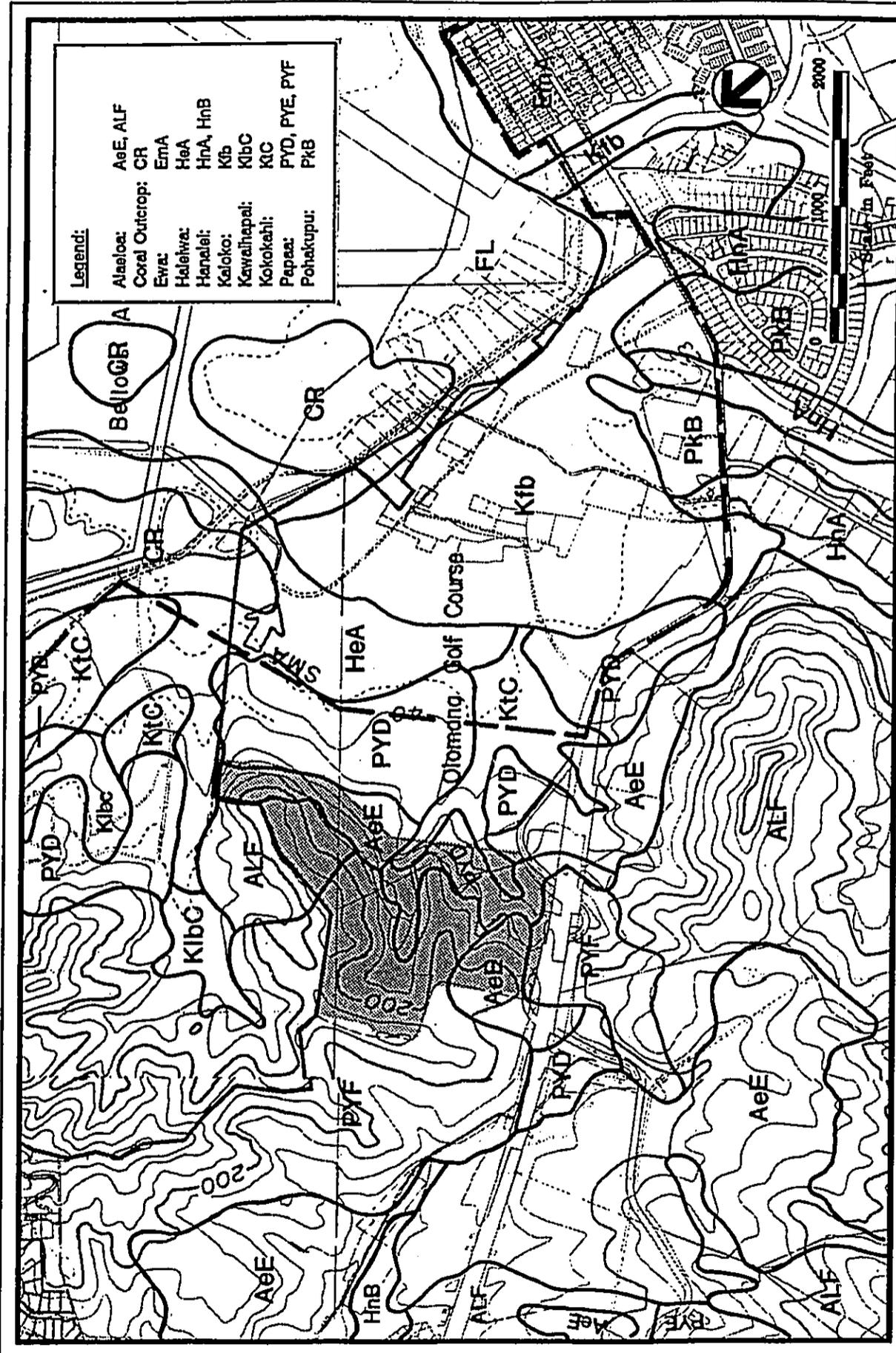
Prevailing winds in the area are the northeasterly tradewinds which occur approximately 80 percent of the time. Relative humidity ranges between 70 and 80 percent, and is somewhat higher during the winter months than the summer months.

3.1.2 Topography and Soils

The overall elevation of the project site ranges from 75 to 250 feet above mean sea level, with a small ridge running through the parcel in a northwest/southeast direction. Slope ranges from about 5 percent to 40 percent, with average slopes at about 15 to 25 percent.

The U.S. Department of Agriculture Soil Conservation Service (USDA, 1972) has classified the soil in the study area as Alaeloa (AeE and ALF) and as Papaa (PYF and PYD) (See Figure 3-1). The Alaeloa series are well-drained soils occurring on uplands on the islands of Maui, Molokai, and Oahu. Alaeloa soils developed in material weathered from basic igneous rock in areas with rainfall of 35 to 60 inches. The AeE series occurs on smooth side slopes and toe slopes of about 15 to 35 percent in the uplands. Permeability is moderately rapid, runoff is medium, and the erosion hazard is moderate. The ALF series occurs on 40 to 70 percent slopes, although its most common slope is at 45 to 53 percent. Runoff is rapid to very rapid, and the erosion hazard is severe.

The Papaa series consists of well-drained soils on uplands on the island of Oahu. These soils formed in colluvium and residuum derived from basalt. Occurring on slopes of 35 to 70 percent, the PYF series has convex, very steep slopes. Permeability is slow, runoff is rapid, and the erosion hazard is severe. Whereas PYD soils occur on slopes of 6 to 20 percent, experience slow to medium runoff, with slight to moderate erosion hazard.



**OLOMANA
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EXPANSION**

Fig. 3-1

SOILS MAP

Prepared for :
OLOMANA GOLF LINKS, INC.
Prepared by :
Wilson Okamoto & Associates, Inc.

Source : U.S. Dept of Agriculture, Soil Conservation Service, August 1972

The University of Hawaii Land Study Bureau, which has rated all lands in State relative to their agricultural productivity, rates the project site as E, the lowest productivity rating in the classification. Drainage characteristics of the soil are considered to range from moderately well-drained to well-drained.

3.1.3 Geology and Hydrology

Geologically, the Waimanalo region is part of the Koolau Volcanic Series which was formed by the Koolau Volcano, an elongate shield built principally by eruptions along a northwest-trending rift zone. Waimanalo can be separated into two areas, the inland portion and the seaward portion. The demarcation between these areas is the 30-foot land elevation contour. In the inland portion, subsurface materials consist predominantly of alluvial clays and silts with some gravel interbeds. This layer is about 150 feet or more in thickness and underlain by basaltic bedrock. The alluvial materials generally have very low permeability and are not capable of transmitting significant amounts of water.

Conditions in the seaward portion are more complex. At or near the surface, there is a layer of sands and poorly-consolidated limestones which extend to depths of approximately 20 to 30 feet below the surface and may be thinly mantled with recent alluvial clays in localized areas. This stratum represents a sequence of recent dune and beach deposits, and is generally very permeable and capable of transmitting large amounts of water.

Groundwater resources in Waimanalo include dike-impounded water, basal water, and perched (or alluvial) water. The dike-impounded groundwater is stored in compartments in the Koolau Mountains where the rift zone of an extinct volcano was deeply-eroded. This water is of high quality and is suitable for domestic use without the need for treatment. Basal water is restricted to calcareous sedimentary material and younger alluvium along the coast. This permeable rock stratum is overlain by caprock materials. The basal water is brackish and is presently not considered suitable for domestic use. Groundwater perched above basal water is also generally of lower quality than dike-impounded water.

Waimanalo Stream is a perennial stream and is the primary drainage course for the Waimanalo Valley area. The stream is located about 0.5 miles south/southwest of the project site, near the southernmost corner of the golf course. Originating from the Koolau Mountains the stream traverses past the golf course and through BASF until its confluence with Waimanalo Bay.

Flow measurements from the U.S. Geological Survey (Station #16249000) indicate an average flow of 5.01 cubic feet per second (cfs), with low and high flows recorded at about 0.49 cfs and 37.9 cfs, respectively (Instream Use Study, 1983). The stream is relatively flat

with an overall gradient of approximately 0.2 percent. Channel widths range between 40 to 90 feet between the upper and lower reaches. Channel depths range between 10 to 15 feet.

Waimanalo Stream is considered to be a continuous stream (year-round flows) with habitat, estuary and wetland values. Based on the Hawaii Stream Assessment (1990), Waimanalo Stream is considered to have moderate aquatic resources, high sensitivity to cultural resources, and substantial riparian and recreational resources. Waimanalo Stream, however, is not considered to be a "candidate stream for protection" using the recommended criteria in the report.

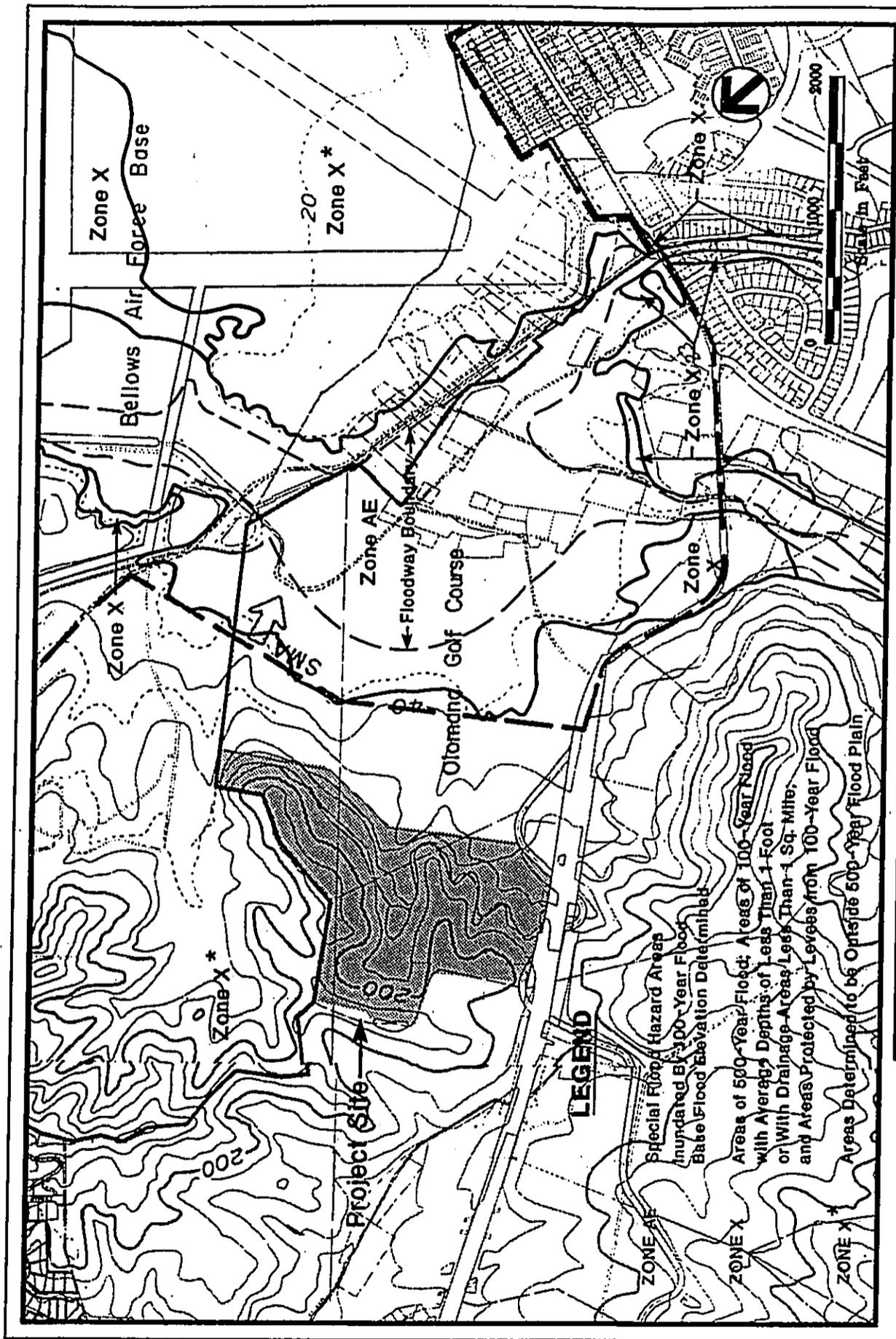
The State Department of Health administers the Underground Injection Control (UIC) program in order to protect the quality of the State's underground sources of drinking water from pollution by subsurface disposal of wastewater. The UIC Program maps indicate that the UIC boundary line is mauka of the project site. This indicates that the aquifer underlying the project site does not currently serve and will not in the future serve as a source of drinking water. The nearest ground water well source is located approximately one mile southeast of the project site approximately 1,000 feet mauka of Kalaniana'ole Highway. Potable ground water wells are located approximately two miles mauka of the site.

3.1.4 Flood Hazard and Drainage

According to the Flood Insurance Rate Map prepared by the Federal Emergency Management Administration, the project site lies in an area determined to be outside the 500-year flood plain, as illustrated by Figure 3-2.

Much of the existing golf course, however, is situated at lower-lying elevations and receives storm runoff from Waimanalo, the highway, and mauka areas. Existing runoff from the project site and the area situated mauka of the project site is conveyed through the existing golf course and Waimanalo Stream, which traverses nearby the course. Flooding occurs in portions of the existing golf course several times a year during periods of heavy rainfall, and during major storms when water levels reach greater than 5 feet above sea level, the entire golf course becomes inundated.

Several drainage studies and flood reports have been prepared to address these frequent flooding problems in the golf course area (*Waimanalo Flood Control Project*, DLNR, 1976; *Floods in Waimanalo Area*, USGS and DLNR, 1968; *Olomana Golf Course Drainage Study*, Olomana Golf Links, 1986). Actual flood limits of the November 1965 storm and computed flood limits for the 50-year and 100-year storm describe the flood plain. The existing storm water runoff from the 56-acre project site is estimated at 131 cubic feet per second (cfs) for a ten-year storm (recurrence interval of ten years), and 196 cfs for a 50 and 100-year storm.



**OLOMANA
GOLF COURSE
EXPANSION**

**Fig. 3-2
FLOOD INSURANCE RATE MAP**

Prepared for :
OLOMANA GOLF LINKS, INC.
Prepared by :
Wilson Okamoto & Associates, Inc.

Based on these estimates, the existing runoff for the 12.2 acres of golf course expansion area is about 29.3 cfs during a 10-year storm, and 44 cfs during 50 and 100-year storms.

3.1.5 Flora and Fauna

A botanical survey was conducted for the 56-acre project site by Botanical Consultants in July 1992 (See Appendix A). No proposed or listed, threatened or endangered species were found on the proposed project site. From 1910 to 1960 the Hawaii Division of Forestry was actively engaged in the introduction and planting of millions of plant species into the lands assigned to its management (Skolmen 1980). Because of the size and variety of the introduced plants found on the project site, there is little doubt that this was an early planting site used for reforestation.

Existing vegetation on the project site is a combination of introduced trees, vines and herbs including: Ironwood trees (*Casuarina equisetifolia* L.), silk oak (*Grevillea robusta* Cunn. ex R. Br.), Siris tree (*Albizia lebbek* (L.) Benth), Monkey pod (*Samanea saman* (Jacq.) Merr.), senna (*senna surattensis* (N.L. Burm.) H. Irwin & Barneby), opiuma (*Pithecellobium dulce* (Roxb.) Benth.), java plum (*Eugenia cuminii* (L.) Druse), and Eucalyptus. Where there are gaps in the forest, introduced grasses form dense mats, and near the roads, the big cucurbit, ivory gourd (*Coccinia grandis* (L.) Voight) drapes over even tall trees.

Because the entire site has been extensively modified from its original state, it has value only as an introduced bird habitat. Both species diversity and population densities are high, including: white-eye (*Zosterops japonicus*); old world sparrows (*Passer domesticus*); house finches (*Carpodacus mexicanus*); Brazilian or red-crested cardinals (*Paroaria coronata*); common mynas (*Acridotheres tristis*); bulbuls (*Pycnonotus jocosus*); waxbills (*Estrilda astrild*); nutmeg mannikins; pigeons (*Streptopelia chinensis*); zebra doves (*Geopelia striata*); herons, egrets and bitterns (*Bubulcus ibis*); and pea fowl (*Palvo cristatus*). The reforestation hillside and the adjoining horse corrals provide an abundant food supply for many species of introduced birds. In addition, there is a wide variety of small trees and shrubs which provide nesting sites for birds.

3.1.6 Archaeological and Historical Resources

An archaeological reconnaissance survey of the 56-acre parcel was conducted by Cultural Surveys Hawaii in August 1992 (See Appendix B). The parcel includes areas of steeply sloping terrain which, based on historic research and field observations, were not utilized for commercial sugar cane cultivation.

Mauka of the project site, the Waimanalo Ditch System has been declared eligible for inclusion on the National Register of Historic Places (Site No. 50-80-15-4042) and has been

nominated to the Hawaii Register of Historic Places. Within the project site, a set of parallel ditches and a reservoir were identified as formerly part of the irrigation system of the Waimanalo Sugar Company (See Figure 3-3). The ditches within the project area are not within the geographic boundaries of the nominated Waimanalo Ditch System and were thus assigned a new site number (Site No. 50-80-15-4524). No other archaeological sites were observed. No Land Commission Awards (LCA) were located within the project area, although numerous LCAs adjacent to Waimanalo Stream were located to the southeast of the project area.

3.1.7 Air and Noise Quality

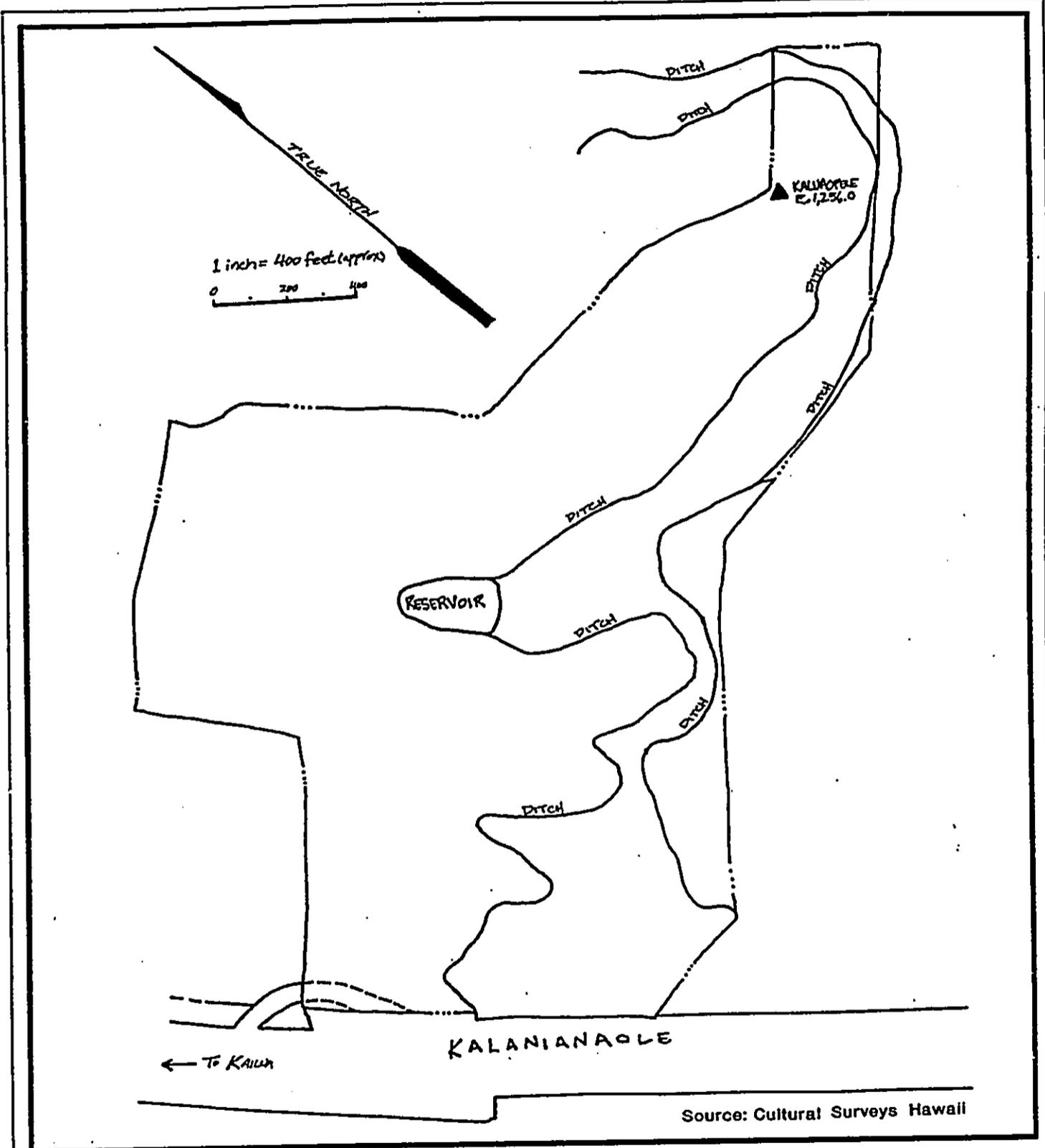
According to the State of Hawaii 1991 Data Book, the 24-hour samplings were taken of total suspended particulates at the Waimanalo sampling station located about 2.5 miles southwest of the project site at 41-1060 Kalaniana'ole Highway, on the grounds of the Waimanalo Sewage Treatment Plant. The 1990 annual range of total suspended particulates was 11 to 20 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$), with an arithmetic average of $15 \mu\text{g}/\text{m}^3$. Vehicular traffic is the major sources of air pollution in Waimanalo, although its impact is not considered to be significant. The rural character of the area and the prevailing northeast tradewinds help to keep pollution levels low.

Existing noise levels in Waimanalo are generally low as a result of the rural lifestyle of the community. Vehicular traffic is the primary noise generator in the area, particularly along the major thoroughfare, Kalaniana'ole Highway.

3.1.8 Visual Resources

According to the Coastal View Study of the City and County of Honolulu Department of Land Utilization, several open space areas and public views are identified within the Koolaupoko Development Plan area. Within the vicinity of the project site, these visual resources include: Koolau ridges; panoramic views of the Koolau mountains through Waimanalo; continuous ocean views from Kalaniana'ole Highway; and views of Olomana from Keolu Hills playground and Kalaniana'ole Highway, from Waimanalo and from the Pali Highway.

Based on the configuration of the shoreline and land forms in the Koolaupoko district, three viewsheds are defined: Kaneohe Bay Viewshed; Kailua Bay Viewshed; and Waimanalo Bay Viewshed. Situated nearest the project site, the Waimanalo Bay Viewshed ranges from Wailea Point to Makapuu Point. Viewing distance across this bay is approximately 5.5 miles. The viewshed includes bellows Air Force Base, Waimanalo, and the coastal drive around Makapuu.



**OLOMANA
GOLF COURSE
EXPANSION**

**DITCH AND RESERVOIR LOCATION
(SITE 50-80-15-4524)**

Fig. 3-3

Prepared for :
OLOMANA GOLF LINKS, INC.

Prepared by :
Wilson Okamoto & Associates, Inc.

The visual characteristics of the viewshed include the vegetation changes from Ironwood forest to coastal scrub, a significant amount of parks and open space, and the Koolau Mountains with Olomana Peak as the most vivid landform in this viewshed.

3.2 Socio-Economic Environment

3.2.1 Population

Current population estimates for the Waimanalo area are based on data from the 1990 U.S. Census of Population. The project site lies within Census Tract Nos. 113.01 and 113.02 which collectively include the area from Wailea Point just south of Lanikai to Makapuu Point, and extends inland to the Koolaus. Resident population and households are relatively stable but have decreased slightly in the last ten years, from 9,132 persons and 2,217 households in 1980 to 9,055 persons and 2,129 households in 1990.

Hawaiian Home Lands in Waimanalo comprise approximately 1,965 acres extending from the Waimanalo Quarry to Makapuu Point. Waimanalo is the only homestead area on the windward side of Oahu, with approximately 575 residential homesteads on about 135 acres.

3.2.2 Employment

Waimanalo is characterized as a rural community and has contributed significantly to the diversified agricultural industry on Oahu. Major agricultural activities conducted in the valley include dairy and poultry operations, nurseries, and truck crops. There is limited commercial development, as stores and businesses are primarily neighborhood convenience type establishments which serve the needs of local area residents. Most Waimanalo residents shop and conduct business activities outside the area in Kailua-Kaneohe or Honolulu.

Based on employment figures provided by the 1980 Census, the total labor force of Waimanalo is approximately 2,900 persons. There is a fairly even distribution among employment classifications, with 17 percent in professional services, 15 percent in finance/insurance/real estate, 12 percent in government services, and less than 10 percent in each of the remaining classifications. Approximately 6 percent of Waimanalo's labor force is employed in agricultural activities.

The Olomana Golf Links currently employs about 100 people in administrative, office support, groundskeeping, machine maintenance, pro shop, and restaurant positions.

3.3 Infrastructure Systems and Public Services

3.3.1 Roadways

Kalaniana'ole Highway which fronts the project site is a three-lane (two traveling south, one traveling north), two-way arterial which expands to four lanes immediately north of the project. The highway encircles the eastern portion of Oahu, originating in Kahala and terminating at its intersection with the Pali Highway.

3.3.2 Water

The Board of Water Supply (BWS) domestic water system and currently provides water supply to the golf course. The BWS water system in the Waimanalo area consists of four high level tunnels and two groundwater wells which produce an average of approximately 0.9 million gallons per day. In the past year, average water demand for the existing golf course was approximately 140,000 gallons per day.

3.3.3 Wastewater

There is no municipal wastewater system to service the project site. However, the existing golf course has its own private individual wastewater treatment system, whereby wastewater is conveyed through several processing stages including batching, aeration, bacterial breakdown, and chlorination. The wastewater is discharged to ponds and water features in the golf course adjacent to the treatment plant. The current wastewater flow from the golf course is estimated at approximately 10,000 gallons per day.

3.3.4 Power and Communication Systems

Electrical and telephone service to the golf course is provided by the Hawaiian Electric Company (HECO) and GTE Hawaiian Telephone, respectively.

SECTION 4 - RELATIONSHIP TO PLANS, POLICIES AND CONTROLS

4.1 Hawaii State Plan

The Hawaii State Plan is a statewide planning system which provides goals, objectives, and policies that address priority directions and concerns of the State of Hawaii. The proposed golf course expansion is consistent with the following State objective and policies:

§ 226-23. Objective and policies for socio-cultural advancement -- leisure (a) Planning for the State's socio-cultural advancement with regard to leisure shall be directed towards the achievement of the objective of the adequate provision of resources to accommodate diverse cultural, artistic, and recreational needs for present and future generations.

(b) To achieve the leisure objective, it shall be the policy of this State to: (5) Ensure opportunities for everyone to use and enjoy Hawaii's recreational resources.

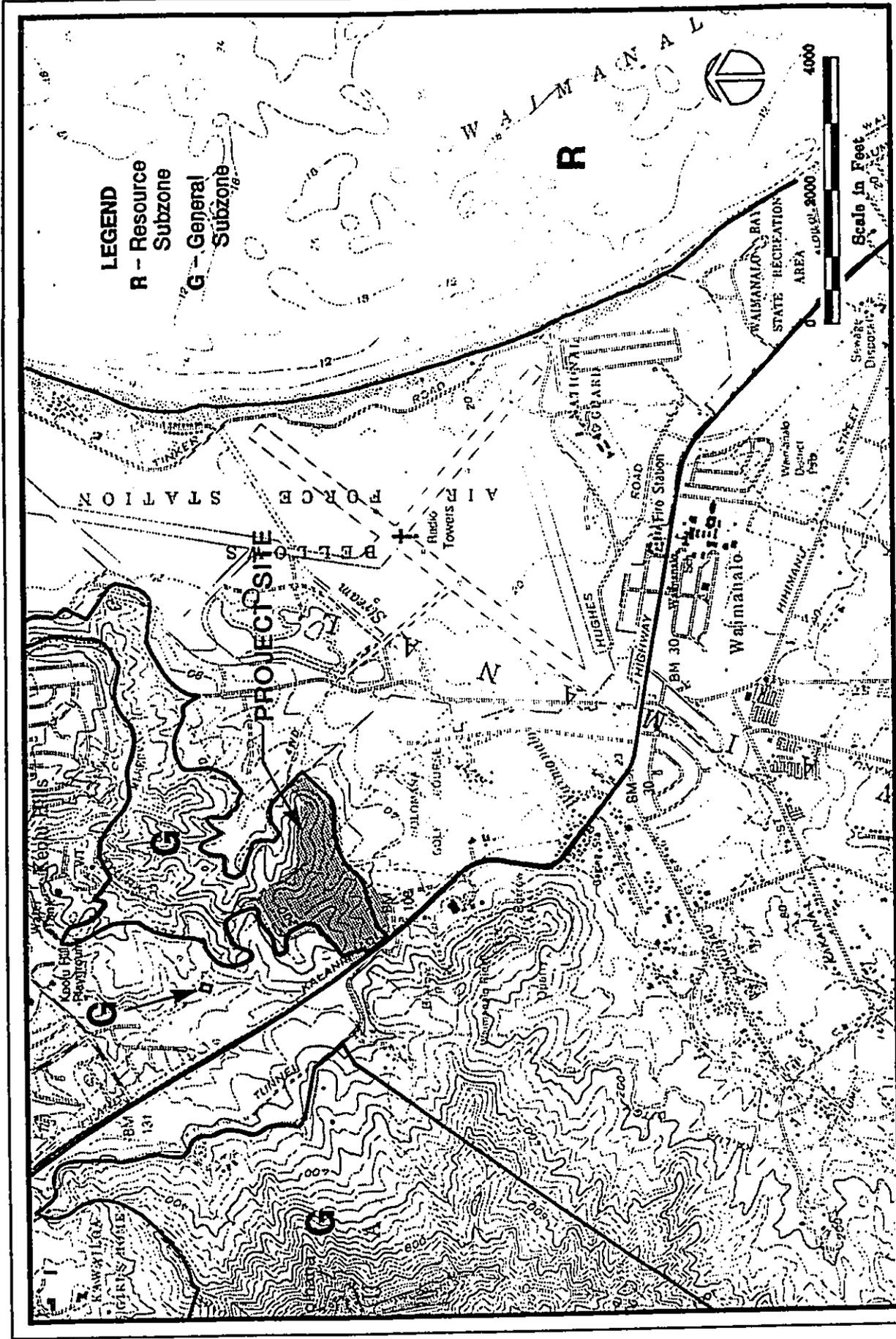
4.2 State Functional Plan

The objectives, policies and implementing actions of the State Recreation Functional Plan are oriented toward improving public recreation opportunities both now and in the future. This Plan evaluates existing and future recreation demand and facilities, and establishes policies to promote an overall conservation ethic, preservation and restoration of significant natural and historic resources, proper management of resources, enhance educational programs, and consolidate State and County governmental functions. Other objectives of the plan include "guiding State and County agencies in acquiring and preserving lands of recreational value, and ensuring public access to recreational areas."

The expansion of the golf course would utilize lands suitable for recreation without impacting significant natural and historic resources. Public access to the facility is also ensured as the golf course will continue to cater primarily to local/resident golfing community.

4.3 State Land Use District

Pursuant to Chapter 205, Hawaii Revised Statutes (HRS), all lands in the State of Hawaii are classified into one of four land use designations: Urban, Rural, Agricultural, and Conservation. The project site lies within land designated as Conservation District. The Conservation District subzone designation is General Subzone (see Figures 4-1 and 4-2).



**OLOMANA
GOLF COURSE
EXPANSION**

Fig. 4-2

CONSERVATION DISTRICT SUBZONE MAP

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Wilson Okamoto & Associates, Inc.

The objective of the General Subzone is to "designate open space where specific conservation uses may not be defined, but where urban uses would be premature". (Section 13-2-14 Administrative Rules of the Department of Land and Natural Resources). Boundaries for the general subzone include lands with topography, soils, climate, or other related environmental factors that may not be normally adaptable or presently needed for urban, rural, or agricultural use. Included are lands suitable for farming, flower gardening, operation of nurseries or orchards, and grazing.

The proposed use is considered a "conditional use" and requires a Conservation District Use Application from the Board of Land and Natural Resources.

4.4 Office of State Planning

In 1991, by Legislative request, the Office of State Planning (OSP) prepared a report on golf course development in Hawaii to assess the cumulative environmental, social, and economic impacts, and to recommend regulations for golf course development. The report, *Golf Course Development in Hawaii, Impacts & Policy Recommendations*, was completed in January 1992 and reflects OSP's position on this issue. The report is geared towards providing land use guidance for the proposed development of new golf courses in the State of Hawaii.

The report generally recommends that land use criteria as well as physical resources of the site such as aquifers, watersheds, wetlands, and critical habitats be considered in land use decisions. Secondly, conditions appropriate for the site would be included such as buffers around streams, wetlands, and coastal waters, inspection and monitoring of pesticide and fertilizer use, preservation of archaeological and cultural sites, and community benefits such as jobs for local residents and public play times.

The OSP report finds that golf courses are generally not consistent with the Conservation District and that reclassification to another district should be sought. The present Olomana Golf Course is within the State Urban District, but the estimated 12 acres of expansion area are proposed within the Conservation District. While the report does not distinguish the development of new golf courses as compared with the expansion of an existing course, the proposed use at the scale envisioned is not incompatible with conservation values. Open space and view planes would not be affected and there are no significant watershed or natural resource values on the project site.

4.5 Oahu General Plan

The Oahu General Plan of the City and County of Honolulu outlines the broad-range objectives and policies for future development to the year 2010. Waimanalo is designated

as a "Rural" area intended to maintain lands to support agricultural pursuits, a relatively open and scenic setting, and a small town country atmosphere with low density of uses.

4.6 Koolaupoko Development Plan

The Koolaupoko Development Plan (DP) is one of eight plans for the City and County of Honolulu which provides relatively detailed schemes for implementing and accomplishing the objectives and policies of the Oahu General Plan at the regional level. The plan establishes the desired sequence, patterns, and characteristics of future land uses and public facilities. The Koolaupoko DP area spans from Kaoio Point at the northern end of Kaneohe Bay to Makapuu Point, and extends inland to the crest of the Koolaus.

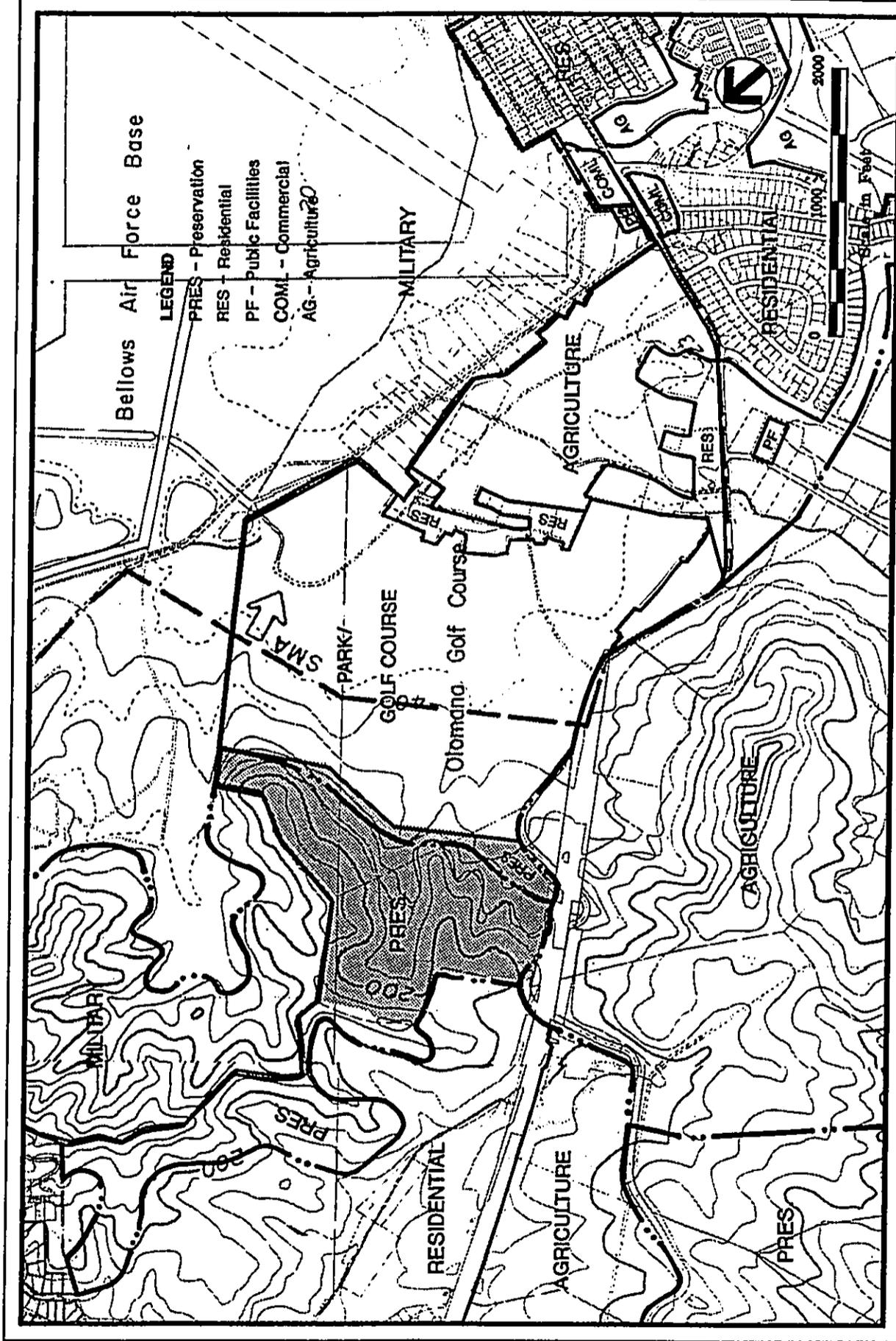
Development priorities for the Koolaupoko DP area relevant to the Waimanalo area include the improvement of cost effective flood control facilities, public facilities improvements for transportation and wastewater systems, expansion of beach parks and accesses, and water resources improvements to support agricultural and aquacultural uses.

As shown by the DP Land Use map in Figure 4-3, the project site is designated "Preservation", with adjacent and surrounding lands designated to reflect existing land uses consistent with the rural character of the area.

The DP Public Facilities map illustrated in Figure 4-4 indicates that a water system is programmed within six years along Kalaniana'ole Highway fronting the project site. Also, a solid waste facility, a park and golf course are indicated within the limits of the Bellows Air Force Station (AFS). The park and golf course public facilities designation on the Bellows AFS was the result of an application in 1986 from the City Department of Parks and Recreation (DPR). This designation appears to have been based on expectation for the release of surplus lands by the Air Force for public recreational use. There are no active City plans for park or golf course development at Bellows AFS (personal communication with Mr. Donald Griffin, DPR).

4.7 Zoning

The City and County of Honolulu Land Use Ordinance (LUO) regulates land use in accordance with adopted land use policies, including the Oahu General Plan and DP. Under the current LUO zoning, the proposed project site is designated P-1 (Restricted Preservation District) as are all lands designated within the State Conservation District (See Figure 4-5). The purpose of the preservation districts is to preserve and manage major open space and recreation lands and lands of scenic and other natural resources value. City zoning controls do not apply within the P-1 district, as all uses, structures, and development standards are regulated by the State Board of Land and Natural Resources. Upon selection

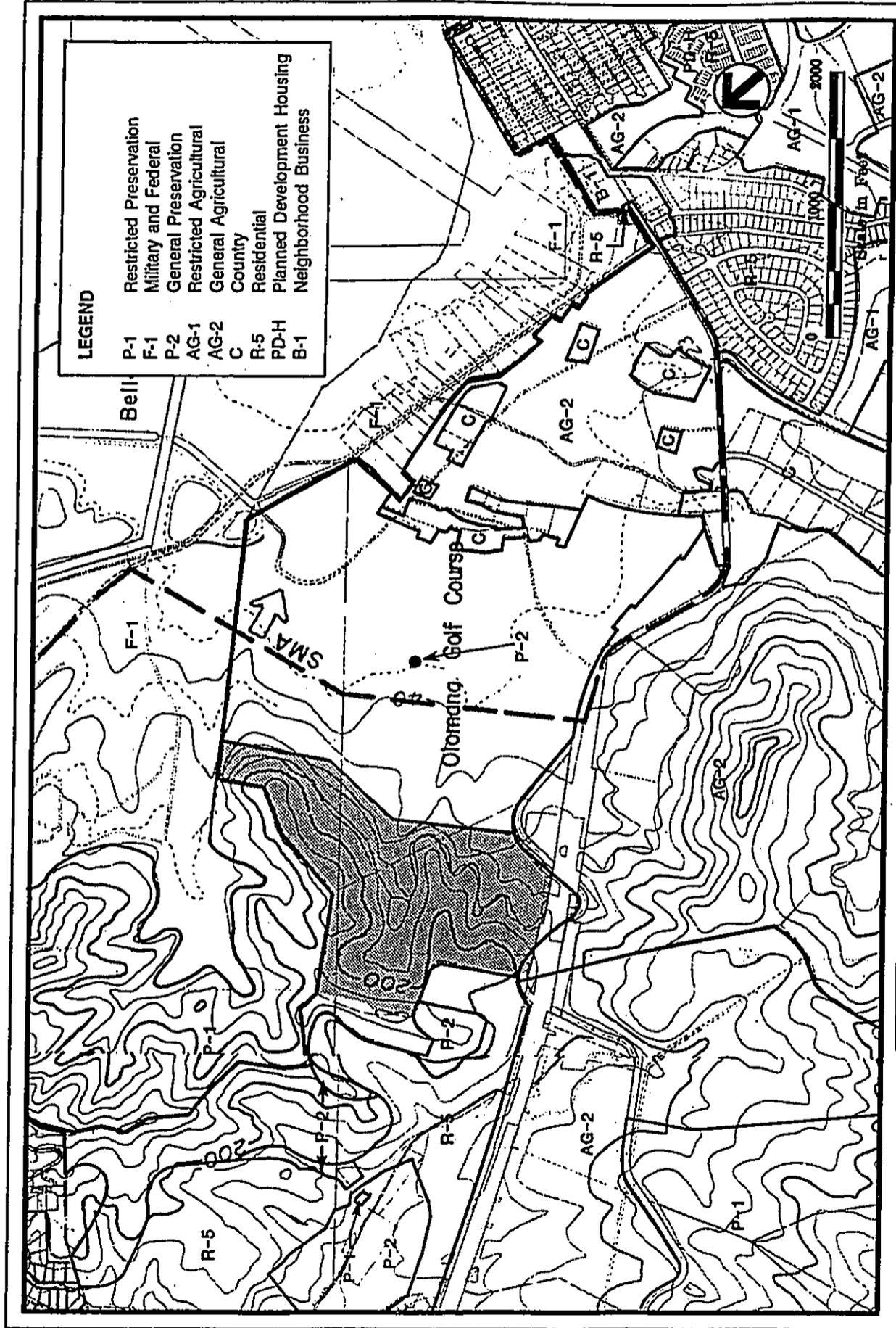


**OLOMANA
GOLF COURSE
EXPANSION**

Fig. 4-3

DEVELOPMENT PLAN LAND USE MAP

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**OLOMANA
GOLF COURSE
EXPANSION**

Fig. 4-5
ZONING

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of a conceptual plan for redevelopment of the existing golf course, the applicant will contact the Department of Land Utilization regarding any applicable Land Use Ordinance requirements.

4.8 Special Management Area

The City and County of Honolulu regulates coastal development under the Special Management Area (SMA) rules authorized under the Hawaii Coastal Zone Management Law, Chapter 205A, HRS. The objectives, policies and SMA guidelines relate to the protection of coastal resources and minimizing adverse impacts to shoreline areas. As shown on Figure 4-5, portions of the existing golf course are within the SMA, but the project site lies outside of the SMA boundaries.

SECTION 5 - PROBABLE IMPACTS AND MITIGATIVE MEASURES**5.1 Short-Term Construction-Related Impacts****5.1.1 Water Quality**

Short-term impacts on water quality due to construction and grading activities are expected to be negligible. There are no surface water bodies or streams on the project site. An abandoned reservoir which was once part of a ditch irrigation system is no longer functional. Coastal water quality would not be affected since the project site is approximately one mile from the coast at its nearest point.

Grading will generally consist of excavation, hauling, and placement of on-site material to create undulations, embankments and some relatively level playing surfaces. Preliminary estimates of rough grading quantities for each conceptual plan are as follows:

Concept Plan A:	Cut =	45,500 cy
	Fill =	24,400 cy
Concept Plan B:	Cut =	3,300 cy
	Fill =	5,600 cy
Concept Plan C:	Cut =	1,100 cy
	Fill =	4,800 cy

Any excess material from cut areas will be redistributed within the existing golf course. Based on the rough grading estimates, Concept Plans B and C would result in the least disturbance and change to the existing topography.

All grading will be in accordance with the City and County of Honolulu's grading ordinance. Erosion control measures including temporary desilting basins, berms, swales, grassing and watering will be employed as may be necessary during grading operations. These measures will be included in the preparation of an erosion control plan which will be submitted for City review and approval at the time of grading permit application. Additionally, in accordance with the Federal Clean Water Act, a National Pollutant Discharge Elimination System (NPDES) Permit as required by the Department of Health for clearing, grading, and excavation activities will be obtained. Proposed drainage improvements will also be coordinated with the Army Corps of Engineers.

5.1.2 Flora and Fauna

The vegetation on the project to be displaced by grading and landscaping consists entirely of non-native, introduced species of trees and vegetation. Birds observed during an ornithological survey also consist of common and introduced species. No endemic or rare and endangered species were identified and no native ecosystems would be affected by any grading and construction activities.

5.1.3 Archaeological Resources

One historic site consisting of a set of parallel ditches and a reservoir was identified as formerly part of the Waimanalo Sugar Company's irrigation system. The ditches, reservoirs, and fields were abandoned in the late 1940's with the closure of Waimanalo Sugar Company. The historic ditch and reservoir are considered "likely to yield information important to prehistory or history". It should be noted, however, that the identified ditch and reservoir are not a part of the mauka Waimanalo Ditch System which has been determined eligible for the Hawaii and National Register of Historic Places. This aside, there were no visible signs of prehistoric agricultural or habitation modifications observed during the survey.

Based on the recommendations of the archaeological survey, it is proposed that further documentation of the site be undertaken in consultation with the State Historic Preservation Division, including:

- (1) further research on the Waimanalo sugar irrigation system and how the ditches in the project area functioned as components of the overall system;
- (2) scale drawings of sample sections of the ditch and reservoir;
- (3) subsurface testing to affirm construction techniques; and
- (4) full evaluation of ditch conditions to suggest possible selective preservation of good sections for possible incorporation into the proposed golf course expansion design.

5.1.4 Air Quality and Noise

Ambient air quality is expected to temporarily decrease during construction activity. The principal pollutants will likely be fugitive dust and hydrocarbon emissions or exhaust fumes. Sources of these pollutants include excavation activities, hauling of construction materials and debris, construction vehicles and equipment, addition of vehicles owned by construction employees, and traffic congestion. Emissions from construction vehicles and equipment will be minimized through proper maintenance procedures.

The short-term effects on air quality during construction will be mitigated by compliance with the Department of Health Administrative Rules, Title 11, Chapter 60, Air Pollution

Control. Control measures to reduce fugitive dust include frequent wetting down of loose soil areas, and covering of dirt-hauling trucks. Watering the area twice a day is estimated to reduce dust emissions by up to 50 percent. The establishment of landscaping early in the construction schedule will also help to control potential dust problems.

During the short-term, construction activities will create a temporary increase in noise levels in the project area. It will be the contractor's responsibility to minimize construction noise impacts through compliance with all applicable regulations. In this regard, the contractor will be responsible for providing and maintaining noise attenuating equipment. Should noise levels exceed the allowable levels specified under Title 11, Chapter 43 (Administrative Rules, Department of Health), the contractor is required to obtain a noise permit.

5.1.5 Traffic

Short-term construction impacts to traffic are not anticipated to be significant. Construction equipment and vehicles will enter and exit the project site from Kalaniana'ole Highway primarily during off-peak hours. To minimize potential traffic impacts, all movement of heavy construction vehicles will be scheduled during off-peak hours, and if necessary, personnel and adequate signage will be employed to ensure traffic safety.

5.2 Potential Long Term Impacts

5.2.1 Water Quality

Other than rainfall runoff, there are no surface flows through the project site. Ground water in the vicinity of the project site may be affected by the application of fertilizers and pesticides, but there are no potable water sources underlying or downgradient of the project site. The Underground Injection Control boundary line established to protect drinking water sources lies mauka of the project site, indicating the absence of any drinking water sources in the project area. The closest potable ground water source is located approximately one mile from the project site.

Fertilizers are normally applied only to the tees, greens, fairways and part of the roughs of a golf course. The primary fertilizer elements of concern for water quality impacts are nitrogen and phosphorus. Phosphorus is attached tightly to soils and moves little if any from the site of application. Nitrogen is not bound to the soil and moves readily with water, but turf grasses rapidly uses the nitrogen, unless there is a heavy rainfall following application (Murdock and Green, 1991). To avoid any adverse impacts, fertilizer applications will not be made when heavy rains are imminent or when the ground is saturated.

The pesticides approved for use on golf courses are known to degrade relatively rapidly. Avoidance of over-irrigation and the application of best management practices will decrease the likelihood of vertical movement. On the existing golf course, pesticide use is kept to a minimum and used only when needed. On average, an estimated 20 gallons per year of various approved pesticides are applied, spread among 3 or 4 applications during the growing season. Pesticide types vary depending on the particular problem encountered, such as worms or cinchbugs.

5.2.2 Flora and Fauna

Flora and fauna on the project site consists exclusively of introduced species which precludes any adverse impacts on native ecosystems. Approximately 12 acres of the 56-acre parcel will be developed for golf course use and remaining areas will be left in their existing natural state. In Hawaii, none of the pesticides approved for use on golf courses have been shown to adversely affect birds or other beneficial wildlife. The U.S. Fish and Wildlife Service will be consulted in the configuration and design of the proposed ponds in the existing golf course area.

5.2.3 Drainage

Development of the golf course expansion area will require about 12.2 acres for tees, fairways, greens, golf cart pathways, and buffer areas. With the reduction in heavily vegetated areas, storm runoff is expected to increase by approximately 18 cfs for a 10-year storm and 27 cfs for 50- and 100-year storms. These increases are relatively small compared to the total runoff produced by the entire drainage area involved, and are expected to follow the existing drainage system of the golf course. Drainage improvements within the golf course can be made to accommodate the additional flows from the project site.

Flooding problems associated with the existing golf course will likely continue particularly with heavy 50- and 100-year storms. The creation of additional surface water and detention basin areas will help to alleviate existing flooding problems by retarding the quantity and intensity of runoff to problem areas.

A major benefit of the proposed expansion and realignment of the existing golf course is that additional ponds or water features may be included to serve as detention basins to retard storm water flows. Measured in terms of the additional surface water areas which would be available upon reconfiguration of the golf course, the proposed improvements would provide between 19 to 69 percent additional storage capacity. Alternative A would provide the greatest increase in storage capacity (69 percent), followed by Alternative B (23 percent) and Alternative C (19 percent). While flooding problems associated with 50- and 100-year storms are expected to recur even with the implementation of these mitigative measures, the

golf course will be less susceptible to flooding and closure during the smaller storms. By using the additional area, more of the course can be built outside of the problem flooding areas.

5.2.4 Air Quality

Airborne drift from the application of pesticides are presently controlled on the existing golf course through several methods of application. A wind gauge is used and chemicals sprayed during periods of low wind speeds. The sprayer operates with a canopy which encases spray jets and greatly reduces drift. Foam or blue dye used with applications also serves as a drift control agent. Anti-drift coagulants are also used to make droplets bigger and minimize chemical drift. Granular applications of fertilizers do not create any airborne drift.

5.2.5 Visual Resources

Significant visual impacts are not anticipated as a result of the golf course expansion. Its construction will require the use of only a small portion of the 56-acre parcel, and will be designed to incorporate as much of the natural terrain and landscape as a visual buffer to mitigate potential view impacts from the highway and neighboring areas. Significant open spaces and public views in the Koolaupoko DP area and the Waimanalo Viewshed would remain unaffected. Expansion of the golf course would preserve the existing open space character of the property both visually and functionally.

5.2.6 Public Services and Utilities

Water. Based on the existing golf course water usage and an expansion area of approximately 12 acres, the additional water usage will be approximately 4,400 gallons per day (gpd) during the winter months and 31,600 gpd during the summer months. Whereas other courses commonly use 800,000 to 1 million gpd to irrigate, Olomana Golf Links during the past year averaged only about 140,000 gpd, with the highest use at 220,000 gpd.

Because of indications that the BWS will not supply the additional water required for irrigation of the golf course expansion area, alternative sources will be considered. Water supply for the expansion area is expected to be provided from additional storage capacities within the ponding basins of the existing golf course area.

Wastewater. No significant increases in wastewater are expected to be generated with the expansion of the golf course since the present golf course play is already at maximum usage. The existing private wastewater treatment system will continue to accommodate wastewater from the clubhouse.

Roads and Traffic. Traffic is not expected to increase with the proposed expansion since the golf course will remain as an 18-hole golf course and is already being used to its maximum potential.

5.2.7 Socio-Economic Impacts

With the expansion of the golf course, no direct socio-economic impacts are anticipated. Nearby residential subdivisions are separated from the golf course by the steep ridges and terrain of the area. Although the golf course will be improved, it will continue to cater primarily to local resident golfers and provide green fees at below market rates. Green fees are subject to approval by the DLNR in accordance with the terms of the State lease.

SECTION 6 - ALTERNATIVES

6.1 No-Action Alternative

The no-action alternative would leave the adjacent area in its current natural state, and existing portion currently used for a residence, corral and trucking operation may continue. There would not be any golf course-related impacts which would occur with the improvements, including grading, drainage, and water supply. Drainage problems with the existing golf course would continue unabated, resulting in periodic closures of the course due to flooding. Due to its short playing length, the golf course would not be able to provide a challenging course which could host championship tournament play and enhance the recreational experience for resident golfers.

6.2 Alternative Development Concepts

Three alternative development concept plans have been developed to use a portion of the 56-acre parcel for golf course expansion. Alternative A would use an additional 12 acres, while Alternatives B and C would use approximately 10 acres (See Section 2.4 and accompanying figures). Each of the alternatives would accommodate portions of up to three golf holes and enable the realignment of the existing golf course.

Existing ponds and waterways within the golf course would be expanded under each of the alternatives to increase storage capacity and improve flood control. For Alternatives A and B, a new storage pond would be added at the west end of the existing course adjacent to the expansion area. For Alternative C, one hole on the northeast side of the present course (Hole No. 5) which is more susceptible to flooding is eliminated.

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AGENCY COMMENTS
AND RESPONSES

AGENCY COMMENTS

FEDERAL

U.S. Department of the Army, Operations Division

STATE OF HAWAII

Department of Health

Department of Land and Natural Resources

Division of Land Management
Commission on Water Resource Management
Division of Forestry and Wildlife
Division of Water and Land Development*
Historic Preservation Division

University of Hawaii Environmental Center

CITY AND COUNTY OF HONOLULU

Planning Department

Board of Water Supply

Department of Land Utilization

OTHER

Hawaii's Thousand Friends*

* No response required

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(711)



REPLY TO ATTENTION OF Operations Division

DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, HONOLULU
FORT SHAFTER, HAWAII 96858-5440

April 2, 1993

RECEIVED
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DEPARTMENT OF LAND & NATURAL RESOURCES
STATE OF HAWAII

Mr. John P. Keppeler, II
Acting Chairperson
Department of Land and Natural Resources
State of Hawaii
P. O. Box 621
Honolulu, Hawaii 96809

Handwritten signature

Dear Mr. Keppeler:

We have reviewed the Conservation District Use Application OA-2604 for the Olomana Golf Course Expansion, Waimanalo, Oahu, Hawaii, TMK: 4-1-13: 11. The project would expand the existing Olomana Golf Course onto approximately 12.2 acres of adjacent State-owned land and allow reconfiguration of the existing course by lengthening some holes and providing additional ponding areas for retention of storm waters

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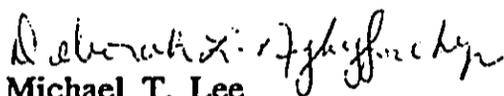
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Based on the information provided in the application, the expansion project does not involve any work in waters of the United States; therefore, a Department of the Army (DA) permit is not required for construction within the 12.2-acre expansion area. The reconfiguration of the existing golf course is not described in any detail in the application; however, its location in a low-lying area with poor drainage conditions and susceptibility to frequent flooding makes it likely that wetlands subject to Corps regulatory jurisdiction are present.

The applicant should have a wetland delineation of the existing golf course performed and submitted to the Corps for verification. If any mechanized clearing, grading, or filling occurs within the delineated wetland areas, a DA permit would be required. By copy of this letter, we are informing the applicant of the need to coordinate with the Corps on any improvements to the existing golf course site.

We appreciate the opportunity to review this application. If there are any questions on this determination, please contact the Operations Division at 438-9258 and refer to file number NP 93-076.

Sincerely,


Michael T. Lee
Chief, Operations Division

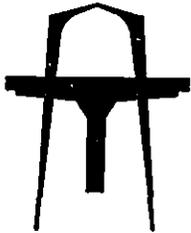
Copies Furnished:

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HI 96795

Wilson Okamoto & Associates, Inc., P.O. Box 3530, Hon., HI 96811

3171-01
May 17, 1993

**WILSON
OKAMOTO
& ASSOCIATES, INC.**



**ENGINEERS
ARCHITECTS
PLANNERS**

1907 S. BERETANIA STREET
HONOLULU, HAWAII 96826
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FAX: (808) 946-2253

Mailing address:
P. O. Box 3530
Honolulu, Hawaii 96811

Mr. Michael T. Lee
Chief, Operations Division
Department of the Army
U.S. Army Engineer District, Honolulu
Fort Shafter, Hawaii 96858-5440

Subject: Conservation District Use Application OA-2604
Olomana Golf Course Expansion, Waimanalo, Oahu

Dear Mr. Lee:

This is in response to comments provided in your letter of April 2, 1993 (NP 93-076) regarding the subject project.

In connection with the proposed expansion of the golf course, improvements to the existing golf course will be needed to effect the reconfiguration plans. As requested, proposed drainage and golf course improvements will be coordinated with the Corps of Engineers, including the preparation of a wetland delineation and submittal of a Department of the Army permit as may be required.

We appreciate your review of the Conservation District Use Application for the subject project.

Sincerely,

A handwritten signature in cursive script that reads "Rodney Funakoshi". The signature is written in black ink and is positioned above the typed name.

Rodney Funakoshi
Project Manager

RYF/ry

cc: Cathy Tilton, DLNR-OCEA
OEQC



JOHN WAIHEE
GOVERNOR OF HAWAII

RECEIVED



JOHN C. LEWIN, M.D.
DIRECTOR OF HEALTH

OA-2604 1639

33 MAR 31 A 8 00
STATE OF HAWAII
DEPARTMENT OF HEALTH
P. O. BOX 3378
HONOLULU, HAWAII 96801

DEPARTMENT OF LAND & NATURAL RESOURCES
STATE OF HAWAII
March 29, 1993

In reply, please refer to:

93-064/epo

CT

1993
MAY
10:33

STATE
OF
HAWAII

To: The Honorable Keith W. Ahue, Chairperson
Department of Land & Natural Resources

From: John C. Lewin, M.D. *John C. Lewin*
Director of Health

Subject: Conservation District Land Use Application

Applicant: Olomana Golf Links, Inc.
File No.: OA-2/5/93-2604
Request: Expand Existing Golf Course (12 acres)
Location: Waimanalo, Oahu
TMK: 4-1-13: 11

Thank you for allowing us to review and comment on the subject application.
We have the following comments to offer:

Water Pollution

A National Pollutant Discharge Elimination System (NPDES) permit is required for any discharge to water of the State including the following:

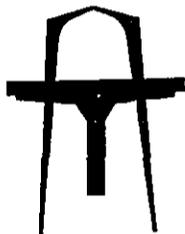
1. Storm water discharges relating to construction activities for projects greater than five acres;
2. Storm water discharges from industrial activities;
3. Construction dewatering activities;
4. Cooling water discharges less than one million gallons;
5. Ground water remediation activities; and
6. Hydrotesting water.

Any person wishing to be covered by the NPDES general permit for any of the above activities should file a Notice of Intent with the Department's Clean Water Branch at least 90 days prior to commencement of discharge to waters of the State.

Any questions regarding this matter should be directed to Mr. Denis Lau of the Clean Water Branch at 586-4309.

3171-01
May 17, 1993

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P. O. Box 3530
Honolulu, Hawaii 96811

Mr. John C. Lewin, M.D.
Director of Health
P.O. Box 3378
Honolulu, Hawaii 96801

Subject: Conservation District Use Application OA-2604
Olomana Golf Course Expansion, Waimanalo, Oahu

Dear Dr. Lewin:

This is in response to comments provided in your letter of March 29, 1993 (ref. 93-064/epo) regarding the subject application.

In connection with the proposed expansion of the golf course, the applicant intends to comply with any Department of Health requirements, including any National Pollutant Discharge Elimination System permits which may be required.

We appreciate your review of the Conservation District Use Application.

Sincerely,

Rodney Funakoshi

Rodney Funakoshi
Project Manager

RYF/ry

cc: Cathy Tilton, DLNR-OCEA
OEQC

✓

JANUARY 14, 1993

MEMORANDUM:

TO: OFFICE OF CONSERVATION AND ENVIRONMENTAL AFFAIRS

FROM: LAND MANAGEMENT *Wm. Jones*

SUBJECT: CDUA OA-2604--PROPOSED EXPANSION OF OLOMANA GOLF COURSE
AT WAIMANALO, OAHU (4-1-13:11)

Olomana Golf Links currently operates on the abutting state owned lands (4-1-13:10) under General Lease No. S-4095 for golf course purposes. Olomana Golf Links also has a Revocable Permit from us on another parcel abutting the golf course (TMK 4-1-13:12) for General Agriculture purposes (Golf Course nursery operations). The subject property is currently under Revocable Permit to Mr. Thomas Noa, Sr. (R.P. S-4869). We understand that Mr. Noa has no objections to the proposed golf course expansion and is prepared to relocate, with the assistance of Olomana Golf Links, should the proposed golf course expansion be approved.

As the only state-owned golf course on Oahu, Olomana has cooperated with our efforts to allow the public to play golf at rates below those of comparable courses on Oahu. Olomana has also been sensitive to providing these recreational opportunities to the local "resident" population as opposed to the tour group markets.

We support Olomana's efforts to improve the quality of the golf course by this proposed expansion. It stands to reason that the public's recreational opportunity will also be enhanced by improvement to the golf course. Also, the state will benefit from the possible added exposure that would result if Olomana were successful in attracting tournament play at their improved facility.

Olomana Golf Links is aware of the fact that in the event the Board approves their propose land use, DLNR will sell a lease a public auction for the land use. Olomana Golf Links also understands that the State makes no assurances that Olomana Golf Links will be the successful bidder.

We appreciate the opportunity to provide comments on this request. Should you have any questions regarding this matter, please feel free to contact Mr. Dean Uchida at 587-0414.

cc: Ms. Himeno

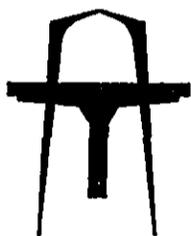
DLNR
OCEA

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CE...

3171-01
May 17, 1993

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& ASSOCIATES, INC.**



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P. O. Box 3530
Honolulu, Hawaii 96811

Mr. Mason Young
Administrator
Division of Land Management
Department of Land and Natural Resources
1151 Punchbowl Street
Honolulu, Hawaii 96813

Subject: Conservation District Use Application OA-2604
Olomana Golf Course Expansion, Waimanalo, Oahu

Dear Mr. Young:

This is in response to comments provided in your memorandum of January 14, 1993 to OCEA regarding the subject application.

As you have noted, Olomana Golf Links caters to the local golfing public with green fees below that of comparable golf courses on Oahu. The proposed expansion will improve the quality of the existing golf course by providing a more challenging layout and alleviating drainage problems.

We appreciate your supportive review of the Conservation District Use Application.

Sincerely,

Rodney Funakoshi
Project Manager

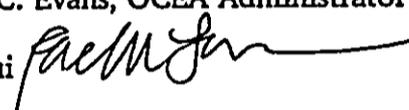
RYF/ry

cc: Cathy Tilton, DLNR-OCEA
OEQC

State of Hawaii
DEPARTMENT OF LAND AND NATURAL RESOURCES
Commission on Water Resource Management
Honolulu, Hawaii

DEC 7 1992

MEMORANDUM

TO: Mr. Roger C. Evans, OCEA Administrator
FROM: Rae M. Loui 
SUBJECT: Olomana Golf Course Expansion, Waimanalo, Oahu

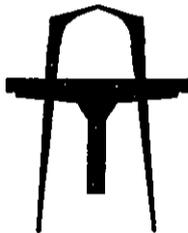
Our review of the CDUA and associated EA indicates the absence of any natural stream, surface water body, or potable-quality ground water aquifer that might be impacted by the golf course expansion project. Also, our understanding is that the developer's disposition of the site's abandoned irrigation ditches and reservoir will be coordinated with DLNR's Historic Preservation Division.

While the developer contemplates the development of a water system to irrigate the golf course, his report makes no reference to a source of water supply. We would find acceptable the use of floodwater detention basins as the water source. If, however, ground water wells or off-site streams are being considered as supply sources, we would remind the developer that appropriate permits will be required from the Commission on Water Resource Management.

GM:ky

3171-01
May 17, 1993

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& ASSOCIATES, INC.



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Mailing address:
P. O. Box 3530
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Ms. Rae M. Loui
Commission on Water Resource Management
Department of Land and Natural Resources
1151 Punchbowl Street
Honolulu, Hawaii 96813

Subject: Conservation District Use Application OA-2604
Olomana Golf Course Expansion, Waimanalo, Oahu

Dear Ms. Loui:

This is in response to comments provided in your memorandum of March 29, 1993 to OCEA regarding the subject application.

The source of water for the proposed expansion of the golf course is expected to be provided from additional storage capacities within ponding basins of the existing golf course area.

We appreciate your review of the Conservation District Use Application.

Sincerely,

A handwritten signature in cursive script that reads "Rodney Funakoshi".

Rodney Funakoshi
Project Manager

RYF/ry

cc: Cathy Tilton, DLNR-OCEA
OEQC

OA-2604

Department of Land & Natural Resources
Division of Forestry and Wildlife

MEMORANDUM:

December 7, 1992

TO: Roger Evans, OCEA

FROM: Michael G. Buck, Administrator



SUBJECT: CDUA for the Olomana Golf Course Expansion, File No. OA-2604

We recommend that the applicant consult with the U.S. Fish and Wildlife Service in the configuration and design of the proposed pond. The pond should be designed in such a way as to attract waterbirds that frequent the area. Other than this recommendation, we have no objections to the proposed request.

cc: Oahu District

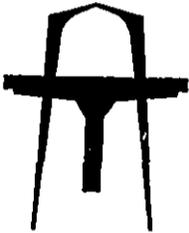
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3171-01
May 17, 1993

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& ASSOCIATES, INC.



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Mailing address:
P. O. Box 3530
Honolulu, Hawaii 96811

Mr. Michael G. Buck
Administrator
Division of Forestry and Wildlife
Department of Land and Natural Resources
1151 Punchbowl Street
Honolulu, Hawaii 96813

Subject: Conservation District Use Application OA-2604
Olomana Golf Course Expansion, Waimanalo, Oahu

Dear Mr. Buck:

This is in response to comments provided in your memorandum of December 7, 1992 to OCEA regarding the subject application.

As requested, the U.S. Fish and Wildlife Service will be consulted in the configuration and design of the proposed ponds to enhance waterbird habitat.

We appreciate your review of the Conservation District Use Application.

Sincerely,

Rodney Funakoshi
Project Manager

RYF/ry

cc: Cathy Tilton, DLNR-OCEA
OEQC



File No. OA-2604

Date: March 19, 1993

Factual Comment

We understand that irrigation water for the golf course will be obtained from the municipal water system and that the disposition of the onsite non-functional ditches and reservoirs will be coordinated with the State Historic Preservation Division.

Signature: George S. Matrone

December 28, 1992

LOG NO: 6940
DOC NO: 9212TD53

MEMORANDUM

TO: Roger C. Evans, Administrator
Office of Conservation and Environmental Affairs

FROM: Don Hibbard, Administrator
Historic Preservation Division 

SUBJECT: Application for Proposed Use of State-Owned
Conservation District Lands, Review for Chairperson's Signature
(Olomana Golf Links, Inc.) (File No: OA-2604)
Waimanalo, Ko'olaupoko, O'ahu
TMK: 4-1-13: 11



The draft environmental assessment (DEA) prepared as part of this application contains as appendix B an archaeological reconnaissance survey of this property (Stride, Borthwick, and Hammatt 1992). The historical background research for this work indicates that the lower portion of this land was used by the Waimanalo Sugar Company (WSC) to cultivate sugar cane. The sloping lands above the old sugar cane fields contain remnants of the WSC irrigation system, including a reservoir and sections of ditch, which have been assigned State site number 50-80-15-4524. The features that make up this site are all identified on maps prepared by WSC in the 1930s. It is unlikely that the sloping lands above the old sugar cane fields were used in traditional Hawaiian times because of the difficulty involved in bringing water to them, the marginality of the soils for agriculture, and the presence nearby of more suitable lands for both agriculture and habitation. The lack of traditional Hawaiian surface historical sites reported in the reconnaissance survey report is probably a function of their absence, rather than their being missed during survey.

The DEA presents several alternate plans for the expansion of the golf course into conservation lands. All of these are located primarily upon the lands used for sugar cane cultivation. In the event a conservation district use permit is issued and a final expansion plan is developed, the applicant will need to identify lands outside the old sugar cane fields that will be affected by development and complete a surface and subsurface inventory survey of affected lands prior to construction.

If you have any questions call Tom Dye at 587-0014.

TD:amk

OA-2604

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DLNR
OCEA

April 22, 1993

LOG NO: 7869
DOC NO: 9304TD29

MEMORANDUM

TO: Edward E. Henry, Acting Administrator
Office of Conservation and Environmental Affairs

FROM: *for landy*
Don Hibbard, Administrator
Historic Preservation Division

CT

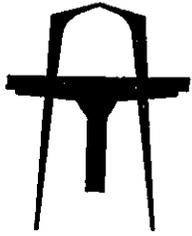
SUBJECT: Conservation District Use Application, Expand Existing Golf Course onto
Approximately 12.2 Acres of State-Owned Land Located Adjacent to the
Existing Course (Olomana Golf Links, Inc.)
(File No. OA-2/5/93-2604)
Waimanalo, Ko'olaupoko, O'ahu
TMK: 4-1-13: 11

The applicant feels, on the basis of an overlay of a map of the proposed golf course expansion alternatives on the 1935 Waimanalo Sugar Company field map, that the surface or subsurface inventory surveys recommended in our earlier comments are not warranted. Since we have not had the opportunity to review a map that shows the relationship of the proposed golf course expansion alternatives to the old sugar cane lands we cannot concur with the recommendation that inventory surveys are not warranted. Therefore, we request that we be given an opportunity to review such a map and offer our comments on suitable conditions prior to issuance of a Conservation District Use Permit. Until then, we cannot evaluate the impacts of this project on significant historic sites.

TD:bek

3171-01
May 17, 1993

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& ASSOCIATES, INC.**



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Mailing address:
P. O. Box 3530
Honolulu, Hawaii 96811

Mr. Don Hibbard
Administrator
Historic Preservation Division
Department of Land and Natural Resources
33 South King Street, 6th Floor
Honolulu, Hawaii 96813

Subject: Conservation District Use Application OA-2604
Olomana Golf Course Expansion, Waimanalo, Oahu

Dear Mr. Hibbard:

This is in response to comments provided in your memoranda of December 28, 1992 and April 22, 1993 to OCEA regarding the subject application.

Your initial recommendation was that, once a final plan is developed, the applicant will need to identify lands outside the old sugar cane fields that will be affected by development and complete a surface and subsurface inventory survey of affected lands prior to construction. In overlaying the proposed expansion alternatives on the 1935 Waimanalo Sugar Company field map, only a few tee areas amounting to less than a quarter of an acre lie outside the former sugar cane lands. These are also on steeper sloping lands on which the Division acknowledges is unlikely to have been used in traditional Hawaiian times. Based on this, we do not feel that a surface or subsurface inventory survey of these areas is warranted.

In response to your subsequent request for an opportunity to review maps showing the relationship of the proposed golf course and the former cane lands, enclosed are these maps at comparable scales.

We appreciate your review of the Conservation District Use Application.

Sincerely,

Rodney Funakoshi
Project Manager

RYF/ry

Enclosures

cc: Cathy Tilton, DLNR-OCEA
OEQC

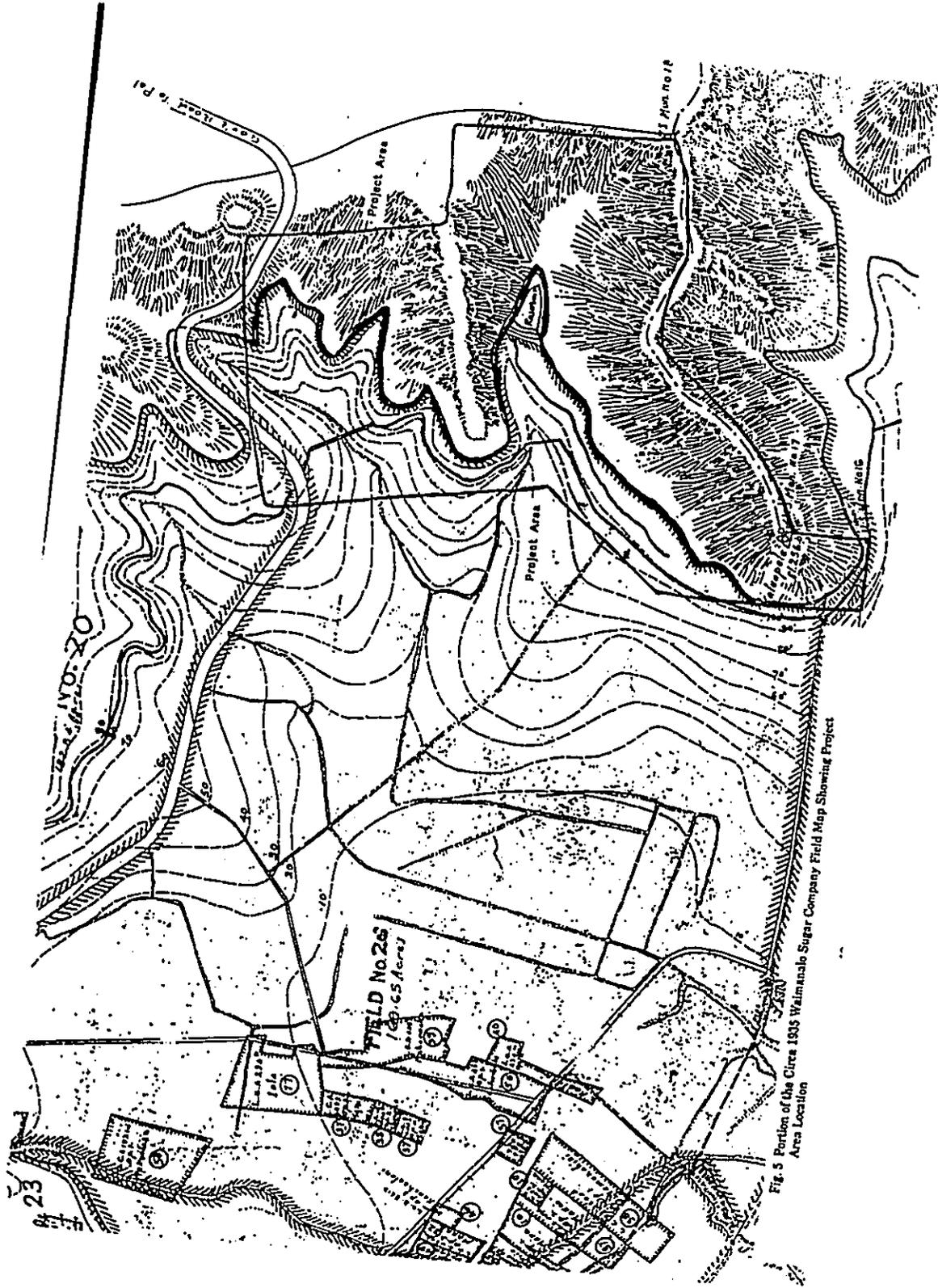
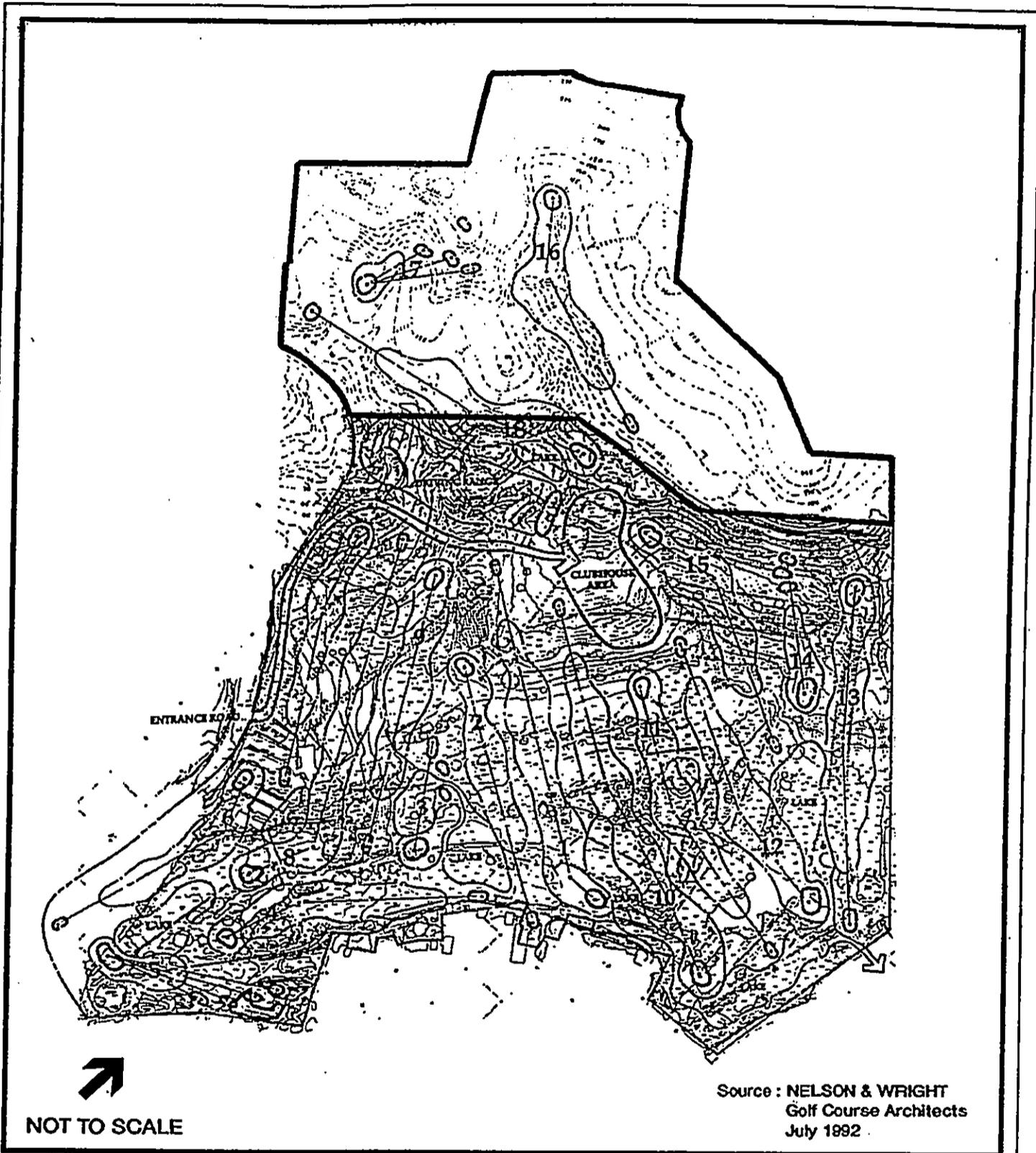


Fig. 5 Portion of the Circa 1935 Waimanalo Sugar Company Field Map Showing Project Area Location



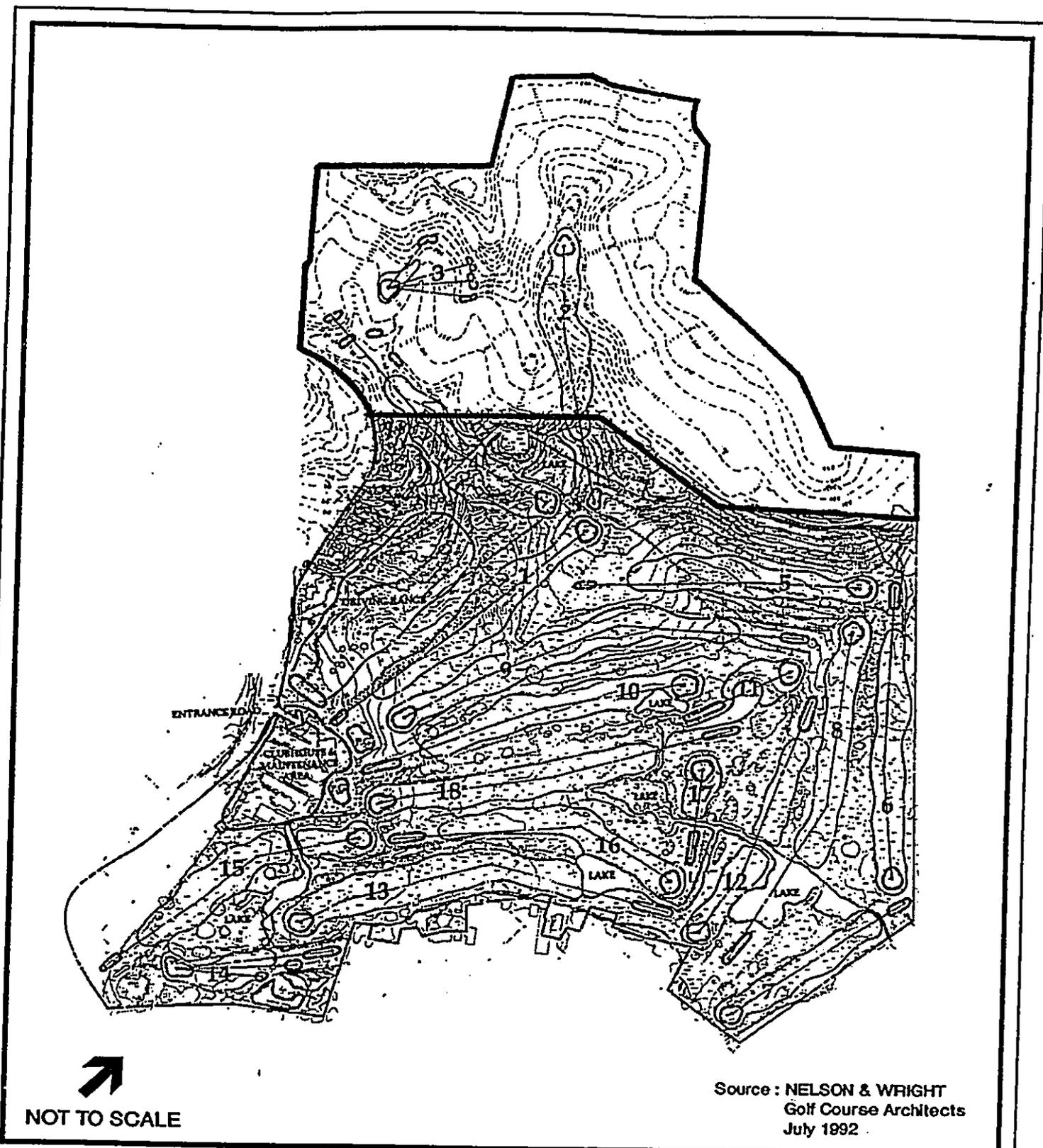
**OLOMANA
GOLF COURSE
EXPANSION**

PRELIMINARY CONCEPT PLAN A

Fig. 2-2

Prepared for :
OLOMANA GOLF LINKS, INC.

Prepared by :
Wilson Okamoto & Associates, Inc.



NOT TO SCALE

Source : NELSON & WRIGHT
Golf Course Architects
July 1992

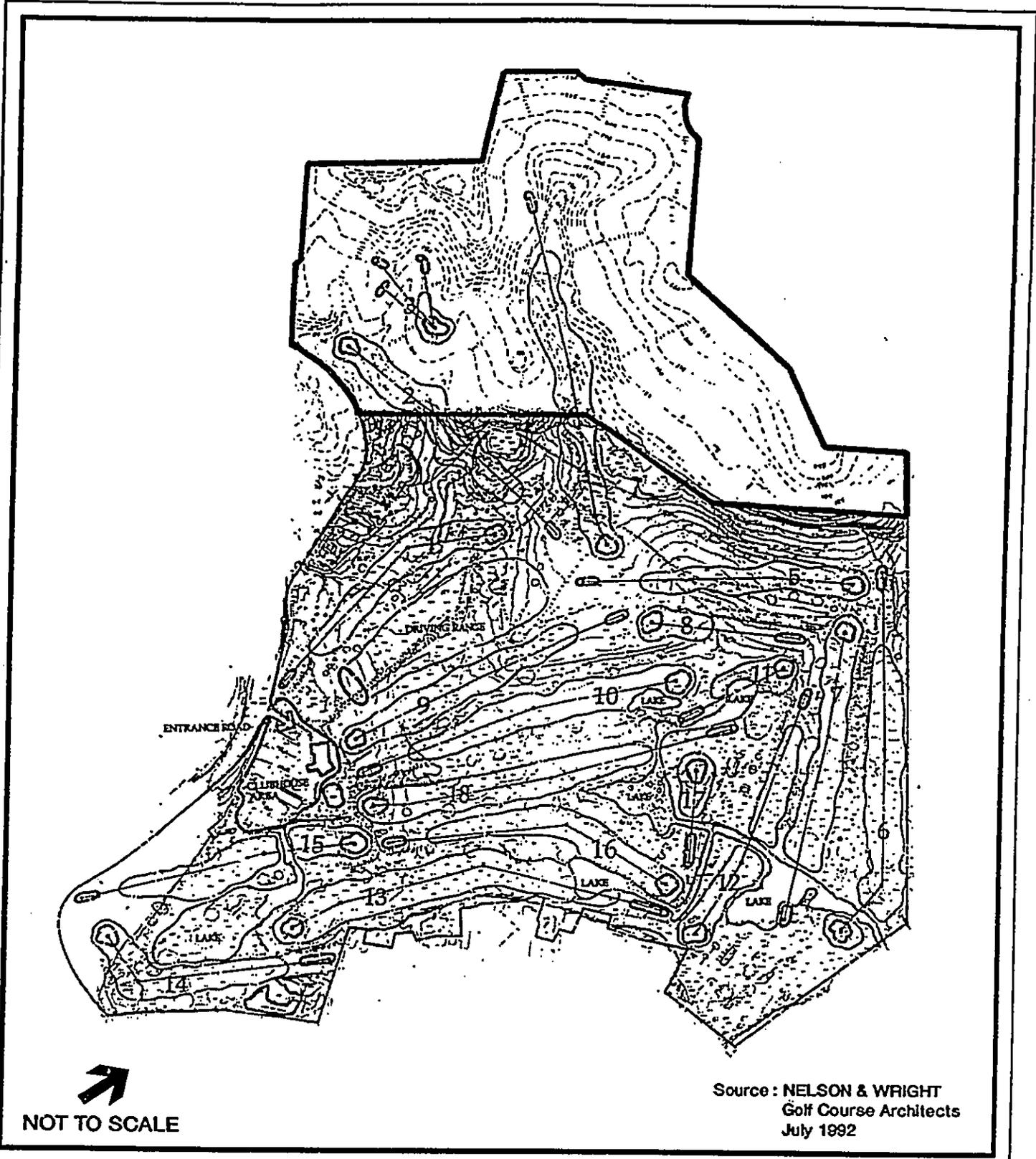
OLOMANA GOLF COURSE EXPANSION

PRELIMINARY CONCEPT PLAN B

Fig. 2-3

Prepared for :
OLOMANA GOLF LINKS, INC.

Prepared by :
Wilson Okamoto & Associates, Inc.



**OLOMANA
GOLF COURSE
EXPANSION**

PRELIMINARY CONCEPT PLAN C Fig. 2-4

Prepared for : Prepared by :
OLOMANA GOLF LINKS, INC. Wilson Okamoto & Associates, Inc.



University of Hawaii at Manoa

Environmental Center
A Unit of Water Resources Research Center
Crawford 317 • 2550 Campus Road • Honolulu, Hawaii 96822
Telephone: (808) 956-7361

APR 22 1993
EA:00

Ms. Cathy Tilton
Department of Land and Natural Resources
1150 Punchbowl Street
Honolulu, Hawaii 96813

Dear Ms. Tilton:

Draft Environmental Assessment
Olomana Golf Course Expansion
Waimanalo, Oahu

The referenced project proposes an expansion of the existing 18-hole golf course onto 12.2 acres of adjacent land in the Conservation District, in order to provide for a more challenging course and to help alleviate existing drainage problems. The expansion area would support up to three golf holes and allow a reconfiguration of the existing course to lengthen some holes, and provide additional ponding areas for the retention of storm waters.

Our review of the Draft Environmental Assessment (EA) was prepared with the assistance of Paul Ekern, Agronomy and Soil Science (Emeritus); and Elizabeth Gordon, Environmental Center.

Pursuant to the Environmental Impact Statement (EIS) Rules (Section 11-200-9; 11-200-10; 11-200-12, H.A.R.), EAs are intended to provide sufficient information to evaluate the significance of potential impacts. Our reviewers have highlighted a number of areas where additional information would contribute to a better basis for decision making, and we suggest that the Final EA be expanded to address these concerns.

Climate (Section 3.1.1)

In the sentence on page 15 which starts "In the vicinity of the project site..." should the mean annual rainfall read 5.5 inches or 55 inches? The EA should also cite the source of these rainfall statistics.

Topography and Soils (Section 3.1.2.)

What is the genetic origin for the Alaeloa soils with regard to hydrology? (page 15)

Ms. Cathy Tilton
April 22, 1993
Page 2

Flood Hazard and Drainage (Section 3.1.4)

The opening paragraph of this section states that the area is outside the 500 year flood plain. However, it then goes on to discuss apparently significant flooding problems, "Flooding occurs in portions of the existing golf course several times a year during periods of heavy rainfall, and during major storms when water levels reach greater than 5 feet above sea level, the entire golf course becomes inundated." Furthermore, it describes the 50 and 100 year storms including estimates of the runoff from the 12.2 acres for a 10, 50, and 100 year storm. How can the runoff for a 50 and 100 year storm be the same value? How were these runoff estimates derived?

The EA needs to reference the drainage studies and flood reports prepared to address the frequent flooding problems in the existing golf course area (page 19). How were the estimates, in cubic feet per second (cfs), for existing storm water runoff derived (page 21)?

Drainage (Section 5.2.3)

How do the storm water figures on page 42 compare with those on page 21? Are the figures given on page 42 in addition to the base estimates given on page 21? If so, this should be stated more clearly since the development will increase the flooding by about 70 percent. The decision of a negative declaration largely depend on the evaluation of flooding, hence it is important that impacts on flooding not be underestimated. What is the potential storage capacity in relation to flood volumes, not just in terms of peak flows? What is the area of draw down, or how fast is surface water removed? Does it percolate or run-off? How is the run-off managed?

Thank you for the opportunity to review this Draft EA. We hope that our comments will be helpful in the preparation of the Final EA.

Sincerely,

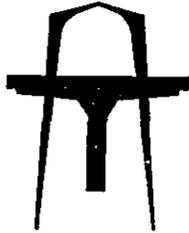


Jacquelin N. Miller
Associate Environmental Coordinator

cc: OEQC
Olanana Golf Links, Inc.
Wilson Okamoto and Associates, Inc.
Roger Fujioka
Paul Ekern
Elizabeth Gordon

3171-01
May 17, 1993

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& ASSOCIATES, INC.



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P. O. Box 3530
Honolulu, Hawaii 96811

Ms. Jacquelin N. Miller
Associate Environmental Coordinator
Environmental Center
Crawford 317
2550 Campus Road
Honolulu, Hawaii 96822

Subject: Draft Environmental Assessment
Olomana Golf Course Expansion, Waimanalo, Oahu

Dear Ms. Miller:

This is in response to comments provided in your letter of April 22, 1993 to the DLNR Office of Conservation and Environmental Affairs regarding the subject project.

The sections in the EA regarding climate and soils will be corrected and revised as suggested.

With respect to flood hazard and drainage, some clarification appears warranted. The 12-acre expansion area, referred to as the project site, lies in Zone X (area determined to be outside the 500-year flood plain). This expansion area does not experience any flooding problems. On the adjacent parcel where the existing golf course lies, however, periodic flooding does occur.

Runoff estimates for the expansion area were calculated using accepted methodologies and storm drainage standards of the City and County of Honolulu (rational method of computation). The 50-year and 100-year storms have the same rates of runoff due to similar rainfall intensities in the project area, as shown in the isohyetal maps (attached) from the State Department of Land and Natural Resources (R-73, 1984).

With development of the 12-acre golf course expansion area, storm runoff is expected to increase by approximately 18 cubic feet per second (cfs) for a 10-year storm and 27 cfs for 50- and 100-year storms. This is in addition to the base estimates of 29 and 43 cfs for the 12 acres, but is a very small proportion of the total runoff to the existing golf course from the Waimanalo watershed and surrounding areas.

Flooding and drainage concerns are important for the existing golf course area, and is one of the primary reasons for seeking the proposed expansion area. That flooding problems persist on the present golf course site is well known and not disputed. At the present time, however, the applicant wishes to defer conducting detailed drainage analyses of the existing golf course until the use of and lease for the expansion area are approved (since the

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3171-01
Letter to Ms. Jacquelin N. Miller
Page 2
May 17, 1993

pending CDUA would determine the feasibility of any reconfiguration schemes). At this point, while we are sure that drainage will be improved with the expansion and reconfiguration of the golf course due to increased ponding and storage areas, we are unable to specifically quantify the improvements.

We appreciate your review of the Draft Environmental Assessment for the subject project.

Sincerely,

Rodney Funakoshi

Rodney Funakoshi
Project Manager

RYF/ry

Enclosures

cc: Cathy Tilton, DLNR-OCEA
OEQC

✓

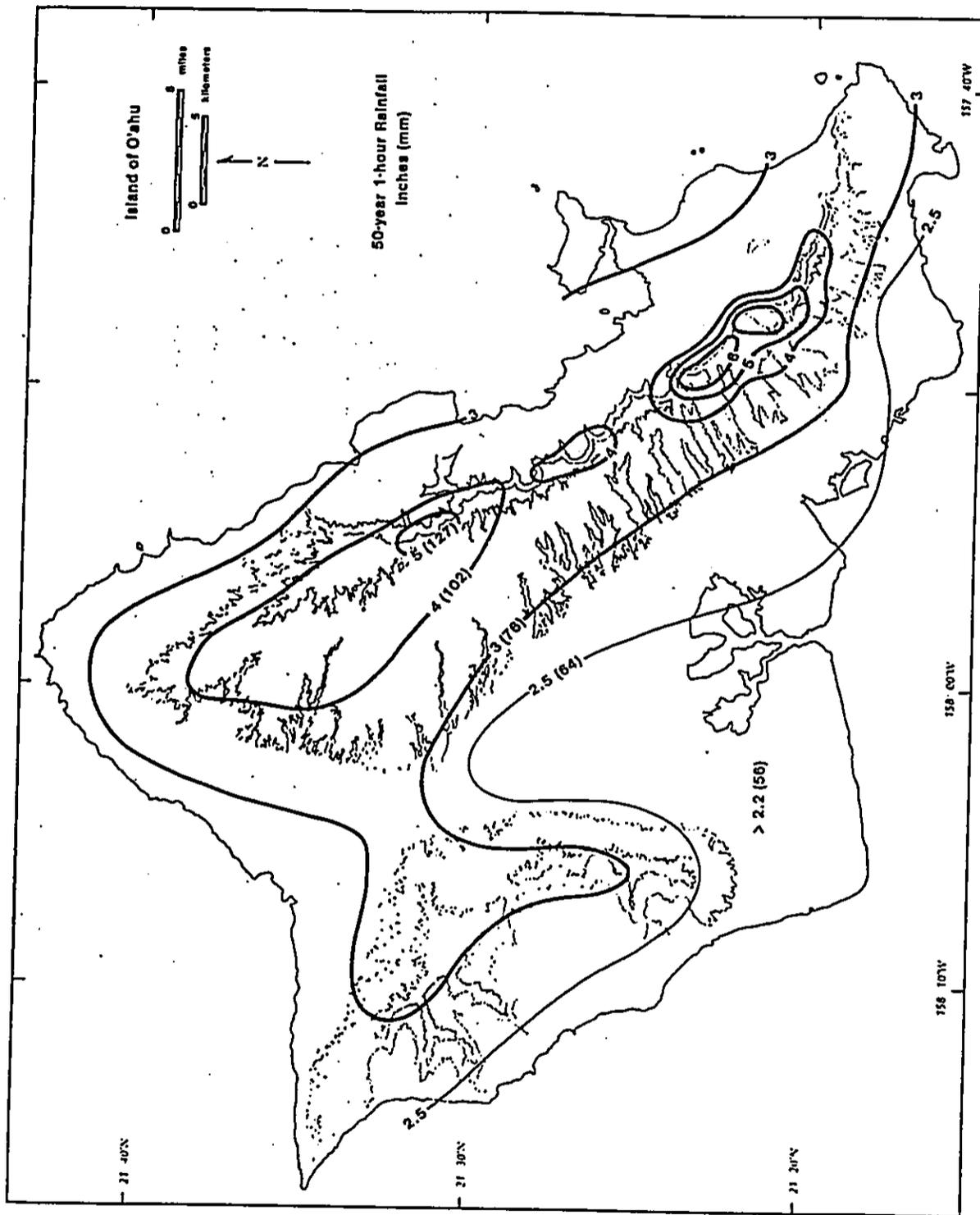


Figure 9. Map of 50-yr 1-hr rainfall, O'ahu, Hawai'i

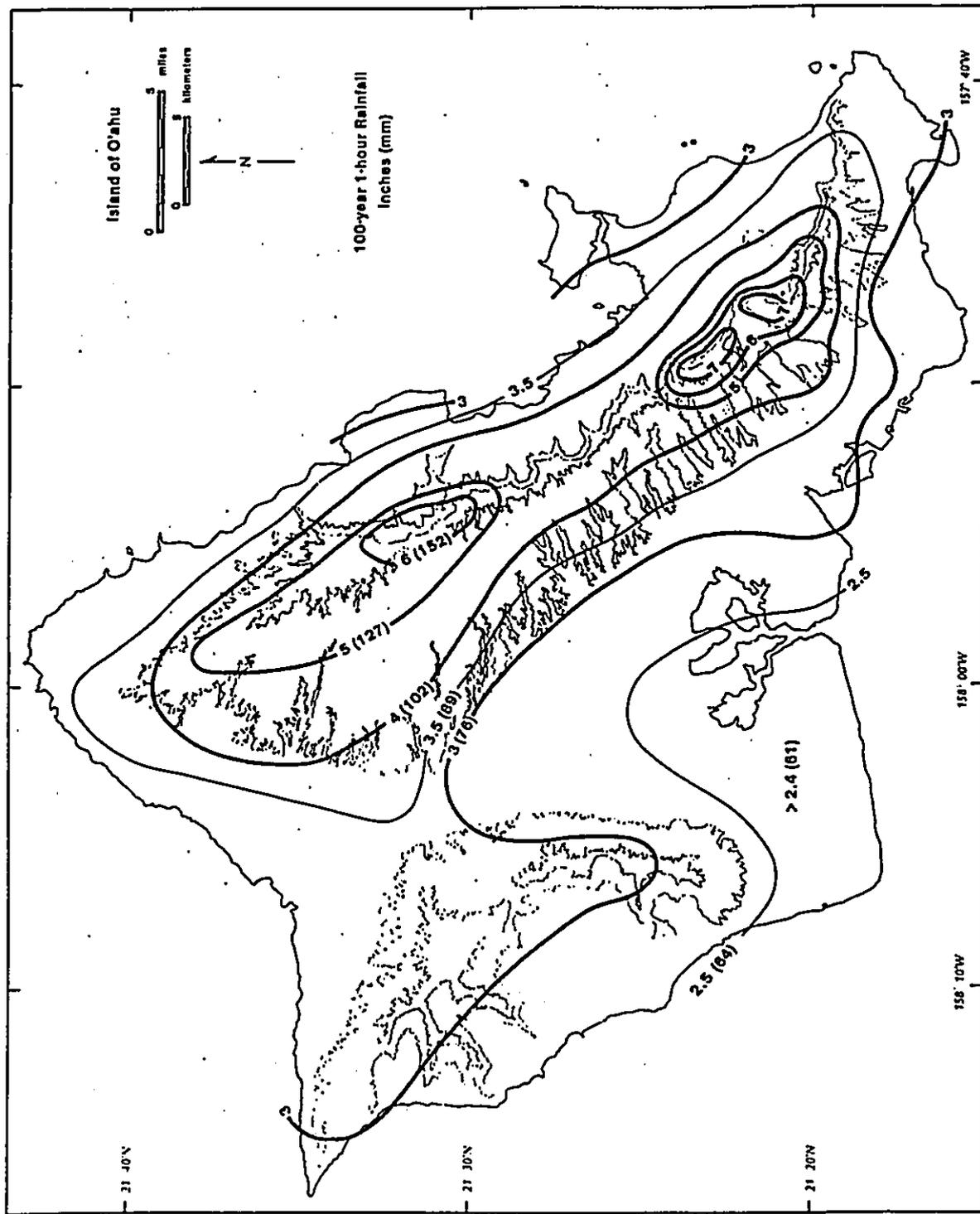


Figure 10. Map of 100-yr 1-hr rainfall, O'ahu, Hawai'i

A

OA-2604

PLANNING DEPARTMENT
CITY AND COUNTY OF HONOLULU
 650 SOUTH KING STREET
 HONOLULU, HAWAII 96813

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93 MAR 23 A 8: 23

FRANK F. FASI
MAYOR



ROBIN FOSTER
CHIEF PLANNING OFFICER

DEPARTMENT OF LAND & NATURAL RESOURCES
 STATE OF HAWAII
 MM 2/93-534

March 18, 1993

Honorable Keith Ahue, Chairperson
 Board of Land and Natural Resources
 Department of Land and Natural Resources
 State of Hawaii
 P.O. Box 621
 Honolulu, Hawaii 96809

C

Dear Mr. Ahue:

Conservation District Use Application (CDUA)
OA-2/5/93-2604 for Olomana Golf Course Expansion,
Waimanalo, Tax Map Key: 4-1-13: 11

We have no objections to the proposed use of Conservation District lands to reconfigure three holes of the existing Olomana Golf Course, provided that: (1) no permanent structures or buildings will be placed in the subject area; and (2) grading will be minimized. We also recommend that the applicant be required to comply with the appropriate golf course development requirements as provided in the Development Plan Common Provisions, Sec. 24-1.15 of the Revised Ordinances of Honolulu. A copy is attached for your information.

Thank you for the opportunity to comment on this proposal. Should you have any questions, please contact Melvin Murakami or our staff at 527-6020.

Sincerely,

Robin Foster

ROBIN FOSTER
Chief Planning Officer

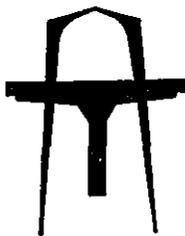
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 DEPT OF LAND & NATURAL RESOURCES

RF:ft

Attachment

3171-01
May 17, 1993

WILSON
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& ASSOCIATES, INC.



ENGINEERS
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PLANNERS

1907 S. BERETANIA STREET
HONOLULU, HAWAII 96826
PH: (808) 946-2277
FAX: (808) 946-2253

Mailing address:
P. O. Box 3530
Honolulu, Hawaii 96811

Mr. Robin Foster
Chief Planning Officer
Planning Department
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Subject: Conservation District Use Application OA-2604
Olomana Golf Course Expansion, Waimanalo, Oahu

Dear Mr. Foster:

This is in response to comments provided in your letter of March 18, 1993 (Ref. MM 2/93-534) regarding the subject application.

No permanent structures or buildings will be placed in the proposed expansion area, and grading will be minimized to the extent necessary for the golf course playing areas.

Regarding your recommendation that the applicant be required to comply with the appropriate golf course development requirements as provided in the Development Plan Common Provisions, we note that an application for a Development Plan Land Use map amendment is not anticipated for the proposed project. Notwithstanding, the proposed golf course expansion and reconfiguration, if approved, will be developed in a manner which addresses the substantive social and environmental quality concerns expressed in the standards and criteria.

We appreciate your review of the Conservation District Use Application.

Sincerely,

Rodney Funakoshi
Project Manager

RYF/ry

cc: Cathy Tilton, DLNR-OCEA
OEQC

ced

1714

BOARD OF WATER SUPPLY
CITY AND COUNTY OF HONOLULU
630 SOUTH BERETANIA STREET
HONOLULU, HAWAII 96843



March 31, 1993

FRANK F. FASI, Mayor
WALTER O. WATSON, JR., Chairman
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SISTER M. DAVILYN AH CHICK, O.S.F.
JOHN W. ANDERSON, JR.
REX D. JOHNSON
MELISSA Y.J. LUM
C. MICHAEL STREET
KAZU HAYASHIDA
Manager and Chief Engineer

30 APR 5
DEPARTMENT OF LAND AND NATURAL RESOURCES
STATE OF HAWAII

Mr. Keith Ahue, Chairperson
Department of Land and Natural Resources
State of Hawaii
P.O. Box 621
Honolulu, Hawaii 96809

CT

Dear Mr. Ahue:

Subject: Your Letter of February 24, 1993 Regarding the Conservation District Use Application (CDUA) for the Proposed Olomana Golf Course Expansion, File No. OA-2604, TMK: 4-1-13: 11, Kalaniana'ole Highway

Thank you for the opportunity to comment on the CDUA for the proposed project. We have the following comments.

1. There is a 1-1/2 inch meter currently serving the proposed expansion site. A three-inch compound meter serves the existing golf course.
2. The Board of Water Supply (BWS) will not provide the additional water required for irrigation of the proposed golf course expansion.
3. The developer should develop nonpotable water sources for irrigation of the proposed expansion. Possible nonpotable sources include brackish water wells, streams or treated wastewater effluent. If an adequate source is available, the use of nonpotable water should not be limited to the golf course expansion but should also include the existing golf course.
4. If a three-inch or larger meter is required to accommodate the project, construction drawings showing the installation of the meter should be submitted for our review and approval.
5. BWS approved reduced pressure principle backflow prevention assemblies should be installed on the domestic water lines immediately after the property valves and prior to any branch piping.

If you have any questions, please contact Bert Kuioka at 527-5235.

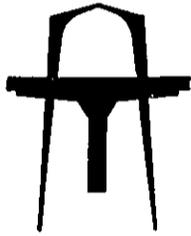
Very truly yours,

KAZU HAYASHIDA
Manager and Chief Engineer

RECEIVED
APR 5 11:30
DEPT. OF LAND AND NATURAL RESOURCES
STATE OF HAWAII

3171-01
May 17, 1993

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Mr. Kazu Hayashida
Manager and Chief Engineer
Board of Water Supply
City and County of Honolulu
630 South Beretania Street
Honolulu, Hawaii 96843

Subject: Conservation District Use Application OA-2604
Olomana Golf Course Expansion, Waimanalo, Oahu

Dear Mr. Hayashida:

This is in response to comments provided in your letter of March 31, 1993 regarding the subject project.

Based on your indication that BWS will not supply the additional water required for irrigation of the golf course expansion area, the applicant is considering alternative sources. At the present time, water for the proposed expansion area is expected to be provided from additional storage capacities within the ponding basins of the existing golf course area.

The applicant will comply with other indicated BWS requirements.

We appreciate your review of the Conservation District Use Application for the subject project.

Sincerely,

Rodney Funakoshi

Rodney Funakoshi
Project Manager

RYF/ry

cc: Cathy Tilton, DLNR-OCEA
OEQC

JOHN WAIHEE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
P.O. BOX 621
HONOLULU, HAWAII 96809

BOARD OF LAND AND NATURAL RESOURCES
DEPUTIES
JOHN P. KEPPELER, II
DONNA L. HANAIKE

AQUACULTURE DEVELOPMENT PROGRAM
AQUATIC RESOURCES CONSERVATION AND ENVIRONMENTAL AFFAIRS
CONSERVATION AND RESOURCES ENFORCEMENT
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FORESTRY AND WILDLIFE
HISTORIC PRESERVATION PROGRAM
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT

FEB 24 10 25 AM '93

FILE NO.: OA-2/5/93-2604
180-Day Exp. Date: 8/4/93
DOCUMENT NO.: 2276

FEB 24 1993

SUSPENSE DATE: 21 Days

The Honorable Donald Clegg, Director
Department of Land Utilization
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

CT

Dear Mr. Clegg:

RE: CONSERVATION DISTRICT USE APPLICATION OA-2604 for
the Olomana Golf Course Expansion at
Waimanalo, Oahu (TMK: 4-1-13:11)

Attached please find Conservation District Use Application No. OA-2604 and our Department's notice to the applicant. We would appreciate your review, and receiving your comments, at your earliest convenience. Please note this is a three-page form. Page 2 is to be limited to your factual responses. Page 3 is to be used for comment and recommendation. Page 3 is not available for public review.* (*Refer to OIP Memorandum dated July 18, 1991 to Honorable William W. Paty.)

Should you have further questions, please call Cathy Tilton of our Office of Conservation and Environmental Affairs at 587-0377.

If no response is received by the suspense date, we will assume there are no comments.

Very truly yours,

JOHN P. KEPPELER, II
Acting Chairperson

DIARR
OCEA

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Attachment

DOC. NO. 0040E

CDUA 15(2)

File No. OA - 2/5/93 - 2604

Date: 2/22/93

Factual Comment

As noted in the Draft Environmental Assessment (DEA), the 12.2-acre golf course expansion area which is the subject of the Conservation District Use Permit Application (CDUA) is not within the Special Management Area (SMA). As such, development of the golf course expansion in this area is not subject to Special Management Area Use Requirements.

Page 8 of the DEA states that "the existing course would be reconfigured to lengthen some of the holes and provide additional ponding area." Section 2.4 of the DEA presents three conceptual alternatives involving modifications to the existing golf course. Although proposed work on the existing golf course is within the State Urban District and is therefore not the subject of the CDUA, we offer the following comments:

The existing golf course is zoned P-2 General Preservation. Golf courses are permitted within the P-2 General Preservation District subject to approval of a Plan Review Use Permit (PRU). The existing golf course is non-conforming because a PRU has not been approved for this facility. Upon selection of a conceptual plan for redevelopment of this area, the applicant should contact Department of Land Utilization regarding Land Use Ordinance requirements.

As is shown in Figure 4-5 of the DEA, a portion of the existing golf course is within the SMA. Development within the SMA, including grading, is subject to approval of a Special Management Area Use Permit (SMP). Land Use Ordinance requirements must be satisfied prior to SMP approval.

cc: Zoning District Changes

A:mem03.as3

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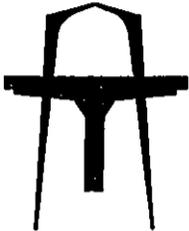
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Signature: Bob Chalchak

3171-01
May 17, 1993

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Mailing address:
P. O. Box 3530
Honolulu, Hawaii 96811

Mr. Donald Clegg
Director
Department of Land Utilization
650 South King Street
Honolulu, Hawaii 96813

Attention: Mr. Art Challacombe

Subject: Conservation District Use Application OA-2604
Olomana Golf Course Expansion, Waimanalo, Oahu

Dear Mr. Clegg:

This is in response to comments provided in your memorandum of March 22, 1993 to the DLNR Office of Conservation and Environmental Affairs regarding the subject project.

As requested, upon selection of a conceptual plan for redevelopment of the golf course, the applicant will contact the Department of Land Utilization regarding Land Use Ordinance requirements.

We appreciate your review of the Conservation District Use Application for the subject project.

Sincerely,

Rodney Funakoshi
Project Manager

RYF/ry

cc: Cathy Tilton, DLNR-OCEA
OEQC

01+-2604



Ke aloha o ko kākou 'āina, 'O la ka mana kū pā'a. Pānoanoa ka 'āina, Mānoanoa ka po'e.
The Love of our land, is the power for us to stand fast. Rare is the land, many are the people.

DATE: 4/15/93
TO: Department of Land and Natural Resources
1150 Punchbowl Street
Honolulu, Hawaii 96813
ATTN: Cathy Tilton
FROM: Donna Wong
RE: OLOMANA GOLF COURSE EXPANSION

93 APR 22 AM 11:21
RECEIVED
CATHY TILTON

We are aware that responding to the negative declaration determination notification in the OEQC Bulletin is not the proper venue for our following remarks but we felt it important to get our comments out early in the process.

We strongly oppose the expansion of the Olomana Golf course onto the adjacent 12.2 acres because of the past history of Olomana Golf Course owner Ken Mizuno. See the attached newspaper articles.

We assume that the Department of Land and Natural Resources was unaware of the activities or the charges against Ken Mizuno and his companies at the time DLNR recommended and BLNR approved the lease agreement for the 12.2 acres in question.

Given the facts that Ken Mizuno is in a Japan jail for tax evasion, and U.S. Federal agencies are investigating involvement in "possible violations of U.S. racketeering and money-laundering statutes", we do not feel it is a wise or prudent use of public land to expand or continue this lease agreement.

If these charges prove to be true the Federal government can confiscate all property acquired by use of defrauded dollars. This then puts the publicly owned 12.2 acres in jeopardy of confiscation.

Because of these facts we urge that the request for expansion be denied and the DLNR re-evaluate the lease agreement with Olomana Golf Course.

2nd Mizuno property seized by U.S. agents

Advertiser Staff
AP News Services

Federal agents have seized a Henderson, Nev., country club owned by Ken Mizuno, the latest in a series of problems for the Japanese high roller.

The Internal Revenue Service and U.S. Customs Service took over the Royal Kenfield Country Club last week.

It was the second time in recent months that a golf course owned by Mizuno was seized by federal authorities.

In August, agents confiscated the Indian Wells Country Club and Hotel near Palm Springs, Calif., as well as a DC-9 jet aircraft belonging to Mizuno.

In addition to the Indian Wells and Royal Kenfield country clubs, Mizuno's holdings include an interest in Olomana Golf Links and two adjoining Diamond Head homes in Hawaii, a restaurant and spa at the Tropicana Hotel in Las Vegas and another mansion in Beverly Hills, Calif.

A search warrant documents executed here in June, federal agents said the Olomana golf course and the Diamond head properties could be subject to seizure, but no such action has been taken to date.

Mizuno has a minor ownership interest in Olomana, which is controlled by his family

members. The Diamond Head homes were purchased in the name of Mizuno's son in 1990 for \$4.8 million.

The Henderson club is expected to remain open, with the government hiring a management company to run the property, as it did at Indian Wells.

Mizuno, 58, was indicted June 19 by a federal grand jury in Las Vegas in connection with a money-laundering investigation.

In June, a Japanese administrator filed an involuntary bankruptcy petition against Mizuno in California, seeking to freeze hundreds of millions of dollars in land, businesses and other assets owned by Mizuno.

Mizuno was arrested in February by Japanese authorities on charges of evading \$44 million in income taxes owed on \$819 million allegedly raised from the sale of fraudulent memberships for a country club northeast of Tokyo.

Authorities said about 52,000 Japanese bought memberships in the Ibaraki Prefecture golf course. Authorities said the course was designed for no more than 2,800 members.

Japanese investigators contend Mizuno had about \$250 million transferred into the United States. Mizuno's U.S. assets are believed to be worth about \$400 million.

9B Saturday 6/20/92

Japan tycoon with isle ties under probe for racketeering

From staff and wire reports

SAN FRANCISCO — A Japanese tycoon spent \$250 million in illegal profits made in Japan to buy property in the United States — including a \$6 million mansion in Honolulu, federal agents say.

Ken Mizuno was arrested in March in Japan for a scam in which he and associates sold 52,000 memberships in a golf club that promised no more than 2,800 members. A U.S. probe was begun at

the request of the Japanese government.

—On Tuesday, agents from the U.S. Customs Service and the U.S. Internal Revenue Service raided the head office of Mizuno's American empire in Tiburon, Calif.

Mizuno bought Windward Oahu's Olomana Golf Links in 1981.

U.S. agents carried away several boxes of business and computer records from his office.

They are looking into possible

violations of U.S. racketeering and money-laundering statutes by Mizuno's holding company, Ken International Inc., and its network of related firms.

According to a search warrant affidavit made public yesterday in the U.S. District Court in San Francisco:

■ Since 1988, Mizuno's companies used wire transfers and travelers checks to transfer huge sums of money here to buy, build and

renovate numerous U.S. properties.

■ They paid \$142 million for the Indian Wells Country Club, resort hotel, racket club and related properties in Palm Desert, Calif.; \$32 million for the Royal Kenfield Country Club and nearby real estate in Henderson, Nev.; nearly \$6 million for a mansion in Honolulu; and \$4 million for a mansion in Beverly Hills.

■ They also own a restaurant

and spa at the Tropicana Hotel in Las Vegas; the Olomana Golf Links; and a corporate jet based in Nevada.

Mizuno allegedly netted \$750 million by defrauding people who bought memberships at the Ibaragi Golf Course in Japan.

—The large number of memberships sold made regular play of golf impossible and made the memberships as valuable as plastic fruit," said a Japanese judge.

Feds grab Mizuno's Palm Springs resort

From staff and wire reports

LOS ANGELES — Federal agents have seized a \$50 million resort near Palm Springs, Calif., owned by high-rolling golfer tycoon Ken Mizuno, who also owns the Olomana Golf Links in Windward Oahu and a Diamond Head mansion.

The Customs Service said it and the Internal Revenue Service seized the Hotel Indian Wells, the Indian Wells Country Club and the Indian Wells Racquet Club.

Mizuno reportedly spent \$160,000 on each of the 150 guest rooms at the newly completed Hotel Indian Wells.

Also seized last week were two Cadillac stretch limousines and two Mercedes-Benz automobiles, according to John Luksic, Customs special agent in charge in Los Angeles.

The property seizures, which totaled about \$50 million, were authorized in a warrant issued by a federal judge in Las Vegas, Luksic said.

He declined further comment, citing an ongoing federal investigation.

Officials at the U.S. Attorney's Office in Honolulu, in contact with investigators in Las Vegas, today said there are no immediate plans to seize Mizuno's Diamond Head mansion on Black Point Road or the Olomana course in Waianalo.

Last week, the Las Vegas Review-Journal said Mizuno, 58, was the target of a multimillion-dollar money laundering investigation and was named in a sealed criminal indictment issued June 19.

The newspaper, citing an unidentified state gambling official, said Mizuno lost \$68 million in two years playing baccarat at The Mirage hotel-casino in Las Vegas.

Mizuno also was targeted in a civil action filed in June seeking to freeze his assets on behalf of 52,000 Japanese residents who bought memberships in a golf club northeast of Tokyo designed for no more than 2,800 members.

Japanese authorities arrested Mizuno in February on charges of evading \$44.4 million in income taxes owed on money raised by sale of the golf club memberships, costing \$13,950 to \$54,280 each.

Mizuno is alleged to have transferred \$248 million from the sale of the bogus memberships to the United States.

It is Japan's largest tax-avoidance case.

Besides Indian Wells, Mizuno owns the Royal Kenfield Golf Course in Henderson, Nev., and a restaurant and spa at the Tropicana Hotel in Las Vegas.

After Bulletin
8/17/72

Advertisements 3/2/92

2 arrested in golf scam

TOKYO — Two businessmen have been arrested in connection with a scam in which 52,000 memberships were sold to a golf club that promised no more than about 2,800 members, investigators said.

Authorities on Saturday arrested Ken Mizuno, 58, on charges of evading \$44.4

million in income taxes. Tax officials said the previous record in Japan for alleged tax fraud was \$28.6 million.

Chikahiko Furuya, 49, was arrested for allegedly evading \$603,300 in taxes on \$1.2 million worth of kickbacks from an advertising agent, prosecutors said.

Officials claim Sanki Co., of which Furuya was a former vice president, made \$819 million since 1987 overselling memberships at the Ibaraki Country Club, northeast of Tokyo. Membership in the club ranged from \$13,950 to \$54,260, news reports say.

Sanki then funneled \$549 million to Ken International Co., a real estate firm headed by Mizuno, and allegedly falsified its tax returns, said officials.

Olomana: Golf links owner wants to expand, improve course

By ELOISE AGUIAR
News Editor

WAIMANALO — A recent bid by Olomana Golf Links to gain more parking and storage space could set the stage for its expansion to a championship golf course.

An agent for the privately owned Waimanalo golf course told the state Board of Land and Natural Resources in July that the owners plan to acquire the land adjacent to the course, which the Department of Land and Natural Resources (DLNR) controls. Jimmy Gomes was before the panel to request a revocable permit (month-to-month lease) for a four-acre parcel abutting the course, now under permit to Beverly Farm.

The land board approved the permit on the land-locked parcel, which Gomes said will be used for overflow parking and temporary storage of golf carts.

Olomana Golf Links paid \$90,000 to Farm after she released her interest in the land, Gomes said, explaining that he and Farm had spoken about releasing her interest, but she had not requested money for it. Farm was willing to give up her interest because she no longer had use for the land after her husband's death.

The parcel, located just past the entrance to the golf course on the Waimanalo side, was used to grow grass for horse feed. Most of the time it was an eyesore in contrast to the manicured course. The property had been cleared by Olomana prior to the board meeting.

"We want to get a little more acreage to make Olomana a championship golf course," Gomes said.

Gomes said that the lease would be temporary until the state puts the land out to bid for a long-term lease later this year. He said that Olomana would be bidding on the property.

Though the temporary lease was approved, there were objections from board members John Arizumi and Christopher Yuen.

Yuen questioned whether leaseholders of state revocable permits should be reaping benefits and suggested that perhaps the state should share in those benefits.

"There's something wrong with someone being paid off to get out

See LINKS on A-7

Sean Press

8/6-12/92

Olomana links needs parking space

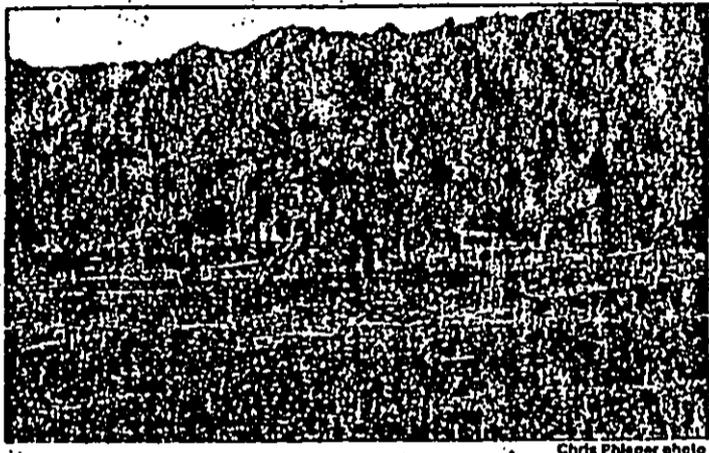
LINKS from A-1 of a state revocable lease," he said.

Arizumi asked that the decision on the request be delayed until the board could discuss it in closed session. He also wanted to get a legal opinion on the situation.

"I'm disturbed about the amount of the transaction," Arizumi said. "I want to discuss the matter further."

Board member Sharon Himeno said she had received telephone complaints from another person who said he might be interested in the Farm parcel. However, no one showed up to oppose Gomes' request.

Gomes said that Clarence Medeiros had objected to his discussions and the final outcome for Farm's parcel. He had spoken with Medeiros about a four-acre parcel, located next to the golf course, that Medeiros is leasing from the state, but was unable to come to any agreement. Gomes told the board that "a party (who had a four-acre



Chris Phleger photo

MORE ROOM: Owners of the Olomana Golf Links would like to use the cleared parcel adjacent to the course (right) for parking and storage area.

parcel next to the course) said he would get off if we give him \$2 million."

Gomes said he also spoke to Thomas Noa Sr., who has a revocable permit for 40 acres of

would have enough land to become a championship course.

"Olomana has been a real good neighbor," he added. "It has put in substantial improvements, built a new club house and upgraded the greens. But most important to us is that 90 percent of its players are local."

He said that DLNR wants to turn its revocable permits into long-term leases to give leaseholders an opportunity to improve the land. The parcels surrounding the golf course will be turned into long-term leases at the end of the year and leaseholders will have the first choice to convert.

If present leaseholders don't meet qualifications or don't want a long-term lease, then the property goes out to bid. The land that the golf course took over would also go out to bid, he said.

According to Young, long-term leases can be assigned to another party, thereby giving leaseholders the option to sell their leases.

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APPENDIX A
BIOLOGICAL SURVEY

**BIOLOGICAL SURVEY REPORT FOR
THE PROPOSED OLOMANA GOLF COURSE EXTENTION**

for

**WILSON OKAMOTO & ASSOCIATES, INC.
1150 SOUTH KING STREET
HONOLULU, HAWAII 96814**

by

**Evangeline J. Funk, Ph.D.
Botanical Consultants
Honolulu, Hawaii
1992**

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INTRODUCTION

A biological survey of the flora and fauna of the proposed Olomana Golf Course extension was carried out on July 2 and 3, 1992. This 56 acre site is located along Kamehameha Highway on the Kailua side of the Olomana Golf Course. At the present time there are two small dwellings, some out buildings, and several horse corrals on the property.

Ornithological Survey

METHODS

One circular plot census and two fixed station observation points (Twenty minutes at each station) were used to determine the relative densities and the species diversity of the bird population at this study site. In order to take advantage of the higher activity levels of birds in the early morning hours, the survey was begun shortly after sunrise and was completed before mid-day.

RESULTS

A single bird habitat, The Reforestation Hillside, is found on this study site. Because the entire site has been extensively modified from its original state, it has value only as an introduced bird habitat. Both species diversity and population densities are high.

The Reforestation Hillside and the adjoining horse corrals provide a rich harvest of seeds and nectar for many species and a large number of introduced birds. This site at one time was probably a reforestation site because of the size and number of trees introduced by territorial forestry (Skolman 1980). The canopy is dominated by ironwood trees (*Casurina equisetifolia* L.), 12 m to 15 m in height, Formosan koa (*Acacia confusa* Merr.) and *Albezzia* (*Albezzia lebbeck* (L.) Benth) 8 m to 12 m in height (Figure 1). In addition there is a wide variety of small trees and shrubs

which provide nesting sites for birds. Silky oak (*Gravillia robusta* A. Cunn.) was in flower at the time of the survey and the trees were filled with white-eyes and bulbuls taking nectar while the finches seemed to favor the ironwood trees. The grassy waste land around the corrals was being used by the common waxbills and a few nutmeg mannikins. The fringes of this forest are heavily draped with the big cucurbitor ivory gourd (*Coccinia grandis* (L.) Voigt). The fruit of this vine is favored by the bulbuls. In turn the bulbuls appear to be spreading the vine further into the forest.

A large number of pea fowl run free and nest among the trees. Common pigeons were also present in fair numbers.



Figure 1. The Canopy of the Reforestation Hillside is Mixed and Varied.

APPENDIX A
BIOLOGICAL SURVEY

ANNOTATED SPECIES LIST

The annotated checklist follows the nomenclature of Pratt, Bruner and Berrett (1987).

Family Zosteropidae: White-eyes

Zosterops japonicus

White-eyes are one of the most widespread introduced bird species in Hawaii. This is an ideal site for these tiny birds. There is water nearby at the golf course and the silk oak trees were providing lots of nectar. Often the trees seemed filled with birds.

Family Passeridae: Old World Sparrows

Passer domesticus (House sparrow)

House sparrows are sometimes called feathered mice. These streaky brown and gray birds are a familiar commensal species and were seen among the houses, in the trees and on fences. No nests were seen.

Family Fringillidae: Cardueline Finches

Carpodacus mexicanus (House finch)

The house finch is a small, sparrowlike bird with a streaked appearance. The head, throat and breast of male birds may vary from dull yellow to bright red. The females and the bodies of males are similar with gray to black streaks of color.

Introduced into Hawaii during the last century, the house finch has adapted and is now widespread throughout the islands. Pairs of birds were seen in the silk oak trees and near the houses.

Family Columbidae: Pigeons and Doves

Streptopelia chinensis (Spotted Dove)

The spotted dove is a large bird which is grayish brown with rosy blushed breast feathers. At the sides and back of the neck is a patch of black with white spots.

The low, repetitive cooing of the spotted dove is common on this site. Several pairs and individuals were seen and appear to be an important part of the bird community of the area. They appeared to favor the open space near the corrals.

Geopelia striata (Zebra Dove)

This ground dwelling, seed eating dove is smaller and even more abundant than the spotted dove. Zebra doves were found in similar densities as the spotted dove in open, weedy places along the roads and in the corrals.

Family Pycnonotidae: Bulbuls

Pycnonotus jocosus (Red-Whiskered bulbul)

This bulbul has clearly defined markings. It is brown above and white below with a sharply pointed, black, top knot. It has a bright cheek patch which is red above and white below, with a black outline. Its tail is white tipped and it has a red spot under its tail. This fairly large bird is common on this site where it favors the fruits of ivory gourd (*Coccinia grandis* (L.) Voigt).

Family Sturnidae: Starlings and Mynas

Acridotheres tristis (Common myna)

The myna is a plump brown bird with a dark head and tail. It has a yellow bill, legs and eyes. It has white markings on its wings and tail which flash when it flies. Its walk is distinctive. Mynas are usually seen in large groups. Many mynas were seen in the ironwood trees.

Family Emberizidae: Emberizine Finches

Paroaria coronata (Brazilian or red crested cardinal)

Several adult brazilian cardinals were seen in the big trees and on the ground near the corrals. The bright red heads of this species make them very easy to recognize.

Cardinalis cardinalis (Northern Cardinal)

The cardinal is a familiar garden bird in most of the lowlands of Hawaii where it feeds on fruits and seeds. Both male and female cardinals were found in low numbers on this site.

Family Ardeidae: Herons, Egrets and Bitterns

Bubulcus ibis (Cattle egret)

Several of these large, white birds were seen flying above the site.

Introduced in 1957 to help control cattle insect pests, cattle egrets have proliferated and are now pests themselves.

Family Phasianidae: Gallinaceous Birds

Palvo cristatus (Pea fowl)

One of the most common birds on this site is the pea fowl. This large bird was introduced into the Hawaiian Islands in 1860 from Asia. It has never flourished in the wild. On the site, the birds appear to be pets. Although they are not feral, they do appear to nest in the forest among the trees.

Family Estrildidae: Waxbills, Mannikins and Parrotfinches

Estrilda astrild (Common Waxbill)

The common waxbill is a small, red-billed finch with a prominent red streak from its bill to its eye. Waxbills have a long tail and brown rump. They feed on grass seeds. Several waxbills were seen feeding near the corrals.

Lonchura punctulata (Nutmeg Mannikin)

Small birds with a brown faces and gray breast and sides, these mannikins form large flocks and are often seen feeding on grass and weed seeds. Nnutmeg mannikins are widespread at all elevations and on all of the islands. A small flock was seen in the weeds near the horse corrals.

INTRODUCTION

Botanical Survey

From 1910 to 1960 the Hawaii Division of forestry was actively engaged in the introduction and planting of millions of trees, shrubs, vines and other plants into the lands assigned to its management (Skolmen 1980). Because of the size and variety of the introduced plants found on the Olomana Golf Course expansion site there can be little doubt that this was an early planting site used for reforestation.

METHODS

Data were collected to determine the make up of the existing vegetation of the site, to ascertain if endangered species are found in the area (USFWS 1991), and to compile an inventory of the present vegetation. The walk-through method was used by a two person team during the data collection phase of the survey. Using existing roads and trails, forays were made to all parts of the site. Access to the lower portion of the site was obtained by way of Olomana Golf Course.

RESULTS

This site is located in the area that Ripperton and Hosaka (Ripperton and Hosaka 1942) called the lower mountain zone. They deemed it tropical and good for tropical crops.

In the Gagne and Cuddihy (In Wagner et al 1990) classification of Hawaiian plant communities, this area falls into the Lowland Mesic Forest category. These areas are found at 30 to 1600 m elevation where the annual rainfall is between 1200 to 3800 m. Within this broad category, the Olomana site would probably fit into either of two smaller sub-divisions, the Common Ironwood Lowland Forest or the Silk Oak Forest.

In either category, the vegetation of the study site is a rich mosaic of introduced trees, vines and herbs. Ironwood trees (*Casuarina equisetifolia* L.) are the emergent trees, reaching a height of 15-20 m. The canopy is made up of silk oak (*Grevillea robusta* Cunn. ex R. Br.), Siris tree (*Albizia lebeck* (L.) Benth), monkeypod (*Samanea saman* (Jacq.) Merr.), senna (*Senna surattensis* (N.L. Burm.) H. Irwin & Barneby), opiuma (*Pithecellobium dulce* (Roxb.) Benth.), java plum (*Eugenia cuminii* (L.) Druse), and Eucalyptus trees to name a few. Where there are gaps in the forest, introduced grasses form dense mats, and near the roads, the big cucurbit, ivory gourd (*Coccinia grandis* (L.) Voight) drapes over even tall trees.

ENDANGERED SPECIES

No proposed or listed, threatened or endangered species were found on the proposed Olomana Golf Course Extension Site (USFWS 1991).

SPECIES LIST

The plant families in the following species list have been alphabetically arranged within two groups, Monocotyledons, and Dicotyledons. The genera and species are arranged alphabetically within families. The taxonomy and nomenclature follow that of St. John (1973) and Wagner, Herbst and Sohmer (1990). For each taxon the following information is provided:

1. An asterisk before the plant name indicates a *plant introduced* to The Hawaiian Islands since Cook or by the aborigines.
2. The scientific name.
3. The Hawaiian name and or the most widely used common name.
4. Abundance ratings are for this site only and they have the following

meanings:

Uncommon = a plant that was found less than five times.

Occasional = a plant that was found between five to ten times.

Common = a plant considered an important part of the vegetation.

Locally abundant = plants found in large numbers over a limited area. For example the plants found in grassy patches.

This species list is the result of an extensive survey of this site during the summer months (July 1992) and it reflects the vegetative composition of the flora during a single season. Minor changes in the vegetation will occur due to introductions and losses and a slightly different species list would result from a survey conducted during a different growing season.

CHECKLIST OF ALL PLANTS FOUND ON THE OLOMANA GOLF COURSE EXPANSION SITE

<u>Scientific Name</u>	<u>Common Name</u>	<u>Abundance</u>
MONOCOTYLEDONES		
GRAMINEAE - Grass Family		
* <i>Bambusa vulgaris</i> Schrad ex Wendl	Bamboo	Locally abundant
* <i>Bothriochloa bladhii</i> (Retz.) Clayton	Beardgrass	Locally abundant
* <i>Brachiaria mutica</i> (Forsk.) Staph	Paragrass	Locally abundant
* <i>Cenchrus ciliaris</i> L.	Buffel grass	Locally abundant
* <i>Cenchrus echinatus</i> L.	Sandbur grass	Locally abundant
* <i>Chloris barbata</i> Swartz	Swollen fingergrass	Locally abundant
* <i>Chloris inflata</i> Link		Occasional
* <i>Cynodon dactylon</i> (L.) Pers.	Bermuda grass	Common
* <i>Digitaria adscendens</i> (HBK) Henr.	Henry's crabgrass	Occasional
* <i>Eleusine indica</i> (L.) Gaertn.	Wiregrass	Common
* <i>Melinis minutiflora</i> P. Beauv.	Molasses grass	Locally abundant
* <i>Panicum maximum</i> Jacq.	Guinea grass	Common
* <i>Paspalum conjugatum</i> Bergius	Hilo grass	Locally abundant
* <i>Rhynchelytrum repens</i> C.E. Hubb	Natal redtop	Common
* <i>Tricachne insularis</i> (L.) Ness	Sourgrass	Occasional
Liliaceae - Lily Family		
* <i>Asparagus plumosus</i> Baker	Asparagus fern	Locally abundant
DICOTYLEDONES		
ACANTHACEAE - Acanthus Family		
* <i>Asystasia gangetica</i> (L.) T. Anders	Chinese violet	Common
AMARANTHACEAE - Amaranth Family		
* <i>Achyranthes aspera</i> L.		Occasional
* <i>Amaranthus spinosus</i> L.	Spiny amaranth	Common
ANACARDIACEAE - Mango Family		
* <i>Mangifera indica</i> L.	Mango	Locally abundant
* <i>Schinus terebinthifolius</i> Raddi	Christmas berry	Occasional
CASUARINACEAE - Casuarina Family		
* <i>Casuarina equisetifolia</i> L.	Ironwood	Common
COMPOSITAE - Sunflower Family		
* <i>Bidens pilosa</i> L.	Spanish needle	Common
* <i>Conyza canadensis</i> Cronq.	Canadian fleabane	Occasional

<u>Scientific Name</u>	<u>Common Name</u>	<u>Abundance</u>
COMPOSITAE - Sunflower Family Con't		
* <i>Emilia sonchifolia</i> (L.) DC	Lalac puale	Common
* <i>Pluchea odorata</i> (L.) Cass.	Pluchea	Common
* <i>Sonchus olerarceus</i> L.	Pualele	Occasional
* <i>Tridax procumbens</i> L.	Coat buttons	Locally abundant
* <i>Verbesina encelioides</i> Cav.	Golden crown-beard	Occasional
* <i>Vernonia cinerea</i> (L.) Less.	Little ironweed	Occasional
* <i>Youngia japonica</i> (L.) DC	Hawksbeard	Occasional
CONVOLVULACEAE - Moringglory Family		
* <i>Ipomoea obscura</i> (L.) Ker-Gawl		Occasional
* <i>Ipomoea triloba</i> L.	Little Bell	Occasional
CUCURBITACEAE - Cucumber Family		
* <i>Coccinia grandis</i> (L.) Voight	Ivory gourd	Common
* <i>Cucumis dipsaceus</i> Ehrenb. ex Spach	Hedgehog Gourd	Occasional
* <i>Momordica charantia</i> Crantz	Balsam apple	Occasional
EUPHORBIACEAE - Spurge Family		
* <i>Chamaesyce hirta</i> L.	Hairy spurge	Common
* <i>Chamaesyce hypericifolia</i> Mellsp.	Graceful spurge	Common
* <i>Chamaesyce prostrata</i> (Ait) Hillsp.	Prostrate spurge	Occasional
* <i>Phyllanthus acidus</i> L.	Otaheite gooseberry	Occasional
* <i>Ricinus communis</i> L.	Castor bean	Occasional
LABIATAE - Mint Family		
* <i>Hyptis pectinata</i> (L.) Poit.	Wild basil	Frequent
LEGUMINOSAE - Bean Family		
* <i>Acacia confusa</i> Merr.	Formosa koa	Common
* <i>Acacia farnesiana</i> L.	Klu	Occasional
* <i>Albizia lebeck</i> (L.) Benth.	Siris tree	Common
* <i>Alysicarpus vaginalis</i> (L.) DC.	One-leaved Clover	Locally abundant
* <i>Cassia leschenaultiana</i> DC.	Japanese tea	Locally abundant
* <i>Crotalaria incana</i> L.	Fuzzy rattle-pod	Occasional
* <i>Crotalaria mucronata</i> L.	Smooth rattle-pod	Common
* <i>Desmanthus virgatus</i> Willd.	Virgate mimosa	Occasional
* <i>Desmodium triflorum</i> (L.) DC		Common
* <i>Enterolobium cyclocarpum</i> (Jacq.) Griseb.	Earpod	Occasional
* <i>Indigofera spicata</i> Frosk.	Indigo	Occasional
* <i>Leucaena leucocephala</i> deWit	Koa-haole	Common
* <i>Medicago polymorpha</i> L.	Bur clover	Locally abundant
* <i>Mimosa pudica</i> L.	Sensitive plant	Locally abundant
* <i>Pithecellobium dulce</i> Benth.	Madras thorn	Occasional

<u>Scientific Name</u>	<u>Common Name</u>	<u>Abundance</u>
LEGUMINOSAE - Bean Family Con't		
* <i>Samanea saman</i> (Jacq.) Merr.	Monkeypod	Occasional
* <i>Senna pendula</i> H. Irwin & Barn.		Occasional
* <i>Senna surattensis</i> H. Irwin & Barn.	Kolomona	Locally abundant
MALVACEAE - Hibiscus Family		
* <i>Abutilon grandifolium</i> Sweet	Hairy abutilon	Uncommon
* <i>Malvastrum coromandelianum</i> Garcke	False marrow	Common
* <i>Sida fallax</i> Walp.	'Ilima	Common
* <i>Sida rhombifolia</i> L.	Cuba jute	Occasional
* <i>Sida spinosa</i> L.	Prickly sida	Occasional
MELIACEAE - Mahogany Family		
* <i>Melia azedarach</i> L.	Neem tree	Occasional
MYRTACEAE - Myrtle Family		
* <i>Eucalyptus sideroxylon</i> A. Cunn	Eucalyptus	Occasional
* <i>Psidium guajava</i> L.	Guava	Occasional
* <i>Syzygium cumini</i> L.	Java plum	Common
PASSIFLORACEAE - Passionflower Family		
* <i>Passiflora suberosa</i> L.	Huehue haole	Occasional
* <i>Passiflora foetida</i> L.	Love-in-a-mist	Occasional
PROTEACEAE - Silk Oak Family		
* <i>Grevillea robusta</i> A. Cunn	Silk oak	Common
PHYTOLACCACEAE - Pokeweed Family		
* <i>Rivina humilis</i> L.	Coral berry	Occasional
RUTACEAE - Citrus Family		
* <i>Murraya paniculata</i> L.	Mock orange	Uncommon
SAPINDACEAE - Soapberry Family		
* <i>Koelreuteria formosana</i> Hayata	Golden rain tree	Uncommon
SOLANACEAE - Tomato Family		
* <i>Nicotiana glauca</i> Grah.	Wild tobacco	Common

<u>Scientific Name</u>	<u>Common Name</u>	<u>Abundance</u>
STERCULIACEAE - Stink tree Family		
* <i>Waltheria indica</i> L.	Hi'aloa, uha-loa	Locally abundant
VERBENACEAE - Verbena Family		
* <i>Lantana camara</i> L.	Lantana	Occasional
* <i>Stachytarpheta jamaicensis</i> Vahl.	Vervain	Common

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APPENDIX B

ARCHAEOLOGICAL SURVEY

RECEIVED
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WILSON OKAMOTO & ASSOC., INC.

**Archaeological Reconnaissance Survey of 56 Acres
for the Proposed Olomana Golf Course Expansion Area
(TMK 4-1-13:11)**

by

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Douglas F. Borthwick, B.A.
and
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for

Wilson Okamoto and Associates

Cultural Surveys Hawaii
August 1992

ABSTRACT

An archaeological reconnaissance survey was conducted on a 56-acre parcel being considered for Olomana Golf Course expansion (T.M.K. 4-1-13:11). The parcel includes areas of steeply sloping terrain which, based on historic research and field observations were not utilized for commercial sugar cane cultivation. However located during the survey was a set of parallel ditches and a reservoir, collectively assigned State Site Number 50-80-15-4524. The ditches were once an active component of the Waimānalo Sugar Company irrigation system. Portions of this system, which are still active are components of State Site 50-80-15-4042 (File Folder 4042 SHPD/DLNR). Though Site -4042 has been declared eligible for inclusion on the National Register of Historic Places the ditches within the project area are not presently within the geographic boundaries of Site -4042 and were thus given a new site number (i.e., 4524). No other archaeological sites were observed. No Land Commission Awards (LCAs) were located within the project area, though numerous LCAs, adjacent to Waimānalo Stream were located to the southeast of the project area.

Recommendations include further documentation of the ditches and reservoir of Site -4524.

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I. INTRODUCTION

At the request of Wilson Okamoto and Associates, Cultural Surveys Hawaii conducted an archaeological reconnaissance survey of the approximately 56 acre proposed Olomana Golf Course Expansion area located in the *ahupua'a* of Waimānalo, District of Ko'olaupoko, Island of O'ahu (TMK 4-1-13:11) (Figures 1-4).

A. Scope of Work

The Scope of Work was designed to satisfy the State and County requirements for a reconnaissance level survey and includes the following items:

1. Limited historic background research includes review of previous archaeological studies, historic maps including Waimānalo Sugar Company maps determining archaeological potential and historic context.
2. The purpose of the fieldwork was to roughly locate archaeological sites within the project area, and provide preliminary evaluations.
3. The following report will include results of historic search and fieldwork with recommendations for further archaeological mitigation if appropriate.

B. Survey Methods

Fieldwork was conducted on July 30, 1992 by a crew of four archaeologists. Access to the project area was gained from Tommy Noa's ranch located on the *makai* side of Kalaniana'ole Highway adjacent to the present Olomana Golf Course.

The crew of four archaeologists systematically surveyed the property by pedestrian sweeps spaced at intervals averaging 10-15 meters apart depending on openness of the terrain. Sweeps were usually conducted from *mauka* to *makai* (northeast to southwest). Survey conditions were good in terms of visibility with ground cover consisting of California grass or para grass, *koa haole*, and Norfolk pine trees along the hill tops.

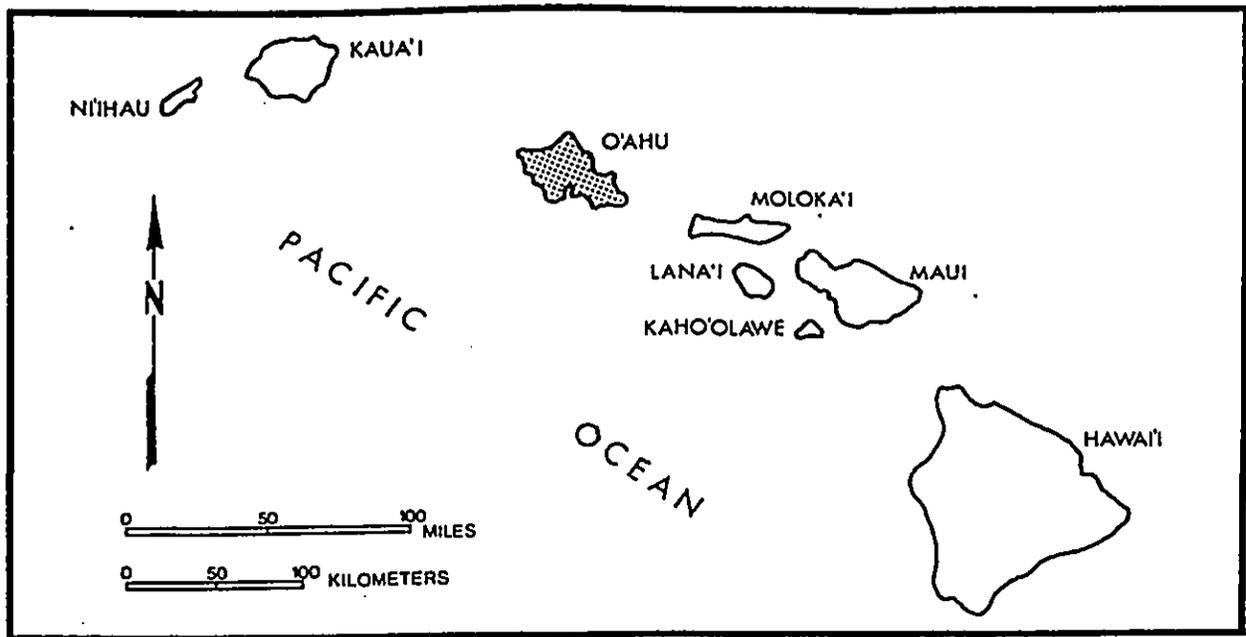


Fig. 1 State of Hawai'i

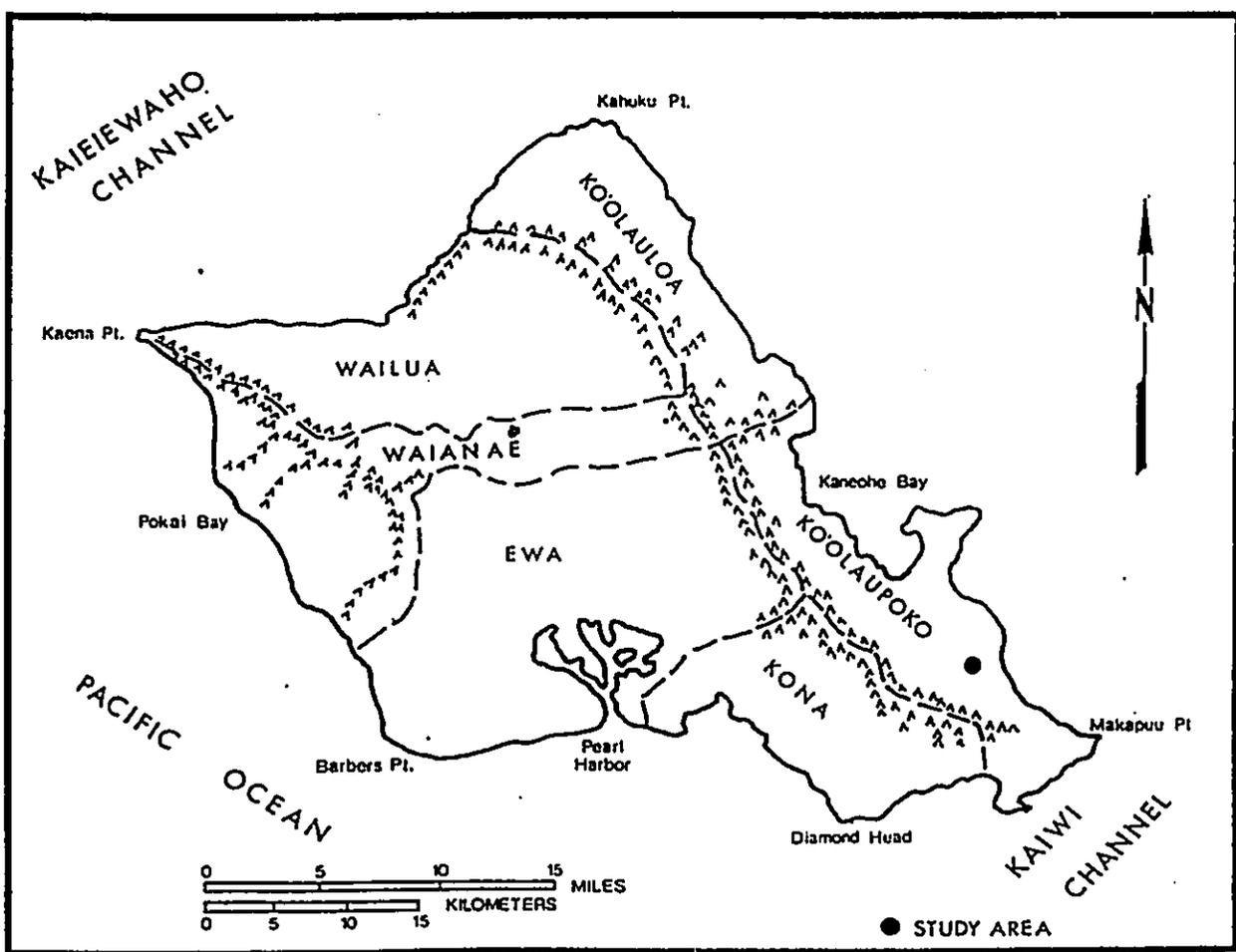


Fig. 2 O'ahu Island Location Map

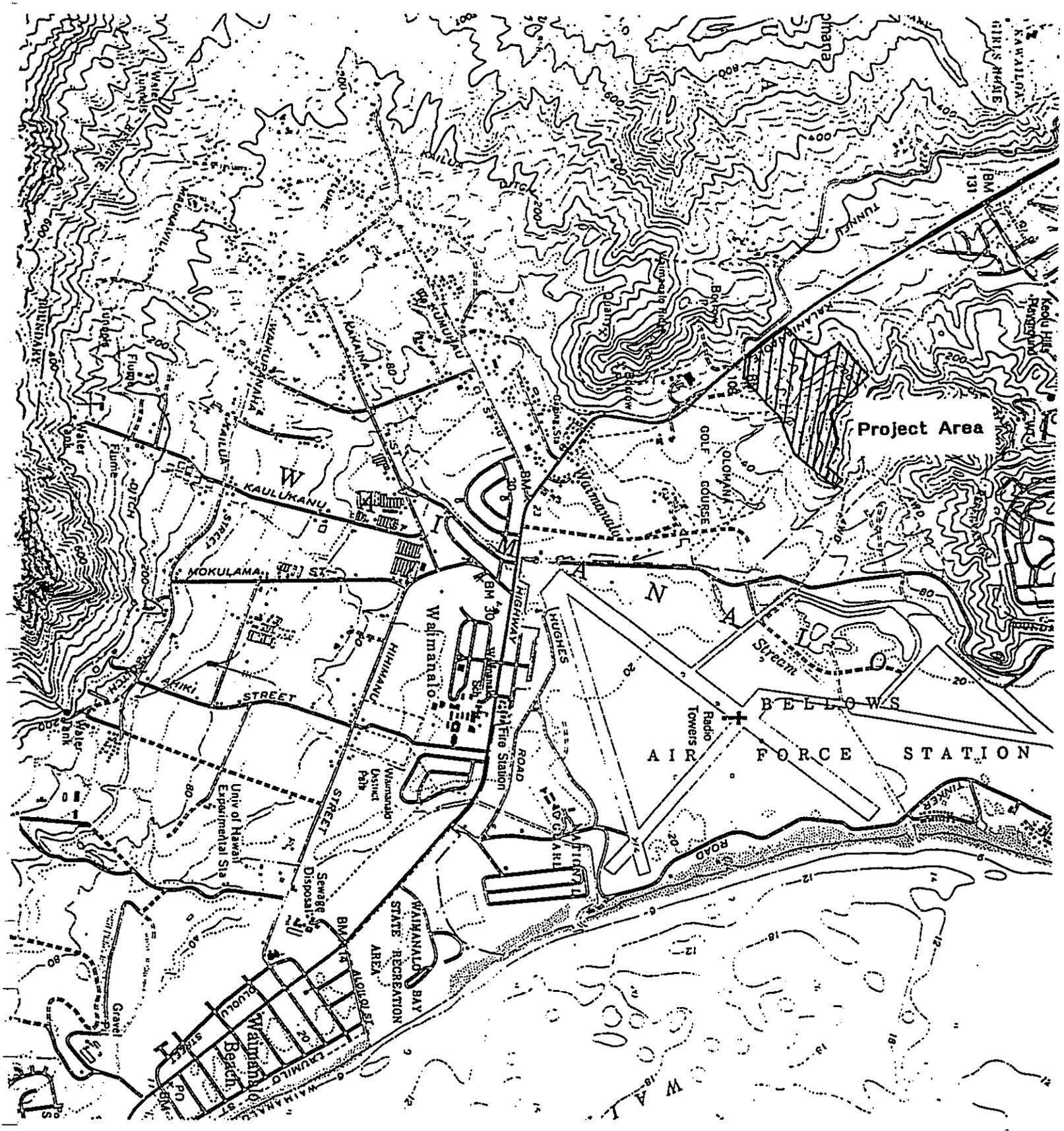


Fig. 3 USGS Koko Head Quad Map, 7.5 min. series Showing the Location of the Project Area (Hatched)

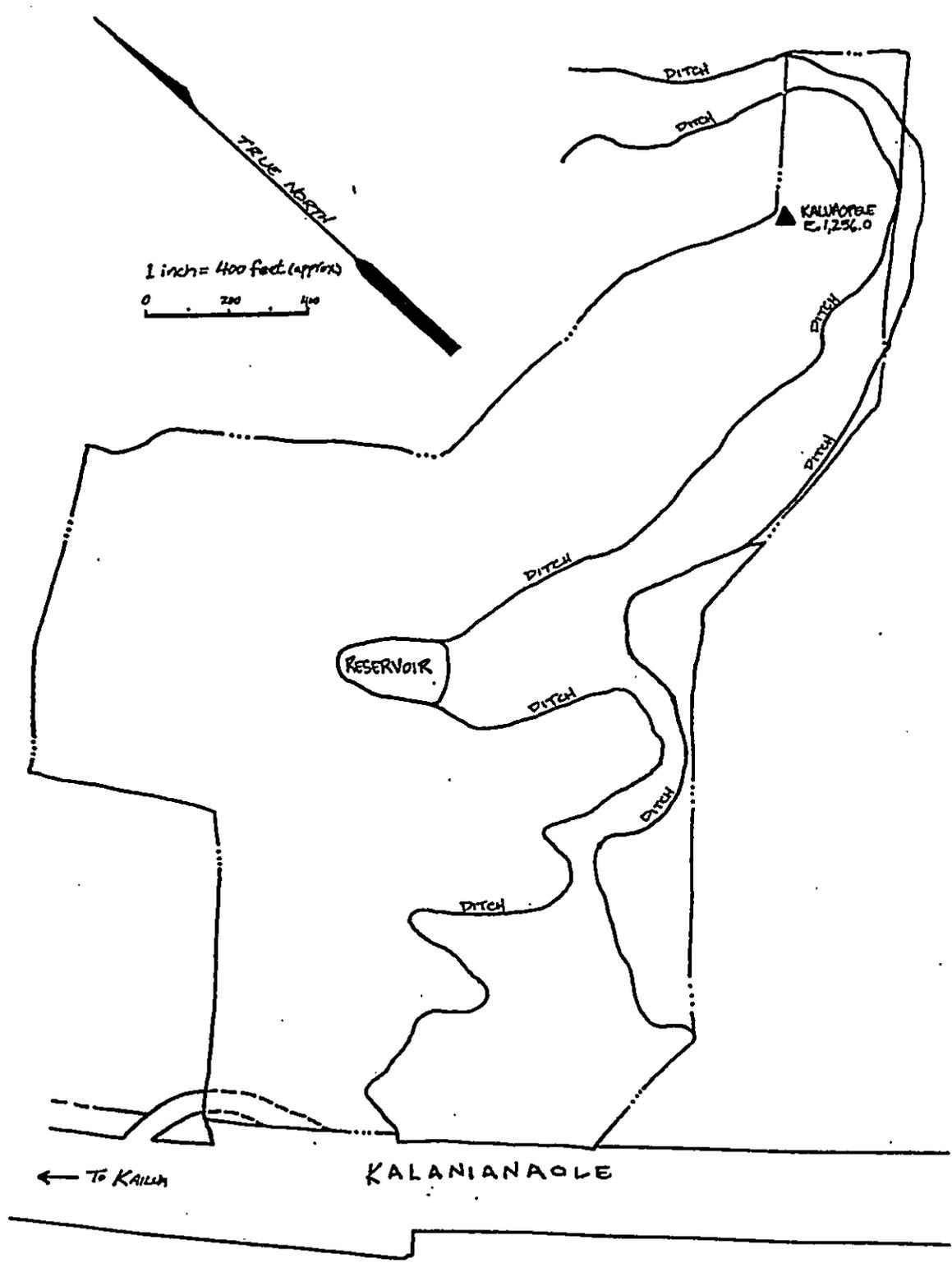


Fig. 4 Project Area Map Showing Ditch and Reservoir Location (Site 50-80-15-4524)

Based on the terrain and visibility Cultural Surveys Hawaii is confident that the entire project area was adequately surveyed with the only site(s) observed being former sugar cane irrigation infrastructure.

C. Project Area Description

The present project area lies on the southeastern end of the of the Ko'olau Mountain Range of O'ahu in the *ahupua'a* of Waimānalo, north of the town of Waimānalo. Waimānalo is one of eleven *ahupua'a* within the district of Ko'olaupoko. Waimānalo is a broad amphitheater - shaped valley in the "late mature to old Age" stage of erosional development (MacDonald and Abbott). The elevation ranges from 75 feet to 275 feet with an annual average of rainfall of approximately 40 to 50 inches. The northwest boundary of the project area coincides with the Kailua and Waimānalo *ahupua'a* boundary line.

Soil Types

The major soil types and their distribution in the project area are as follows (Foote et al. 1972):

Papaa clay, 6 to 20 percent slopes (PYD) - On this soil runoff is slow to medium and the erosion hazard is slight to moderate. Workability is difficult. This soil is used for pasture. This soil occurs along the base of the hills in the project area.

Papaa clay, 35 to 70 percent slopes (PYF) - This soil has convex very steep slopes. Includes small, stony areas and basalt outcrops near the ridgetops. Permeability is slow. Runoff is rapid, and the erosion hazard is severe. This

soil is used for pasture. This soil occurs just *makai* of Kalaniana'ole Highway.

Alaeloa silty clay, 15 to 35 percent slopes (AeE) - This soil occurs on smooth side slopes and toe slopes in the uplands. Permeability is moderately rapid. Runoff is medium, and the erosion hazard is moderate. This soil is used for pineapple, pasture, truck crops, orchards, wildlife habitat, and homesites. Small areas are used for sugarcane. This soil also occurs along the base of the hills in the project area in fairly level areas.

Kokokahi clay, 6 to 12 percent slopes (KtC) - This soil is on talus slopes and alluvial fans. Permeability is slow to moderately slow. Runoff is medium, and the erosion hazard is slight to moderate. This soil is used for pasture and homesites. This soil occurs in the *makai* portion of the project area along the hills.

Alaeloa silty clay, 40 to 70 percent slopes (ALF) - In areas of this soil, the most common slope range is 45 to 53 percent. Runoff is rapid to very rapid, and the erosion hazard is severe. This soil is used for pasture and wildlife habitat. This soil occurs just *makai* of Kalaniana'ole Highway in the southeast portion of the project area.

Vegetation

The vegetation within the project area includes Christmas berry (*Schinus terebinthifolius*), guava (*Psidium guajava*), and rubber plant (*Brassaia actinophylla*) found along the hillsides and in the flat areas intermixed with California grass (*Brachiaria mutica*), koa haole (*Leucaena leucocephala*), and various species of weeds. Wattle (*Acacia mearnsii*) was also found along the hillsides and atop the hills with Norfolk pines (*Araucaria excelsa*) used as a windbreak or possible boundary

II. HISTORICAL RESEARCH

A. Introduction

A number of historical sketches of the Waimānalo area have been done, notably, the mythological and archaeological material on Waimānalo found in Sites of O'ahu (Sterling and Summers, 1978), "A General Plan for Waimānalo Valley, Island of Oahu" (Harold Bartholomew and Associates, 1959), and the "Historical Documentary Research" of Waimānalo with specific reference(s) to Bellows Air Force Station by Carol L. Silva (in Rosendahl, ARA-20-020781, 1981). The following brief synopsis owes much to these works and credit must be given the authors for the bulk of the research.

Waimānalo "potable water" (Pukui, et al. 225:1974) is a large *ahupua'a* located in the district of Ko'olaupoko, O'ahu. *Ahupua'a* refers to the traditional land divisions that were basic units of social, economic, and political life in pre-contact Hawaii. "Ideally an *ahupua'a* land section stretched in a wedge from its apex at a mountain top to its base in the sea, thereby including within its boundaries all environments necessary for a self-sustaining community. Again, ideally the inhabitants of an *ahupua'a* were related by blood and through children and could claim some degree of relationship to the chiefly family to whom the *ahupua'a* had originally been assigned." (D. Barrere, 1970:3).

Mythological and early historical references about Waimānalo attest to the importance of the area during traditional Hawaiian times. Archaeological work along the shoreline of Waimānalo (Bellows Air Force Station) has detailed some of the earliest known sites in the Hawaiian Islands. Site 50-80-15-18 (018 Dune Site), which is situated at the present mouth of Waimānalo Stream, has an early date of circa A.D. 400 and is included on the National Register of Historic Places (as part of site 50-80-15-511).

B. Traditional Accounts

The traditional accounts infer some generally recurring themes about Waimānalo. The themes include the scarcity of water except for small springs and Waimānalo or Puha Stream, the abundance of food crops along Puha Stream, and the good fishing resources of the ocean fronting Waimānalo. Also the somewhat isolated nature of Waimānalo, especially in terms of land routes, but with the sandy beach frontage allowing access by sea.

An example of the mythological references to Waimānalo, from the Pele and Hi'iaka epic states: "As they traveled on, Makapu'u and its neighbor hills passed out of sight. Arriving at Ka-ala-pueo, they caught view of the desolate hill Pohaku-loa, faint, famished, forlorn

It is indeed a barren land. Fish is the only food it produces. Our vegetables come from Wai-manalo. When the people of the district bring down bundles of food we barter for it our fish" (Emerson 1915:89 from Silva 1981:A-14). Another myth includes references to the place name Kalua-o-Pele, Pele's pit, which based on the Sterling and Summers map and the ca. 1937 Waimānalo Sugar Co. maps show this site to be within our project area.

Above Puha is an old crater called Ka-lua-o-Pele (Pele's pit). Pele dug here long ago and gave it up when she came to water. Much palolo clay was found here and Alona remembered seeing women come to get it to rub into their scalps before going to the sea. The clay was washed out in sea water. The scalps were very clean, free of dandruff and the hair grew long and thick. Alona, Charles, Informant, Sept 22, 1939 (Sterling and Summers, 1978:244).

Late pre-historic and early historic accounts also give evidence of who controlled Waimānalo. "When King Kahakili of Maui heard of the death of the priest Kaopulupulu by Kahahana (a chief appointed by Kahakili to govern Oahu), he sent some of his men thither by canoe, who landed at Waimānalo, Koolau, where as spies, they learned from

the people respecting Kaopulupulu and his death, with that of his son; therefore they returned and told the King the truth of these reports, at which the affection of Kahekili welled up for the dead priest, and he condemned the King he had established. Coming with an army from Maui, he landed at Waikiki without meeting Kahahana, and took back the government of Oahu under his own kingship. The chiefs and people of Oahu all joined under Kahekili for Kahahana had been a chief of wrong-doing... (Thrum 1904:212-3; in Silva 1981:A-15). Samuel Kamakau in 1875 related "The *ahupua'a* of Waimānalo, including the fishpond at Maunalua and the travelling uhu of Makapu'u belonged to Maui-mua (First Maui), (Kuokoa Nov. 27, 1875; in Sterling and Summers 1973:244).

During Kamehameha's conquest of O'ahu part of his fleet landed near Makapu'u and then joined with Kamehameha's other forces, finally conquering O'ahu. Prior to the invasion, Kamehameha sent a messenger to Kahekili; "Ki-Kane, Kamehameha's messenger to Kahekili, threw down two maika stones, this stone (the white) brings life through farming and fishing, rearing men, and providing them with food; this other stone (the black) brings war. Let the reader ponder the meaning of this answer. Kahekili asked, Is Kamehameha coming to O'ahu to fight? 'Yes' answered Ki-Kane. What harbor will he choose? It was Kiko'o's counsel to make Waimānalo the harbor and battle site. 'It is too low there to cast sling stones to reach the heights. It is good only for food and fish...'" (Kamakau 1961:250; in Silva 1981 A-16).

After Kamehameha's conquest of O'ahu and his apportionment of the island, among his chiefs, Waimānalo apparently was retained as his personal property. This seems to be the case as in 1845, when Kamehameha III, Kauikeaouli, who had "inherited" the land, as a son of Kamehameha I, claims the *ahupua'a* of Waimānalo "to be the private lands of his Majesty Kamehameha III, to have and to hold to himself, his heirs and

successors, forever; and said lands shall be regulated and disposed of according to his Royal will and pleasure, subject only to the rights of tenants" (Com. of Public Lands, 1929:28).

C. Early Historic Accounts

Two early foreign visitors, both missionaries were generally unimpressed with Waimānalo, however, their descriptions are of interest. Levi Chamberlain in 1828 comments on Waimānalo being a "considerable settlement" and while there, stayed in a native house," a miserable place for the abode of human beings and presented a motley group of children and women, dogs, hogs and fowls (Chamberlain 1857:80-1, in Silva 1981:A-20). In 1830 Edwin Hall writes, "we could not however, but notice, that most of the inhabitants on the eastern end of the island were much more degraded, and exhibited far less evidence of improvement than any we saw on other parts of the island; a fact calling for our sympathy and pity, and for our endeavors to enlighten and elevate them" (Hall 1939:111; in Silva 1981:A-21).

The 1840's and early 1850's were a time of major change for all Hawaii, including Waimānalo. It was during this period that the Great Mahele took place. Traditional land use rights of the Hawaiians were replaced by private land ownership. As mentioned earlier, Kamehameha III claimed virtually the entire *ahupua'a* of Waimānalo as his. Individual land holdings (*Kuleanas*) were registered to native farmers. The greatest number of these were along the banks of Waimānalo Stream (Fig. 5). The native and foreign testimonies indicate that this portion of Waimānalo had well-developed and functioning *lo'i* (ponded taro patches) around 1850. Though Waimānalo Stream was by far the most important water source, other "creeks" fed by mountain runoff and/or springs

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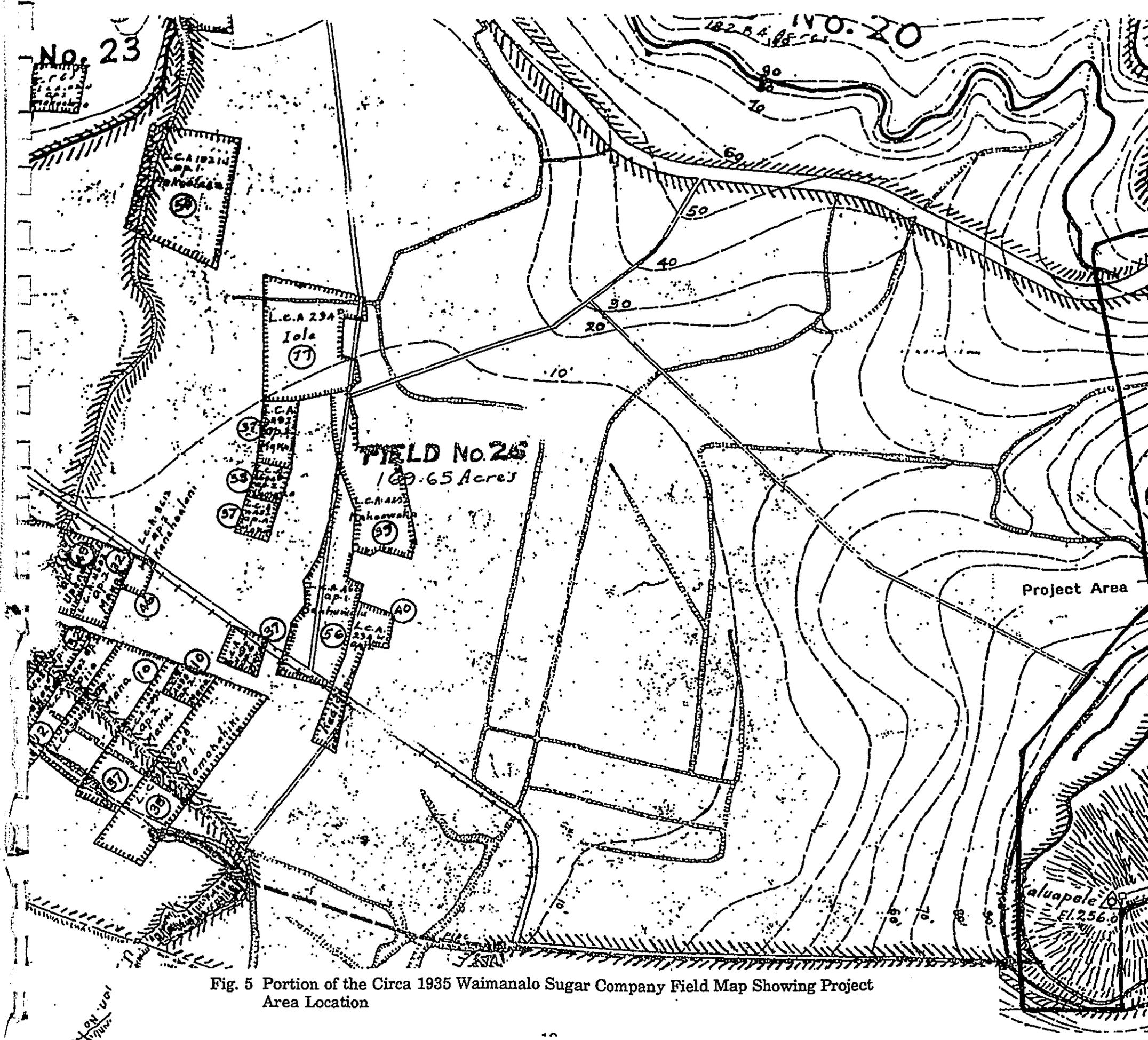
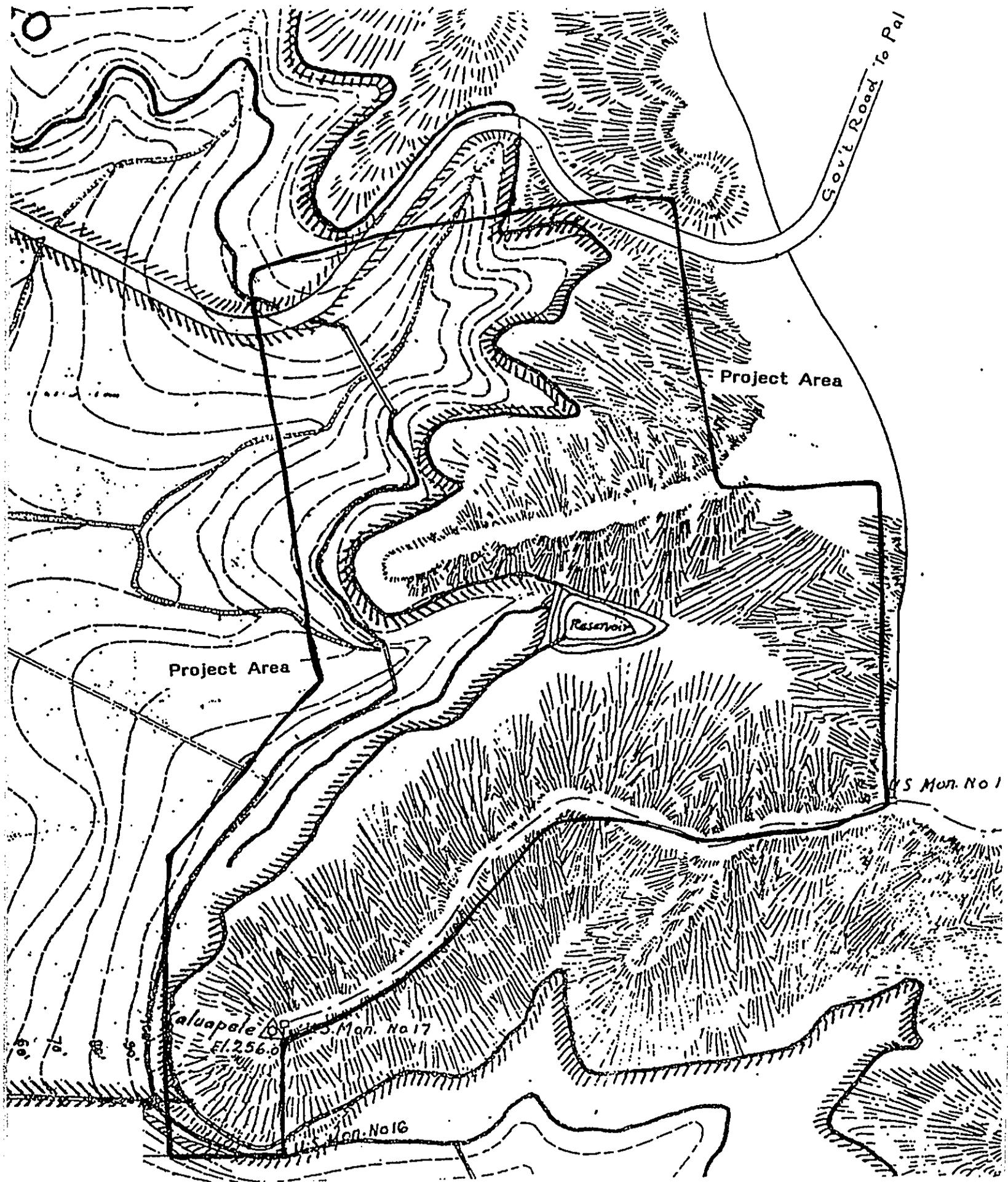


Fig. 5 Portion of the Circa 1935 Waimanalo Sugar Company Field Map Showing Project Area Location

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were also utilized. The references to obtaining these *kuleanas* "in the time of Kinau" (ca. 1832-1839) may suggest an intensification of cultivation in the post-Kamehameha I era and/or the degree of control she wielded as governor of O'ahu and *Kuhina Nui* of the Hawaiian Kingdom.

D. Ranching Period

In 1850 Kamehameha III leases the entire *ahupua'a* Waimānalo (except for the *Kuleanas*) to an Englishman Thomas Cummins. The original deed is dated Feb. 12, 1850 and was for a period of 50 years for 6,970 acres at \$350.00 per annum. However, there was confusion over land title. Kamehameha IV, Alexander Liholiho, "deeded" Waimānalo to a Wm. Webster in 1855 for \$1. Wm. Webster mortgaged the land for some \$2,000 with the mortgage being released in 1857. The same thing happened again in 1857 with the mortgage clearing by April 1858. These deeds and mortgages did not actually cause the control of lands to change as Thomas Cummins retained his lease, but they apparently served as security for loans made to Alexander Liholiho.

Thomas Cummins and his son John A. Cummins turned Waimānalo into a large cattle and horse ranch. The Cummins Estate was known for its lavish parties; "Cummins was also host to American and British officers on warships visiting in Hawaiian waters. The Kamehamehas, King Kalākaua and Queen Lili'uokalani all made this part of the island their home, and they spent a great part of their time at the Cummins Estate" (Star Bulletin 6/22/1935:9; in Silva 1981:A-22). However, it appears as if not all were enthusiastic about the cattle ranching.

At the time, it seemed that the valley was filled with breadfruit, mountain apples, kukui and coconut trees. There were taro patches, with banks covered with ti and wauke plants. Grass houses occupied the dry lands, a hundred of

them here and sweet potatoes and sugar cane were much grown. It was a great help toward their livelihood.... The whole *ahupua'a* of Waimānalo was leased to white men except the native *kuleanas* and because the cattle wandered over them, they were compelled to build fences for protection. The taro patches that were neatly built in the time when chiefs ruled over the people and the land, were broken up. The sugar cane, ti and wauke plants were destroyed. The big trees that grew in those days, died because the roots could not get moisture. The valley became a place for animals (Kuokoa, Oct. 26, 1906; in Sterling and Summers 1973:244).

E. The Waimānalo Sugar Company

The Cummins Estate eventually began to buy up the *kuleanas* of the native farmers, gaining some 200 acres in fee. By the early 1870's Chinese rice farmers were using some of these lands under agreement with John A. Cummins. In 1876 the Hawaiian Kingdom entered into a Reciprocity Treaty with the United States. This allowed the growing Hawaiian sugar industry a free market and the potential for great profits. One of the Chinese rice farmers, Tai Lee, began sugar cultivation on Cummins' land. Eventually Tai Lee and other Chinese farmers cultivated up to 1,200 acres of cane in Waimānalo.

John A. Cummins saw the potential and in 1880 started construction of a sugar mill. In 1890, J.A. Cummins renegotiates his father's lease for an additional 30 years and "sub-lets the lands of Waimānalo to the Waimānalo Sugar Company (W.S.C.) which he then controlled" (Bartholomew and Ass., 1959:14). The plantation continued to buy sugar from the Chinese farmers until around 1900, when W.S.C. did most of its own cultivating.

During this time, sugar and most goods were transported between Honolulu and Waimānalo by steamer. The Cummins Estate was still renowned for its extravagant hospitality. Lavish week-long luaus were given for Hawaiian Royalty. King Kalākaua came and rode on the newly built railroad in 1882 and in 1885 Cummins was host in

celebrating Queen Kapiolani's birthday.

Waimānalo Sugar Co. continued growing and was doing good business. More lands were being put under cultivation. New tracks were being laid and another locomotive was ordered. Interest in W.S.C. grew, and in 1885 W.G. Irwin of the W.G. Irwin & Co., agents for W.S.C. gain control with J.A. Cummins staying on as overseer. In 1894 J.A. Cummins sells the majority of shares in W.S.C. to two California men and a Kohala sugar planter Robt. R. Hind, with George Chalmers taking over duties as plantation manager. J.A. Cummins died in 1913 and his estate sold the remaining fee simple lands and the unexpired lease of Waimānalo to W.S.C. for \$52,000.

Water was a continuous problem for most sugar companies, including Waimānalo. Irrigation for W.S.C. was dependent on three ditch and tunnel systems, the Maunawili Ditch and Tunnel, the Kailua Ditch system and the Waimanalo or Pump Ditch System. It is unclear when this ditch system was initiated, but water from Maunawili was used in Waimānalo as early as 1878. "Water sources in upper Maunawili Valley were first utilized prior to 1878 and have remained the basic supply for Waimānalo since that time" (Bartholomew and Ass. 1959:53). Maunawili Ditch does appear on a 1911 map (Carol Wilcox), but its present course and construction style probably relate more specifically to major reconstruction undertaken in the 1930's. This was done under the managership of W.S.C. by George Bennett. "During the last five years (i.e. prior to 1940) Mr. Bennett has rebuilt all the old flumes which bring the Maunawili water to the fields using redwood, good for 15 years or more; concreted the open ditches; and has replaced the old wooden pipes with concrete siphons" (Condé and Best 1973:367). The rebuilding of the water system was part of a general modernization in the 1930's which continued a trend which began in the 1920's, with the construction of a new mill. Other facets of modernization

included mechanized land clearing and the opening of Pali Road in 1924 with improvements in the 1930's which also saw the opening of the Kokohead to Waimānalo Road. The paved roads to Honolulu ended the need to ship sugar and molasses to the Honolulu Plantation Refinery by steamer. The mechanized land preparation enabled more land to be cleared in a shorter amount of time. The Hawaii Sugar Manual of 1931 stated: Mechanical power has been substituted almost entirely for mules in soil preparation, but have 32 mules on the property using them for plowing odd corners and steep hillsides... (in Condé and Best 1973:366).

In 1910 W.G. Irwin and Co. merged with C. Brewer and C. Brewer controlled W.S.C. till liquidation in 1947.

The acquisition of the Bellows area, which was part of the original Cummins lease, began in 1916 and is well-documented elsewhere.

In summary, traditional Hawaiian accounts indicate that the Waimānalo area and specifically the area associated with Waimānalo or Puha Stream was agriculturally very productive. The Mahele records of the 1850's also indicate much taro was still being grown at that time. However, with the lease of Waimānalo to the Cummins family in 1850, rapid change not only of land tenure, but also to the landscape takes place. Taro patches, fruit trees, and other gardens give way to pasture land and rice fields. By the 1880's pasture land is being replaced by cultivated sugar cane, first grown by Chinese rice farmers. The early 1900's see an expansion of the Waimānalo Sugar Co., including water resource procurement from Maunawili Valley and Kawainui Marsh.

Waimānalo Sugar Co. eventually had some 2,600 acres under mechanized cultivation with the present project area within and along the edges of Fields 20 and 26 (See Fig. 5). C. Brewer and Co., which gained control of W.S.C. in 1910, liquidated in

1947, ending nearly 70 years of sugar cultivation. Since the lands within the project area were leased government lands, they reverted first to the Territory of Hawaii and are now under State of Hawaii jurisdiction with Olomana Golf Course a State of Hawaii lessor.

III. PREVIOUS ARCHAEOLOGICAL RESEARCH

There has been no previous archaeological research for this specific survey area. Waimānalo, in general, is distinguished as being the place of one of the earliest archaeological investigations in the Hawaiian Islands. In 1879 Mr. Otto Finsch reported on human burials in sand deposits and associated artifacts in an area which is now Bellows Air Force Base (Finsch 1879).

McAllister, in his 1930's Survey of the Island of Oahu, reported two sites in *mauka* Waimānalo (McAllister 1933:191). Both of these sites are *heiau*. Site 382 is located on the slope below Mt. Olomana and reported to be 250 feet long and 130 feet wide, but its present condition is not known. Site 381 is referred to by the name of the place - Pohakunui - and is 90 feet long and 50 feet wide (*Ibid.*:191). It is of special interest to note that McAllister makes no mention of taro terraces in his 1930's survey. This would indicate that at this time taro cultivation had been abandoned and the *lo'i* that survived were overgrown by forest.

With the exception of these early surveys, the major focus in archaeological research in Waimānalo has been the Bellows area.

Bellows Air force Station is one of the most extensively studied areas on O'ahu and is comparable to Barbers Point in Ewa. Beginning in the 1960's, over 30 separate reconnaissance, survey, excavation and monitoring projects have taken place, most in conjunction with construction activity. A partial list of these projects is provided in Rosen-dahl (1981:16) and again in Leidemann and Cleghorn (1983:7). Human burials, lithic scatters, soil features and/or occupation layers have been found almost everywhere archaeological investigation has taken place. Possibly, the most important finds occurred in dune deposits adjacent to the mouth of Waimānalo Stream. These dune deposits

referred to as Site 018 yielded archaeological materials which are still considered to be among the oldest in Hawaii (Pearson et al. 1972, Cordy and Tuggle, 1976 and Kirch, 1985:71). Radiocarbon dates on charcoal from cultural layers within the dune would place the earliest occupation to around 300-400 C14 years A.D. (Tuggle et al. 1978). Much of the research since this discovery of early Bellows Dune occupation has focussed on attempting to connect other archaeological finds in more inland areas of Bellows to this early Polynesian settlement.

IV. SURVEY RESULTS

Four archaeologists surveyed the entire project area on foot to determine the presence or absence of archaeological sites in the project area. The survey was conducted by sweeps oriented roughly North/South. A single archaeological site was discovered in the entire project area. This site consists of branches of the Waimānalo Sugar Company irrigation system which are located along the hillsides of the project area.

The site, 50-80-15-4524, consists of the remains of two parallel cement and earthen ditches, and a reservoir. The ditches are cut into the bank of the southeast facing slopes of the ridge and which separate Waimānalo and Kailua *ahupua'a*. The ditches roughly correspond to the 120-foot contour near the base of the slope.

The construction of the ditches incorporates earthen embankments with cement lining. The ditches average 1.5 meters wide at the top and about .75 meters along the bottom and are .75 meters deep. Presently the ditches are discontinuous, having been washed out and/or bulldozed in some places. Additionally, the ditches have been slowly filling up with soil from slope wash during heavy rains. Vegetation is also impacting these unmaintained ditches.

The reservoir which is roughly triangular, measures 55 meters by 91.5 meters. It is constructed with earthen sides with a cement and earthen retaining embankment on the downslope side. The cement spillway, at the base of the retaining embankment, is still visible (see photo Appendix). The interior and sides of the reservoir are overgrown and the impression is one of a large bowl-shaped depression.

The ditches and reservoir, site -4524, have clearly been unutilized, probably since 1947 when Waimanalo Sugar Co. was liquidated. Though they were once part of an overall irrigation system they are no longer a functioning component and, in fact, are

separated from the rest of the system by Kalaniana'ole Highway and other post-1947 development.

As mentioned previously, no other archaeological sites were observed during the survey.

IV. SUMMARY, SIGNIFICANCE, AND RECOMMENDATIONS

A. Summary

The proposed Olomana Golf Course Expansion area contains no surface evidence of prehistoric archaeological sites. The only site (50-80-15-4524) located in the project area consists of branches of the historic ditch system of the Waimānalo Sugar Company. Based on the information collected from the historical background research it would appear that the ditches and reservoir were part of the "modernization" that took place during the 1930's. Sugarcane was also once planted in the flat areas and along the base of the slope within the project area. The ditches, reservoir, and fields were then abandoned in the late 1940's with the liquidation of Waimanalo Sugar Company.

There were no visible signs of prehistoric agricultural or habitation modifications observed during the survey. Based on the mid 1800s (i.e., Mahele records) settlement pattern of living and working along Waimānalo Stream, it appears doubtful that the project area was ever intensively utilized for agriculture or habitation prehistorically.

B. Significance and Recommendations

The project area lies within an *ahupua'a* (i.e., Waimānalo) that contains, arguably, the earliest dates of occupation in the Hawaiian Islands. However, no evidence of prehistoric utilization was observed. The historic ditch and reservoir (Site 50-80-15-4524) are assessed, based on the present level of documentation as being significant - under Criterion D. Criterion D significance assessment infers that the "site may be likely to yield information important to prehistory or history" (National Codes of Criteria for Site Significance).

Recommendations include further documentation of Site 50-80-15-4524.

Documentation should include (1) further historic research on the Waimānalo Sugar irrigation system and how the ditches in the project area functioned as a component of the overall system; (2) scale drawings, like cross-sections, of sample sections of the ditch and reservoir; (3) subsurface testing to affirm construction techniques; and (4) full evaluation of ditch conditions to suggest possible selective preservation of good sections, and if appropriate incorporating them into the proposed golf course expansion design.

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V. Photographic Appendix

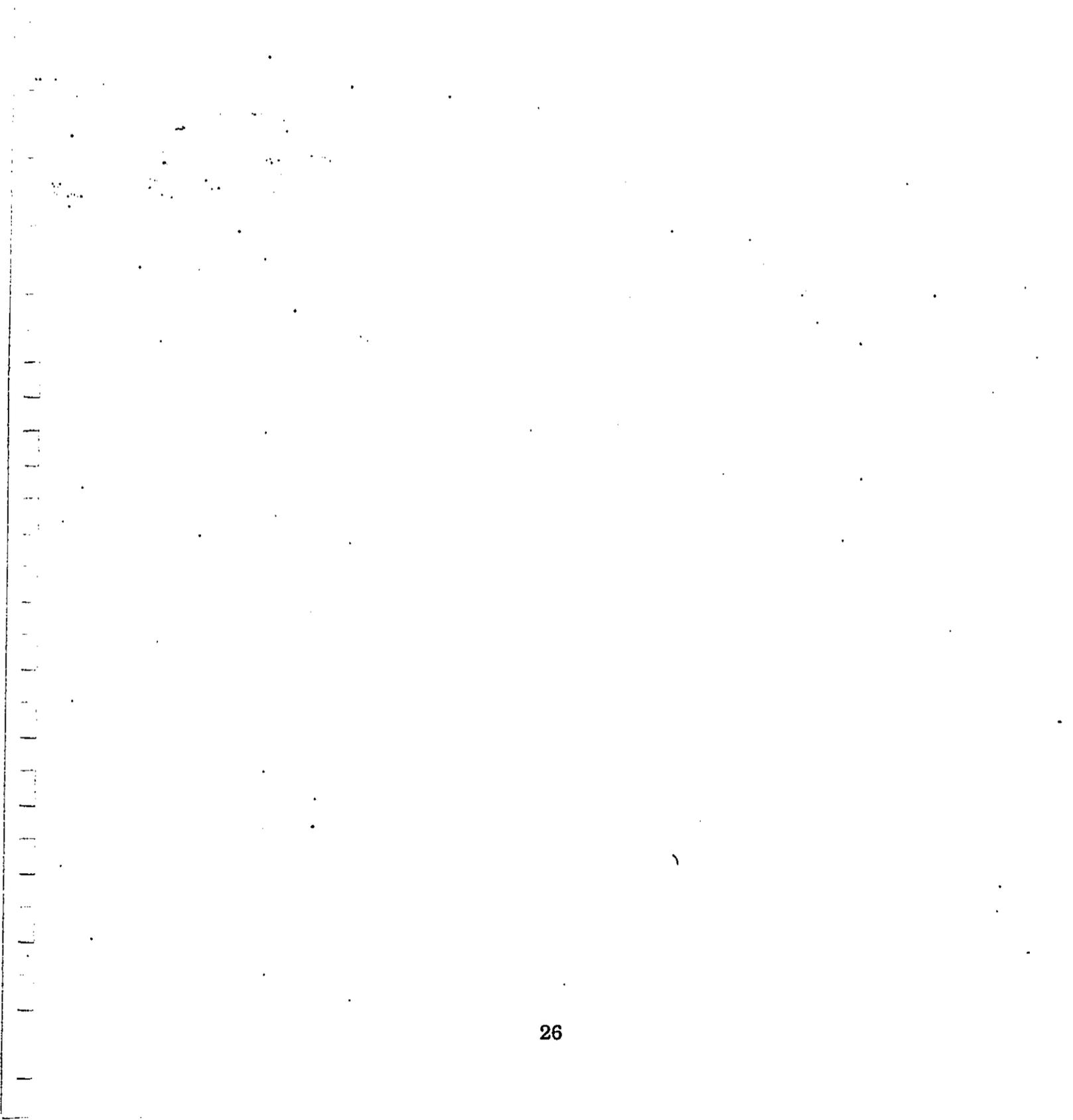




Fig. 6 Remnants of Modern Ranching Structure in Olomana Golf Course Expansion Area



Fig. 7 Sample of Vegetation in the Project Area



Fig. 8 View of Reservoir Spillway in the Background, View to Northwest

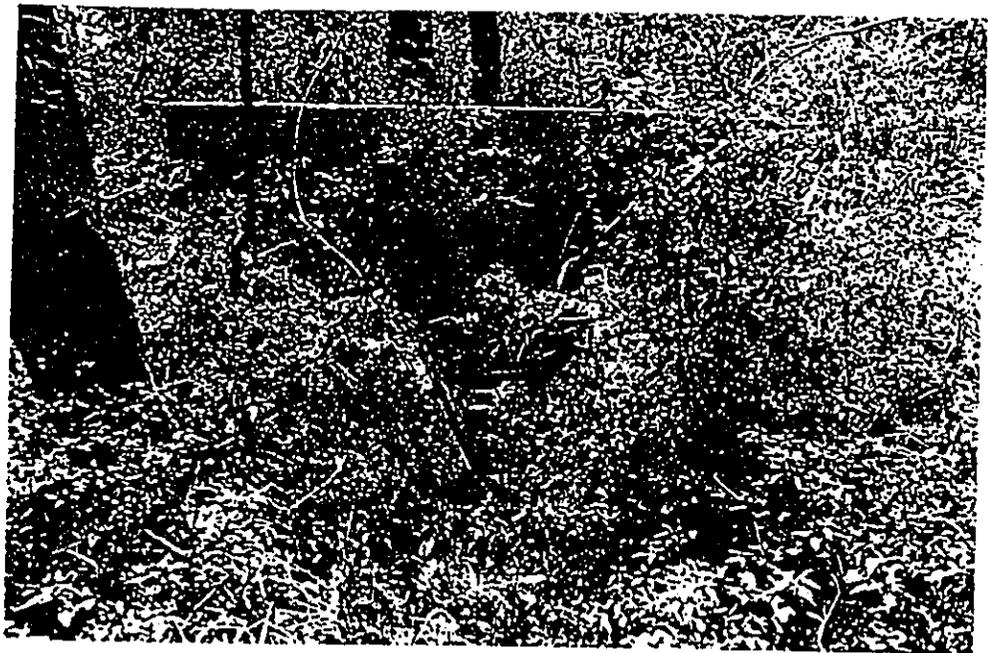


Fig. 9 Spillway Close Up, View to Northwest

VI. Appendix B Native Testimonies

No. 4067 Kahihina

Greetings to the Land Commissioners: Here is my claim, one mo'o, kula, and mountain area. Keliimamo is the one from whom I got my mo'o. The kula was from Kaio. They are in Waimānalo, on Oahu. I got them in the time when M. Kuanaoa made a circuit of the island.

KAHIHINA

No. 4067B Manoa

To the Land Commissioners: I hereby explain to you: Geogi /George/ is above and I am under. Two of my lo'i are on the south and three are on the north. There is also the bank of a watercourse, a parcel of kula and the house. Farewell to you.
Kauala, Kaipu

MANOA

No. 4500 Keliimama

Greetings to you, the Land Commissioners: I hereby state my claim: One mo'o and a kula, one lo'i in the land of Kaina, two lo'i in the land of Kahuwalu, one kula planted in bananas in the land of Kauahi and a house. I got this claim in the time of Kahalaia. It is in Waimānalo on Oahu.

KELIIMAMA

No. 4492 Makai

Greetings to the Land Commissioners: I hereby state my claim. I have four lo'i in the land of Mana, in Pouli, Waimānalo, Island of Oahu and a kula. I have three lo'i in the land of Kaanaana and a weed grown lo'i makes four lo'i I have there, and a kula, which is upland. I got it at a houseslot from Kehau. In the time of Kaiakoili I got one hala grove in the land of Kamahalo /and/ and one stream in the land of Kalakai.

MAKAI

No. 4493 Mana

Greetings to the Land Commissioners: I hereby state my claim for land in Kapouli in Waimānalo on Oahu. There are eight lo'i, five weed-grown lo'i which are mine, however Kawaa is Konohiki. A kula and a house claim are at Paneonea. I got them in the time of Kaiakoili. I have four lo'i in the land of Keliimama, a pond in the land of Kamahalo.

MANA

No. 4503 Mauae

Greetings to the Land Commissioners: Here is my claim: Six lo'i in the land of Keliimama, who has the kula; and a houseslot. I got these in the time of Lono. It is in

Waimānalo on Oahu.

MAUAE

No. 4502 Piiā

Greetings to you, The Land Commissioners: Here is my claim in Ahiki: Mine was from Kealiimama. One taro mo'o runs to the kula. I have one kula in the land of Kauahi and house. It is in Waimānalo on Oahu.
I got these in the time of Lono.

PIIA

No. 2643 Maaha Dec. 27, 1847

To the Land Commissioners: I hereby state my claim for land, an 'ili, Hikini. Kahuaiki is the upland and Kaiki is the sea. Waimānalo, Koolaupoko, Island of Oahu
MAAHA

No. 5949 Poeole Waimānalo, 31 January 1848

Greetings to the Land Commissioners: I hereby state my claim at Waimānalo. There are fourteen taro lo'i, close to Hoonee, and also another lo'i. Hoonee is the name. This claim was from Poki and I am caring for it in Poki's name.

POEOLE

No. 5346 Pahulu

Greetings to the Land Commissioners: I hereby state my claim for my one mo'o, in the Ahupua'a. Kaaukai is the Konohiki. At Ohea in the mo'o of Nalu I have one mala of breadfruit. The second is Waimānalo on the Island of Oahu.

PAHULU

No. 10,214 Makaalaea Waimānalo, Oahu, Dec. 28, 1847

To the Land Commissioners, Greetings: I hereby state my claim in the 'ili of Kailili 2. There are five lo'i, from Kaoao and a mala of sweet potatoes from Amakiki. I got these claims at the time when Kekuanaoa made a circuit of the island.

MALAEA

No. 4501 Kaahuwalu

Greetings to you, the Land Commissioners: I hereby state my claim: One mo'o in the land of Kealakai and a kula from sea to the upland. I have two lo'i in the land of Mahoe. A pond is in the land of Kaina and a lo'i is there. One lo'i is in the land of Kihokea. I got this claim in the time of Manuia. It is in Waimānalo on Oahu.

KAAHUWALU

No. 3575 Kalauao

Greetings to the Land Commissioners: I hereby state my claim for three lo'i in Ihu's land, one in Paukeaho's land and a house claim at waimanalo on Oahu. It was from Lono.

KALAUAO

No. 3578 Kauowai

Greetings to the Land Commissioners: I hereby state my claim for eight lo'i at Kamokulama in the land of Kanehoalani, and a kula and a sweet potato kula. Poki is the konohiki. a house was from Lono.

KAUOWAI

No. 2648 Ili Dec. 27, 1847

Greetings to the Land Commissioners: I hereby state my claim for one 'ili of Kaulukanu, and the lele at the sea, of Keoneula. One garden is in the upland of Paoi, mo'o of Kahiona. I got them from Kahoohanohano Waimānalo, Koolau, Oahu

ILI

No. 2649 Kapule Dec. 27, 1847

Greetings to the Land Commissioners: Here is my claim for four lo'i, at Kumuhau which I got from Kalua. There is one sweet potato patch. My house is in the land of Kealoha, Waimānalo, on Oahu. One lo'i is in the land of Kaholo.

KAPULE

No. 7087 Kealoha Waimānalo, Island of Oahu, December 28, 1847

To the Land Commissioners: I have a mo'o, Pepela, in the 'Ili of Kaoao. There are eight lo'i and a kula also. Six lo'i were from Mauae, a mala which is being rested was from Nalii. Also one lo'i was from Nalii. My house is in the 'Ili of Hoonee. My land was from Paeole, In the time of Kamehameha I.

KEALOHA X his mark

No. 10,392 Nahopono Waimānalo, Oahu, Dec. 2, 1847

To the Land Commissioners, Greetings: Here is my claim, in the 'ili of Kaoao. There are six lo'i, a kula and a house, which I had from Mauae. One lo'i was from Puaa. I live under them. I got these claims at the time that M. Kekuanaoa made a circuit of the island.

NAHOPONO

No. 3207 Ihu

Greetings to the Land Commissioners: My claim is at Waikupanaha in Waimānalo uka, along the Road of Keaniani. My Konohiki is Kawelookalani. I have two lo'i in Kaniku's land and a kula at Mooiki. In the time of Lono I got a house which is at the shore. Three lo'i are in Kaalehu's land.

IHU

No. 3576 Kalawaiianui

Greetings to the Land Commissioners: My claim is for two mo'o at Kealakaalaea in Waimānalo on Oahu. One kula is at Mooiki and a house claim is in Ihu's land. One kula is in Pohakunui. I got these in 1846.

KALAWAIANUI

No. 2641 Holau Dec. 27, 1847

Greetings to the Land Commissioners: I hereby state my claim for land. I have a mo'o in Pohakunui and in the lele of Keawawa in Kona, in Maunalua. A steep sweet potato patch, Ohua, is at Wawamalu, and the sweet potato patches are at Kaeo of Poki, the konohiki. I have one lo'i at Kapuiki in the 'ili of Kekupuohi. I got these in the time of Lono.

Waimānalo, Koolaupoko, Island of Oahu.

HOLAU

No. 8611 Kaholo Waimānalo, Feb. 12, 1848

To the Land Commissioners: I hereby state my claim. I have an 'ili, Kuaihinale, and the upland, Olomana, which I got in the time of Lono, and have held until this time, of Poki. Waimānalo, Koolau Poko, Oahu. Kuanaoa is my landlord.

KAHOLO

No. 2561 Nahinu Dec. 27, 1847

To the Land Commissioners, Greetings: I hereby state my claim for land. I have some lo'is in Kiimakainoa in the 'ili of Kaaukai. I have two lo'i in the mo'o of Pu in Kaulukanu. Paki is their konohiki. Also there is an 'awa plantation at Mole in the upland of the 'ili of Kekuanaoa. Kumuhau gave it to me in the time of Lono.

Waimānalo, Koolaupoko, Island of Oahu

NAHINU

No. 2593 Pu December 27, 1847

To the Land Commissioners, Greetings: I hereby state my claim for land, an 'ili named Kauluhonu, under the kipapa of the Ahupua'a. I got it from Poki.

Waimānalo, Koolaupoko, Island of Oahu

PU

No. 4497 Kahoowaha

Greetings to you, the Land commissioners: Here is my claim: four lo'i in the land of Kaakau, and two in the land of Ihu. One hala grove is in the land of Kamahalo, a houselot and house. I got these in the time of Kahalaia.

KAHOOWAHA

No. 8217 Iao Waimānalo, Island of Oahu, Dec. 28, 1848
To the Land Commissioners, Greetings: I hereby state my claim in the 'Ili of Kumuhau, a mo'o, Mauakapuaa. There are nine lo'i a small kula, and a house, which were from Kuanaoa. Four lo'i are at Hooulu, from Kuanaoa. Two lo'i were from Ahia. One lo'i was from Kahia. There is also a mala of sweet potatoes. I got these in the time of Kinau.

IAO X his mark

No. 7085 Kalua Waimānalo, Island of Oahu
December 28, 1847

To the Land Commissioners, Greetings: I hereby state my claim in the 'Ili of Kumuhau 3. There are seven lo'i and a house. Two mo'o are in the 'Ili of Kahikiea, a kula adjoins them. I got them from Kaupena in the year of 1846.

KALUA X his mark

No. 7090 Kekuanaoa Waimānalo, Island of Oahu, December 28, 1848

To the Land Commissioners, Greetings: I hereby state my claim in the 'Ili of Kumuhau. There are ten lo'i also a kula and an upland area. Three lo'i po'alima are from M. Kekuanaoa; I live under him. Three lo'i are from Kapau. One lo'i is from Ahia. One lo'i is from Kalua. I got these in the time of Kinau.

KEKUANAEOA x his mark

No. 10,207 Molea Waimānalo, Oahu, Dec. 28, 1847

To the Land Commissioners, Greetings: I hereby state my claim, an 'ili /named/ Kumuhau 2. There are three lo'i po'alima. I have eight lo'i of my own, and there is also a houselot. My land was from Kawahalei in 1845. One lo'i was from Mauae.

MOLEA

No. 10,393 Napuuone Waimānalo, Oahu, Dec. 28, 1847

To the Land Commissioners, Greetings: I hereby state my claim in the 'ili of Kumuhau 2. I have eight lo'i, and a houselot. I got them from Molea, and I live under him.

NAPUUONE

No. 8612 Kanehoalani 12 February 1848

To the Land Commissioners: I hereby state my claim for my 'ili of Kamokulama, and the upland of Kapupuu, and the kula of Pukalua, and the shore area/fishery of Apuakea. It was gotten from my makuas in the time of Kamehameha I, and I have it at present. Furthermore, I have a mo'o in the 'ili of Poki at Puahia, with the pond and the kula, and my house lot is there also. I have one lo'i in the 'ili of Kaualii Panene. I have two lo'i at Puamano in the 'ili of Naeole. I got these in the time of Lono, until this time of Poki. Kuihelani is my landlord.
Waimānalo, Koolaupoko, Oahu

KANEHOALANI

No. 10,216 Mahu Waimānalo, Oahu, Dec. 23, 1847

To the Land Commissioners, Greetings: Here is my claim for land in the 'ili of Wailea, the mo'o of Kawaielieli. There are 30 lo'i, a kula and a house. 22 lo'i are in the Ahupua'a of Kiimakaiwa, two mala are in the Ahupua'a. I got it from Puniwai in the time of Kinau.
MAHU

No. 4504 Makahiki

Greetings to you, the Land Commissioners: Here is my claim: One mo'o is in the land of Keliimama, and a kula, and houselot. One lo'i is in the land of Kalauoho, in Waimānalo on Oahu. One pond is in the land of Kaanaana. One kula is in the land of Mahoe. One kula is in the land of Amokihi, two lo'i are in the land of Kumaunahina. One lo'i is in the land of Mahoe. One mo'o is in the land of Puniwai, and a kula and a houselot. I got these in the time of Kalolo.

MAKAHIKI

No. 4499 Kalauoho

Greetings to you, the Land Commissioners: Here is my claim: Two taro mo'o in the land of Kawaihalau, a kula from the sea to the upland, of Puuhala, and a house claim. I got this claim in the time of Kalolo. It is in Waimānalo on Oahu.

KALAUOHO

No. 7088 Kahopuna Waimānalo, Island of Oahu, December 28, 1848

To the Land Commissioners, Greetings: Here is my claim in the 'ili of Wailea, mo'o of Kaulu. There are seven lo'i in one place, also a small kula. Thirteen lo'i are in the mo'o of Kaohē, also a kula and a house; I got them from Puniwai. Two lo'i are in Puniwai's mo'o. Three mala are from Puniwai, and Mahu, and Iao. Four lo'i are from Kuahili. Four lo'i are from Iku. Those are my claims which I got in the time of Kinau.

KAHOPUNA X his mark

No. 2635 Kahunanui Dec. 27, 1847

To the Land Commissioners, Greetings: I hereby state my claim. One lo'i is in the mo'o of Hikaalani, four lo'i are in the mo'o of Mahu, one lo'i is in the mo'o of Kahapuna. I got them in the time of Puhiea. They are in the 'ili of Kinimaka in Ohea, Waimānalo, Island of Oahu.

KAHUNANUI

No. 7089 Kaiwinui Waimānalo, Island of Oahu
December 28, 1847

To the Land Commissioners, Greetings: Here is my claim, a mo'o /named/ Opuohua. There are two large lo'i and fifteen small lo'i, also a small kula and a house, which I had from Puniwai. Three lo'i were from Keoni. There are eight cultivated mala. I got these in the time of Kinau.

KAIWINUI X his mark

No. 2645 Paumano Dec. 27, 1847

To the Land Commissioners, Greetings: I hereby state my claim for land. I have three lo'i in the mo'o of Kukaniaua, I have four lo'i in Paniwai's /land/, five lo'i at Pawaa. I have one 'awa garden there in the 'ili of Kinimaka, and one 'awa garden at Mole in the mo'o of Pulu at Pohakunui.
Waimānalo, Island of Oahu

PAUMANO

No. 3265 Lauheaiku

Greetings to the Land Commissioners: I hereby state my claim for one mo'o in the land of Kaalehu, two lo'i in Mauae's land, three mala of sweet potatoes and one mala of wauke at Mooiki, one mala in Kaina's land, and a house claim. I got these in the time of Lono. They are at Waimānalo, on Oahu.

LAUHEAIKU

No. 2638 Kepaa Dec. 27, 1847

Greetings to the Land Commissioners: I hereby state my claim. I have a mo'o and a kula, Kaliliokii, adjoining Puea. The konohiki is Poki. I got it from Lono.
Waimānalo, Koolaupoko, Island of Oahu

KEPAA

No. 2640 Naili Dec. 29, 1847

Greetings to the Land Commissioners: I hereby state my claim for my mo'o at Pohakunui, and a kula in the 'ili of Poki. I have three lo'i in the mo'o of Maluihi, one 'awa garden is in the upland of Kapuiki in the 'ili of Kekupuohi. I got these in the time of Lono.

Waimānalo, Koolaupoko, Island of Oahu.

NAILI

No. 10,215 Mauae Waimānalo, Oahu, Dec. 28, 1847

To the Land Commissioners, Greetings: I hereby state my claim for land. I have three 'illis, Kaoao, Paka and Pokaa, On these 'illis I have eight lo'i of my own. In the 'illis of Kaoao and Paka are five po'alima. There are two kai kapu /prohibited fisheries/, Awaawamalu and Paka. The uhu is the prohibited fish of Awaawa, the squid is the prohibited fish of Paka. Awaawa has three kula, from the ascent of Makapuu to Ohua, those are /the kulas of/ Kaoao. Pukalua and Kukui are the kulas of Paka. I got these from Kaniku at the time that Kekuanaoa made the circuit of the island. The third of my 'ilis was from Poki, there is one lo'i po'alima, a kula and a house which I got in the time of Puhiea. I live under them.

MAUAE

No. 4498 Kaio

Greetings to you, the Land Commissioners: I hereby state my claim: One mo'o is in Kouhou, the land of Kealakai in Waimānalo on the Island of Oahu and I have two lo'i in the land of Mahoe, and a kula is in the upland and is named Kalamea. I have one kula in the land of Kehau. I got this claim in the time of Manuia.

KAIO

No. 8002 Ahia Waimānalo, Island of Oahu, Dec. 28, 1847

To the Land Commissioners, Greetings: I hereby state my claim for land, the 'Ili of Pukani. There are two lo'i Po'alima, seven lo'i of my own hands, a kula, a house, an upland area, Kapukaawapuhi, a sweet potato patch at Paauki which was from Kainapau. My land was from Keaweopu. An 'ili, Hakakea, was from the 'ili. I got it in the time of Kinau.

AHIA X his mark

No. 2637 Kaalehu Dec. 27, 1847

To the Land Commissioners, Greetings: I hereby state my claim for land, at Waikupanaha, next to Keaniani. I have two sweet potato patches in the kula of Paka, seaward, one at Kamoku, two at Mooiki. My house is at Pakaikai of /belonging to/ Pahoni. I have a hau tree at Hahakea. I got these in the time of Lono.
Waimānalo, Island of Oahu

KAOLEHUA /sic./