SP73-155 - DEPARTMENT OF PUBLIC WORKS, COUNTY OF MAUI
(Kihei Sewerage System)

SP73-155 - DEPARTMENT OF PUBLIC WORKS,
COUNTY OF MAUI
(FEIS & MAPS)

Smead
No. C1536G
HASTINGS, MN
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U.S.A.

FEIS
SP73-155

STATE OF HAWAII LAND USE COMMISSION MEETING MARCH 18, 1993

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MAR 1 8 1993

State of Hawaii
LAND USE COMMISSION

COUNTY OF MAUI
KIHEI WASTEWATER
RECLAMATION FACILITY
EXPANSION DESIGN 1992 / 1993

AGENCIES CONTACTED IN PREPARATION OF ENVIRONMENTAL ASSESSMENT (INCLUDING ALL COMMENTS RECEIVED)

AGENCIES CONTACTED IN THE PREPARATION OF THE ENVIRONMENTAL ASSESSMENT AND RESPONSES RECEIVED

The following agencies were contacted during the preparation of the Environmental Assessment:

1. U.S. Army
   Corps of Engineers
   Pacific Ocean Division
   Building 230
   Fort Shafter, HI 96858

2. U.S. Department of the Interior
   Fish and Wildlife Service
   Pacific Division
   P. O. Box 50167
   Honolulu, HI 96850

3. Dr. John Lewin
   Department of Health
   1250 Punchbowl
   Honolulu, HI 96813

4. Mr. David Nakagawa
   Chief Sanitarian
   Department of Health
   54 High Street
   Wailuku, HI 96793

5. Mr. William Paty
   Department of Land and Natural Resources
   1151 Punchbowl St.
   Honolulu, HI 96813

6. Mr. Brian Miskae
   Department of Planning
   250 S. High Street
   Wailuku, HI 96793

7. Mr. Michael J. Banfield
Executive Vice-President
Haleakala Ranch
529 Kealaloa Avenue
Makawao, HI 96768

8. Mr. Gene Thompson
Kihei Community Association
P. O. Box 662
Kihei, HI 96753

9. Mr. Ronald Gammie
Maalaea Community Association
RR1 Box 388, #301
Wailuku, HI 96793

10. Ms. Tanya Every
Wailea Community Association
3750 Wailea Ala Nui, Suite F21
Wailea, HI 96753

Wailea Community Association

Wailea Shopping Village
3750 Wailea Alanui, Suite F-21
Wailea, Maui, Kihei, Hawaii 96753-8383
(808) 874-6866 • FAX (808) 874-4027

RECEIVED
1992 JUN 18 AM 10:19
WASTEWATER RECLAMATION DIVISION
COUNTY OF MAUI

(12)

June 16, 1992

George Kaya
Director Public Works
200 So. High Street
Wailuku, HI 96793

Subject: Planned Kihei Sewage Treatment Plant Expansion

Dear Mr. Kaya:

Regarding your letters dated April 2 and June 2, the Wailea Community Association has no objection to the proposed expansion proceeding with all possible haste.

We appreciate your notices and thank you for keeping us informed.

Very truly yours,

Tanya Every

Tanya Every
WCA Administrator

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STAFF OF	☐	☐	☐	☐	☐	☐	☐
LUCA	☐	☐	☐	☐	☐	☐	☐
WW RECL.	☐	✓	☐	☐	☐	☐	☐
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By _____ Date 6/17

Post Office Box 662

KIHEI COMMUNITY ASSOCIATION
KCA

Kihei, Maui 96753

Tel: 879-5390

June 22, 1992

Mr. George N. Kaya
Director of Public Works
County of Maui

RE: Your request for comments on proposed expansion of Kihei Wastewater Reclamation Facility. (Letter April 2 and June 2, 1992)

Dear Mr. Kaya:

The Kihei Community Association does not have the expertise to constructively comment on the expansion of subject facility.

Our concern is the interest of the community and this interest includes control and abatement of the odor problem, which situation is being addressed. We are also supportive of future use of treated wastewater for irrigation purposes.

Very truly yours,

Gene Thompson

Gene Thompson, President

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RECLAMATION DIVISION
COUNTY OF MAUI

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By _____ Date 6/2

APR 30 1992

DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, HONOLULU
BUILDING 230
FT. SHAFTER, HAWAII 96858-5440

April 23, 1992

'92 APR 24 21:27

REPLY TO
ATTENTION OF:

Planning Division

Mr. George N. Kaya, Director
County of Maui Department of Public Works
200 South High Street
Wailuku, Maui, Hawaii 96793

DEPT OF PUBLIC WORKS
DIRECTOR
DEP. DIR.
PERS
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By
4/25

Dear Mr. Kaya:

Thank you for the opportunity to review and comment on the environmental assessment preparation notice for proposed expansion of the Kihei Wastewater Reclamation Facility, Phase II, at Kihei, Maui (TMK 2-2-24: 10, por. 11). The following comments are provided pursuant to Corps of Engineers authorities to disseminate flood hazard information under the Flood Control Act ~~of 1960~~ and to issue Department of the Army (DA) permits under the Clean Water Act; the Rivers and Harbors Act of 1899; and the Marine Protection, Research and Sanctuaries Act.

a. Provided that no fill is placed in the adjacent stream, a DA permit is not required for the proposed project.

b. According to the Federal Emergency Management Agency's Flood Insurance Rate Map, Panel 150003-0265-C, dated September 6, 1989 (copy enclosed), the project site is in Zone C (areas of minimal flooding).

Sincerely,

Kisuk Cheung, P.E.
Director of Engineering

Enclosure

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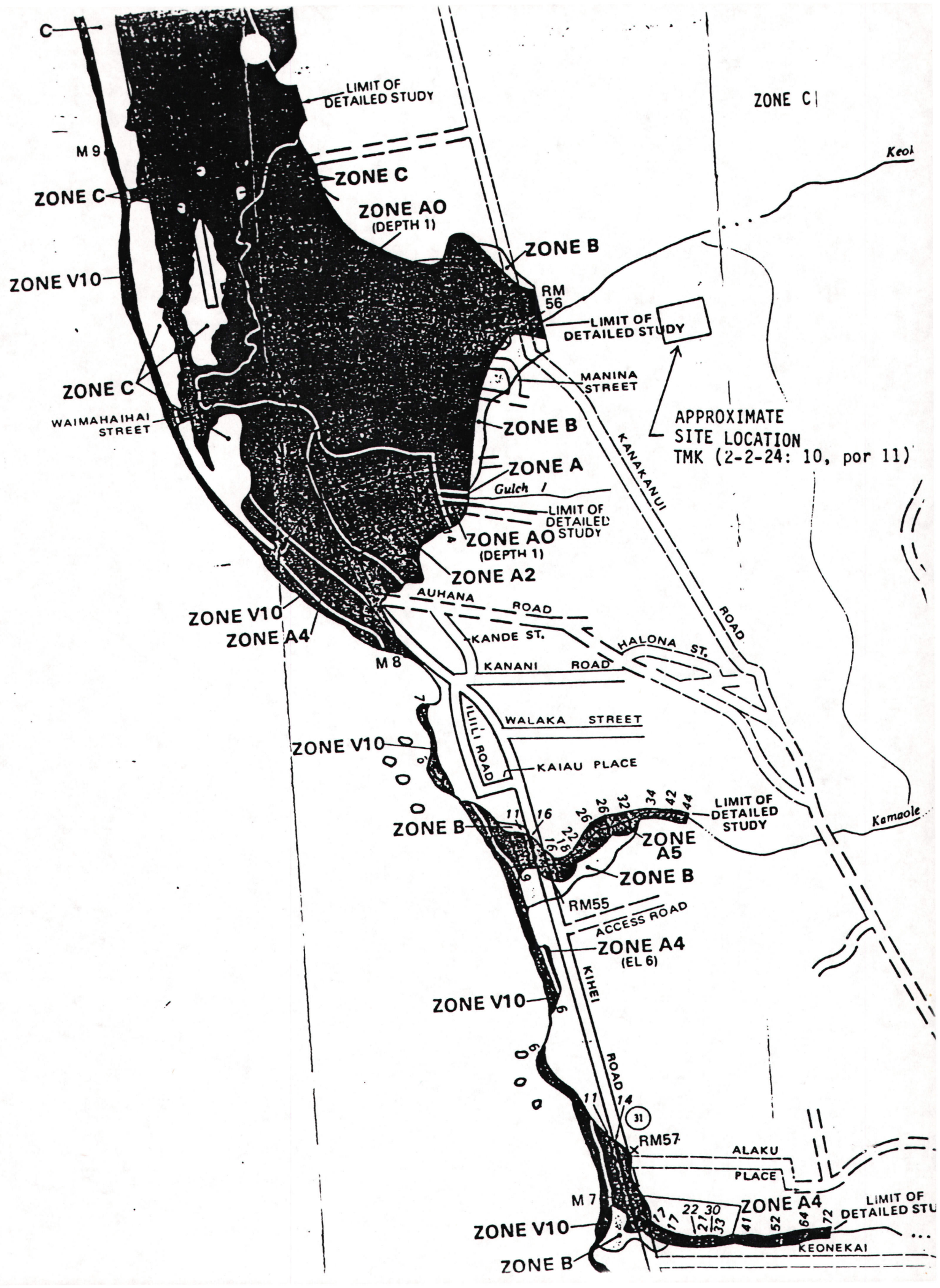
C
LIMIT OF DETAILED STUDY
ZONE C
M 9
ZONE C
ZONE C
ZONE AO (DEPTH 1)
ZONE B
ZONE V10
RM 56
LIMIT OF DETAILED STUDY
MANINA STREET
ZONE C
WAIMAHAIHAI STREET
ZONE B
APPROXIMATE SITE LOCATION TMK (2-2-24: 10, por 11)
ZONE A
Gulch 1
KANAKANUI ROAD
LIMIT OF DETAILED STUDY
ZONE AO (DEPTH 1)
ZONE A2
AUHANA ROAD
ZONE V10
ZONE A4
KANDE ST.
HALONA ST.
M 8
KANANI ROAD
ILIILI ROAD
WALAKA STREET
ZONE V10
KAIAU PLACE
LIMIT OF DETAILED STUDY
ZONE B
ZONE A5
ZONE B
RM55
ACCESS ROAD
ZONE A4 (EL 6)
KIHEI ROAD
ZONE V10
RM57
ALAKU PLACE
M 7
ZONE A4
LIMIT OF DETAILED STU
ZONE V10
KEONEKAI
ZONE B

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

MAUI COUNTY, HAWAII

PANEL 265 OF 400
(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER
150003 0265 C

MAP REVISED:
SEPTEMBER 6, 1989

Federal Emergency Management Agency

Gulch

PANEL 0270

KEY TO MAP

500-Year Flood Boundary	
100-Year Flood Boundary	
Zone Designations	ZONE B / ZONE B
100-Year Flood Boundary	
500-Year Flood Boundary	
Base Flood Elevation Line With Elevation In Feet**	513
Base Flood Elevation in Feet Where Uniform Within Zone**	(EL 987)
Elevation Reference Mark	RM7×
Zone D Boundary	
River Mile	•M1.5

**Referenced to the National Geodetic Vertical Datum of 1929

EXPLANATION OF ZONE DESIGNATIONS

ZONE	EXPLANATION
A	Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
A0	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundation are shown, but no flood hazard factors are determined.
AH	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; base flood elevations are shown, but no flood hazard factors are determined.
A1-A30	Areas of 100-year flood; base flood elevations and flood hazard factors determined.
A99	Areas of 100-year flood to be protected by flood protection system under construction; base flood elevations and flood hazard factors not determined.
B	Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood. (Medium shading)
C	Areas of minimal flooding. (No shading)
D	Areas of undetermined, but possible, flood hazards.
V	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined.
V1-V30	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors determined.

NOTES TO USER

This map is for use in administering the National Flood Insurance Program; it does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size, or all planimetric features outside Special Flood Hazard Areas.

Areas of special flood hazard (100-year flood) include Zones A, A1-30, AE, AH, AO, A99, V, V1-30 AND VE.

Certain areas not in the Special Flood Hazard Areas (zones A and V) may be protected by flood control structures.

Coastal base flood elevations apply only landward of the shoreline shown on this map.

For adjoining map panels, see separately printed Index to Map Panels.

INITIAL IDENTIFICATION:

DECEMBER 6, 1977

FLOOD HAZARD BOUNDARY MAP REVISIONS:

ENCLOSURE

JOHN WAIHEE
GOVERNOR OF HAWAII

RECEIVED
1992 MAY -5 PM 2:02
WASTEWATER
RECLAMATION DIVISION
COUNTY OF MAUI

STATE OF HAWAII
DEPARTMENT OF HEALTH
MAUI DISTRICT HEALTH OFFICE
54 HIGH STREET
WAILUKU, MAUI, HAWAII 96793

'92 MAY -1 P3:37
PUBLIC WORKS

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

PAUL E. HOFFMAN, M.D., M.P.H.
DISTRICT HEALTH SERVICES ADMINISTRATOR (M.D.)

DEPT OF PUBLIC WORKS
DIRECTOR
DEP. DIR.
PERS.
STATE OF
LUCA
WW RECL.
SOLID W.
ENGR.
HWYS.
SECTY.
Return to
By Date 5/4

May 1, 1992

Mr. George N. Kaya
Director
Department of Public Works
County of Maui
200 S. High Street
Wailuku, Hawaii 96793

Dear Mr. Kaya:

Subject: Proposed Expansion of Kihei Wastewater Reclamation Facility, Phase II

We have reviewed the document on the subject project submitted by your office. We concur with the plans of expanding the design capacity from 6.0 million gallons per day (MGD) to 8.0 MGD for the wastewater facilities in accordance with all applicable local standards and regulations for wastewater service.

All wastewater plans must conform to applicable provisions of the Department of Health's Administrative Rules Chapter 11-62, "Wastewater Systems." However, we do reserve the right to review the detailed wastewater plans for conformance to applicable rules.

Should you have any questions, please contact Ms. Lori Kajiwara of the Wastewater Branch at 586-4290.

Sincerely,

David H. Nakagawa

DAVID H. NAKAGAWA
Chief Sanitarian

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	✓			✓		

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FINAL ENVIRONMENTAL IMPACT STATEMENT

KIHEI SEWERAGE SYSTEM

COUNTY OF MAUI

JUNE 1973

SP73-155
Maui Dept of
Public Works

E.I.S. Approved
Aug 10 '73
by Gov.
signed by Ariyoshi
Ann Takamatsu
for OEQC



F I N A L

ENVIRONMENTAL IMPACT STATEMENT

KIHEI SEWERAGE SYSTEM

COUNTY OF MAUI

Approved by:

_____

Stanley S. Goshi
Director of Public Works
County of Maui

P6931.

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APPENDIXES

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A.	Transcript of Public Meeting on Kihei Sewer System and Wastewater Reclamation Plant held 22 February 1973 at Kihei Elementary School
B.	Record of Public Meetings on Comprehensive Sewer Master Plan held 19 March, 22 March, and 23 March 1971 at Kahului, Makawao and Lahaina.
C.	Record of Public Hearing on County of Maui Sewerage and Drainage Master Plan held 27 January 1972 at County Building in Wailuku.
D.	Copies of letters received by the Office of Environmental Quality Control in response to Draft Environmental Impact Statement for Kihei Sewerage System.
E.	Response to letters received by the Office of Environmental Quality Control.

D R A F T

ENVIRONMENTAL IMPACT STATEMENT
KIHEI SEWERAGE SYSTEM

PROJECT IDENTIFICATION

Name of Applicant: County of Maui
Address: Wailuku, Maui, Hawaii
Project Number: (to be assigned)
Location: Kihei area, County of Maui

PROJECT DESCRIPTION:

The proposed project provides for construction of a sewage collection system and wastewater reclamation plant for an area extending from Wailea northward to Kihei as shown on Figures I-1, II-1, II-2 and II-3[1] Future additions can be made to the system to extend service north to the Maalaea area and south to the Makena area as needed. The treatment plant, shown on Figures V-1, V-2, V-3, V-4 and V-5, will be adequate for the present population needs and will provide a 3 million gallon per day capacity for increased needs over the next 20 years in accordance with the Kihei Civic Development Plan and population forecast shown on Figure II-5. Provisions have been made for expansion of the plant when needed. The treatment plant will utilize the complete-mix activated sludge process to provide a high quality secondary effluent. Approximately 90-95 percent of the BOD and suspended solids will be removed from the wastewater prior to its use for irrigational purposes.

Approximately 250,000 gallons per day of the plant flow will receive mixed media filtration and additional chlorination to

---

(1) Figures shown are from full report entitled "Design Criteria Report for Kihei Sewerage System," County of Maui, 1972.

achieve an even higher quality of reclaimed water for irrigation at Kalama Park, 4,000 feet makai of the plant. Kalama Park presently is irrigated with potable water from the county water system.

The remainder of the effluent from the plant will be used for rangeland irrigation adjacent to the plant site. This system will utilize an effluent storage basin, underground irrigation lines, and application spray nozzles. The below-ground storage tank will be 1.5 million gallon capacity. An injection well is provided as a backup system for effluent disposal and would be utilized only in cases of extreme emergency such as extended periods of heavy rainfall. The effluent storage facilities will provide flexibility in meeting flow variations. Complete standby pumping and power generation equipment will insure continued operation in the event of power failure or mechanical breakdown.

I. AREA BACKGROUND DESCRIPTION:

Service Area. The 4,400 acre area ultimately to be served is shown on Figure I-1. It covers, in general, the same areas as the Kihei Civic Development Plan which was completed in 1970 and which supersedes previous zoning and development plans for this area of Maui. This plan becomes the basis for updating the previous studies made for the sewerage of the area.

The overall service area is considered in five distinct parts: (1) Maalaea Village, which lies at the extreme northwest and is separated geographically from the Kihei-Makena area by Kealia Pond and its surrounding flats; (2) North Kihei, which comprises generally the area from the Kihei Road--Mokulele Highway junction and southward to Lipoa Street; (3) South Kihei, which runs from Lipoa southward to the boundaries of Wailea Land Corporation;

(4) Wailea Land Corporation's resort complex; and (5) Makena, comprising an area southward from Wailea Land Corporation's southern boundary to the old Hawaiian Church at Makena. Only the North Kihei and south Kihei portions are included in the proposed project.

A. TOPOGRAPHY

That portion of the service area in the vicinity of Maalaea ranges from rocky cliffs on the northwest to low-lying sand dunes on the northeast. The North Kihei area is generally characterized by gentle slopes, with some portions tending to be swampy due to low elevations and high groundwater table. A portion of the area in the northeast is at a higher level, with steeper slopes. Topography in the South Kihei area, north of Kalama Park, is similar to that found in the North Kihei area. South of the park, the ground slopes upward more quickly from the road and reaches elevations up to about 200 feet in the southeast corner. Land in the Wailea area is somewhat more rugged than the area to the north, with slope steepness increasing further south to the Makena area.

B. CLIMATE

The entire area is similar in climate. Situated on the lee side of Haleakala, it is the driest area on Maui with an annual mean rainfall of 10 to 15 inches. Practically all of this rain occurs in the winter months, largely during southerly wind storm periods. These storms cause localized flooding, particularly in the lower elevations of the north and south Kihei sections.

Winds are normally out of the northeast averaging 10 to 15 mph during the afternoons, with lighter winds during the mornings and nights.

Temperatures are mild throughout the year. The extreme high seldom exceeds 90 degrees, with an extreme low in the middle 50's.

C. SOILS AND GEOLOGY

Soils throughout the service area are typically shallow and sandy, underlain by series of layers of cinders and basalt. Soils are slightly deeper in the narrow coastal sandy beach areas, and become virtually non-existent in the higher elevations.

Soils in the Kalama park area are deep Jaucus sands with high infiltration and transmission rates.

Soils in the treatment plant and treated effluent irrigation area are the Waiakoa series. Discussions with local representatives of the Soil Conservation Service concerning the site indicated acceptable irrigation rates of 0.5 to 1.0 inch per acre per day. Prior to final design of irrigation facilities, a complete review of the soils and application rates will be made to insure against over-irrigation.

D. HYDROLOGY

The Kihei area is relatively arid (10 to 15 inches of annual rainfall) and receives its potable water supply from the Waikapu-Wailuku area, outside of the Kihei drainage basin. Groundwater is relatively high (approximately 1-1/2 feet below ground level) in the lower areas of North Kihei area and a portion of the South Kihei area. Tests of well water by the Department of Water Supply indicated salinity beyond limits for human consumption (30 gr.) and marginal for irrigation.

E. LAND USE

The service area is characterized by a narrow coastal strip of scattered residential development, bordered mauka by open ranchland.

In the Maalaea area, the small boat harbor is the most significant urban feature. Areas for future development are primarily

northwest of the small boat harbor and west of Honoapiilani Highway.

Development in the North Kihei area generally is restricted to a strip bordering both sides of Kihei Road, with scattered development extending to the mauka boundary of the Civic Development Plan.

In the South Kihei area, development is primarily mauka of the Kihei Road with more scattered residential development in the area immediately east and south of Kalama Park.

The Wailea area is not presently developed, but plans have been approved to create a major tourist resort and surrounding community. An 18-hole golf course has been completed and construction of some homes and apartments is scheduled for 1973.

The Makena area consists almost entirely of scattered homes and weekend cottages.

F. EXISTING WASTEWATER TREATMENT

Wastewater treatment in the area for the more than 2,500 residences is provided by individual cesspool units. In the lower areas of Kihei cesspools are approximately 6 to 10 feet deep with normal groundwater level at 2 to 4 feet below the ground surface. In the higher areas cesspools are dug in solid rock to depths of 10 to 20 feet. In both areas adequate drainage does not occur from existing facilities causing backup of sewage and need to dig another cesspool.

Since 1968 larger developments (10 to 200 units) have installed cavitets or small "package" treatment plants. At the present time there are more than 25 of these units in the area serving approximately 1,500 units. Over half of these plants have been

built within the last two years. Effluent is disposed of by injection wells at depths generally 30 to 50 feet below the ground surface, in some cases injection wells are more than 100 feet. Problems are already occurring in injection well plugging by solids carryover from the treatment plants.

G. VEGETATION AND WILDLIFE

Vegetation in the area consists mainly of grasses and scrub keawe. Some palms and other large trees exist in Kalama Park and the surrounding area.

No significant wildlife or wildlife habitat exists in the project service area, except in the Kealia Pond and existence of the Grey Franklin partridge throughout the general area in uninhabited locations. Sewerage construction will not occur near the Pond area. No significant impact will occur to the Grey Franklin partridge since sewer construction will be primarily limited to existing road rights-of-way and on 16 acres at the plant site.

H. LEGAL OR ADMINISTRATIVE REQUIREMENTS

The project is in keeping with the coastal water quality standards as set forth by the Hawaii Water Quality Standards, Chapters 37 and 37-A (1).

II. PROBABLE IMPACT OF THE PROJECT ON THE ENVIRONMENT

A. LAND RESOURCES

1. Water Reclamation Plant and Pump Stations. No significant direct impact to land resources is anticipated due to the location of the water reclamation plant or pump stations. The 25-acre plant site is set back 1,000 feet from the proposed Kihei Ulupalakua Road and is bounded on all sides by ranchland. This buffer will avoid possible future land use incompatibility, provided effective land use controls are implemented. Pump stations will be located along the Kihei Road on approximately one-quarter acre sites as shown on Figures II-1 and II-2. Each pump station will be architecturally designed and landscaped. A typical pump station is shown on Figure IV-6.

2. Sewage Collection System. A minor direct impact will be experienced with the installation of sewer lines. This will be only a temporary impact, associated with construction. The interceptor sewer line is routed entirely along the Kihei Road as shown on Figures II-1 and II-2 and avoids potential impact to native vegetation, wildlife and historical or natural features. Primary impact on vegetation will be associated with installation of the lateral sewer lines. Impact will be minimized in this instance by specific instructions to the contractor, included in the construction contract documents, to limit the work area to existing street rights-of-way and within easements, thereby reducing the amount of vegetation which would be disturbed. Instructions will also be provided to insure that the original ground level is achieved after backfilling. Some light soil erosion due to wind is expected, but this will be minimized by backfilling the trenches as soon as possible and controlling dust by lightly watering of work areas. Disruption of traffic during installation of the sewers in the road right-of-way will also occur but will be minimized by planned detours. All

detours will be approved by the County prior to start of construction.

3. Urbanization. A potential secondary impact of the proposed system could be upon land use in the planning area. Lack of water and sewerage systems have restricted development in the area up to the present. Provision of the proposed facilities will permit limited urbanization of the Kihei area by controlled, orderly growth in accordance with the Civic Development Plan. Growth will be limited by the initial treatment plant capacity which provides for less than 25 percent of the possible development considered in the Civic Development Plan. From an island-wide point of view, this appears environmentally desirable. That is, if a larger population is to be accommodated on Maui, this area seems to offer the least adverse environmental impact. Soils are more suited for urban development than for agriculture. Development of the area partly as a desirable area for tourists should insure the retention of the exceptional beaches in their natural state. Development of the area is called for in the Kihei Civic Development Plan which specifies a public sewer system as the most critical public facility need.

B. WATER RESOURCES

1. Water Quality. The most immediate impact of the proposed system will be to improve the quality of wastewater treatment, eliminating the potential threat of pollution to the groundwater and beach areas concerned.

Existing individual cesspools used throughout the area are capable of removing less than 50 percent of the wastewater pollutants with no provisions for disinfection of the treated effluent. The proposed treatment facilities will produce a treated effluent with less than 10 to 20 mg/l BOD and suspended

solids (more than 90 percent removal of wastewater pollutants). All effluent will receive chlorine disinfection with an effluent chlorine residual of 1 mg/l. Residuals of this level are not considered hazardous to animals or plant life.

The first 250,000 gallons per day of treatment plant effluent will be given further treatment by mixed-media filtration and stored for irrigation at Kalama Park. Primary means of effluent disposal for the remaining flow will be rangeland irrigation on acreage adjacent to the plant site. Negotiations are being conducted with Haleakala Ranch, the Wailea Corporation and the highway division to arrange for spray irrigation areas. The irrigation site will be fenced and have limited public access. During the first two years of operation other methods of effluent reuse will be investigated as discussed later.

Potential contamination of potable water due to irrigation is remote due to the fact that all potable water is obtained from outside the Kihei drainage basin.

The high chloride, total solids and magnesium concentrations found in local wells in the area[1] indicate the influence of salt water on the local groundwater supply. New sewers will

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[1] A water sample taken from a shallow well in the vicinity of Kihei Road and Ohukai Road in late January 1973 indicated the following:

Parameter	Found (in mg/l)
Hardness as $CaCO_3$	295
Calcium (Ca)	42
Magnesium (Mg)	46
Chloride (Cl)	515
Sulfate (SO_4)	72
Total Solids	1,500
Total Volatile Solids	94

limit the infiltration of all groundwater thus chloride concentration in the treated plant effluent will be due, primarily, to the existing potable water supply. Recent State tests indicate chloride concentrations under 50 mg/l in the existing Kihei potable water supply. It should also be noted that only the interceptor is affected by any infiltration of brackish groundwater in the North Kihei area, since the remaining collection system is above the normal groundwater table. The average chloride content of the wastewater may be increased 20-40 mg/l from normal sewer usage; hence, the effluent chloride concentration from the reclamation plant should be under 100 mg/l. This compares with the 500+ mg/l chloride content of the existing groundwater.

The proposed method of disposal is consistent with the Kihei Civic Development Plan.

2. Water Quantity. A beneficial impact of the proposed project will be the conservation of the potable water supply. Use of reclaimed water at Kalama Park, golf course, parkways and similar uses will allow conservation of the potable water supply for domestic purposes. This would amount to 250,000 gallons per day at Kalama Park alone.

3. Water Cycle. The proposed project is not expected to alter the present water cycle significantly. The Kihei water supply is obtained from outside the drainage basin. After domestic use, the bulk of the water enters the groundwater supply as cesspool effluent. Little if any change in the water cycle is expected, since the reclaimed water resulting from the proposed system will be discharged in the same drainage basin.

C. AIR QUALITY

The proposed sewerage project is not expected to have significant impact on air quality. No incineration of sludge will take place. Sludge will be dried by evaporation and disposed of on land. The wastewater treatment process is entirely aerobic and with normal operation will be odor free. Aerobic process means adding sufficient oxygen to allow biological growth to occur without generation of noxious gases.

D. SOLID WASTE

The primary solid waste byproduct of the project would be digested sewage sludge. Approximately 3,000 pounds of solids will be produced per day at maximum capacity. Initially, less than 200 pounds of solids would be produced. Impacts associated with sludge disposal are not considered significant in view of the relatively small quantities involved. The dried, odorless humus material would be trucked to disposal sites or landfills. The existing Maui County Landfill can accept all treated waste sludges from the Kihei plant. The preferred method of disposal to be used would be as a soil conditioner on adjacent rangeland, parks and highway parkways. Tests will be conducted at the plant site and by the Park Department to demonstrate the useability of sludges as a soil conditioner prior to any other use by public or private parties.

There will be no excess excavated material from the construction which will require off-site disposal.

E. ESTHETICS

1. Odor. Potential odor problems associated with any sewage treatment process is most likely to occur at the pump stations; at the headworks, where the raw sewage enters the treatment plant; and in the incineration or drying of sludge. Due to the treatment processes and facilities selected, no adverse impacts caused

by odor are anticipated. Each pump station will incorporate an odor control system to minimize any potential odors at that point. The odor control system will be a wet scrubber type, utilizing an oxidizing solution to eliminate any possible odors. The water reclamation plant utilizes a completely aerobic process and, therefore, as previously discussed, will be odor free. An odor control system also will be located at the plant headworks to minimize any potential odors from the influent flow prior to the aeration basin. The plant headworks is completely enclosed. The sludge digestion process is completely aerobic and produces only carbon dioxide as an odorless gas. Standby aeration equipment for both the aeration basins and aerobic digesters will be provided to permit continued operation of the treatment process in the event of mechanical failure. The odorless digested humus material will be dewatered by decanting and dried in two 1-acre humus ponds located at the plant site. The nearest residence to the plant site is approximately 1,800 feet away.

2. Visual. No adverse visual impacts are anticipated from the project. Primary structures will be those at the treatment plant and the pump stations along the interceptor route. All buildings will be low profile, single-story structures, and will be architecturally designed to blend harmoniously with the natural surroundings. All building sites also will be landscaped to provide an attractive appearance. Sewer installation will not result in any adverse visual impacts since other than manhole covers, the entire installation is below ground.

3. Noise. Potential noise sources in the proposed project are: (1) surface aerators, (2) emergency generators, (3) pumps, and (4) smaller compressors and exhaust fans. No adverse noise impacts are expected, since all of the above equipment with the exception of the surface aerators will be essentially soundproofed within structures. Emergency generators will be muffled,

and their use would be infrequent. In the case of the surface aerators, the design provides for equipment which has a very low noise level. dB measurements for similar installed equipment is in the range of 70 to 80 dB, measured at the basin wall. This is comparable to an automatic dishwasher or vacuum cleaner. At a distance of 100 feet from the aeration basin, the measured dB level drops to approximately 50. This is comparable to inside a home during the evening. Comparable noise levels of 50 dB were measured 20 feet from a pump station similar to those proposed.

F. SOCIAL FACTORS

1. The most significant direct impact of the project will be beneficial, in that it will provide for the elimination of the existing pollution threat to groundwater and adjacent beach areas due to cesspool seepage. This in turn will permit controlled orderly planned growth, in accordance with the Kihei Civic Development Plan.

2. Beach-oriented recreational opportunities will be enhanced by the alleviation of pollution along the beach areas. This will provide a healthier and more enjoyable recreational experience in these areas.

3. No families or businesses will be relocated or otherwise affected by the project.

4. The project will not adversely affect any historical, archeological, cultural values--churches, schools, cemeteries, parks, etc.--located in the service area.

III. ADVERSE IMPACTS WHICH CANNOT BE AVOIDED SHOULD THE PROJECT BE IMPLEMENTED

A. Principal direct impacts associated with implementation of the project would be those temporary impacts involved with construction. These would be limited to traffic disruption, and some limited soil and vegetation disturbance during installation of sewer lines. Other minor impacts normally associated with construction such as dust and noise from heavy equipment could be anticipated.

B. Possible secondary impacts on air, water and land resources due to urbanization, could be anticipated. The extent of this impact would depend greatly on the development controls which will be imposed by the responsible county and state agencies. Even without the proposed project, some form of comparable wastewater collection and treatment would have to be provided for the existing population to correct the present pollution threat.

IV. ALTERNATIVES TO THE PROPOSED ACTION

A. Four alternative approaches to the question of sewage collection and treatment were considered. These were:

1. No Public Wastewater Collection and Treatment System. This alternative would rely on the continued use of cesspools cavitets or individual package treatment plants for sewage treatment. In most cases, cesspools and cavitets provide only superficial primary treatment or act as holding tanks.

This alternative would not meet present federal, state or local water quality standards. The possibilities of pollution and health hazards still remain through malfunction and improper maintenance of individual treatment facilities. Also, failure to direct growth through the planned location of services (such as sewer and water) could shift the urbanization pressure to agriculturally more productive land.

2. Multiple Collection and Treatment Facilities. This alternative would involve the use of several smaller plants along the coastline of the service area and was investigated in previous studies. Considerably higher operational and construction costs would result from this alternative. The land use incompatibility is significantly greater than for a single plant located out of the urbanizing area. In addition the multiple facility concept would be less reliable and in conflict with the regional plan developed for the Kihei area.

3. Centralized Regional Water Reclamation Plant. Topography and distance effectively prohibit the use of a regional plant for the entire island. Further, this solution would be less desirable from an ecological point of view since it would tend to concentrate both the volume of wastewater and the

sludge/BOD/nutrient load at one location. Productive use of the effluent in the Kihei area would not be economically feasible once the wastewater left the Kihei basin.

4. The Proposed Kihei Regional Plant as Previously Discussed.

B. Alternative methods of effluent disposal considered.

1. Outfall to the Sea. The major advantage of this alternative would be in the discharge of nutrients into the ocean, with possible beneficial effects on marine life. The disadvantages would be the greater costs involved (in excess of $1,000,000); problems involved in controlling and monitoring the effect of ocean discharge to the marine environment; the loss of the water resource for irrigation; and possible esthetic objections to ocean disposal in the vicinity of recreational beaches.

2. Tertiary Treatment. Effluent reuse now contemplates irrigation. Secondary treatment as proposed provides good quality water for irrigation use and additional expenditures for more advance waste treatment at this time are not justified. Additions can be made to the planned Wastewater Reclamation Plant to provide higher quality effluent if needed in the future.

3. The Proposed System utilizing spray irrigation of effluent on parks, golf courses and ranchland, with an emergency injection well. During the initial two years of operation studies will be made using irrigation water on diversified agricultural crops. Consideration will also be given providing treated effluent for highway beautification programs on the proposed Kihei Ulupalakua Road.

V. RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF THE ENVIRONMENT AND MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

There appears to be little conflict in this instance between short-term uses of the environment and long-run productivity. Short-run benefits of the project are summarized as follows:

1. Elimination of existing and potential health hazards.
2. Provision for adequate disposal of sewage.
3. Attainment of water quality objectives of the county, state and federal agencies.
4. Attainment of the Kihei Civic Development Plan, for the planned orderly growth in the area.

Long-run productivity of the water resource will be enhanced by the elimination of present groundwater pollution. Recycling of the treated effluent for agricultural purposes will provide a much more responsible use of a precious resource. Agricultural productivity will be enhanced on a long-term basis, both through the availability of additional irrigation water, and by the use of the sludge as a fertilizer supplement and soil conditioner.

The proposed project would involve secondary long-term effects on air, water and land resources, through the urbanization of the area. As noted in the discussion of adverse impacts under Section III, the actual extent of these impacts would depend on the development controls which will be exercised by government. It is noted, however, that the limited increment of growth which would be facilitated by this project is totally

consistent with the Kihei Civic Development Plan. Further, urbanization in this area would utilize land which is poorly suited to agriculture and does not possess significant quantities of flora or fauna which would be removed or displaced. Urbanization with a goal of tourist attraction will serve to preserve the sandy beaches which are a major asset to the area and, along with the expressed goals of the Civic Development Plan, would assure the retention of the environmental quality of the area. From an overall island point of view, this area appears to be one of the most desirable locations for urbanization to occur.

Long-term productivity of human resources, in terms of expressed social and health goals, will be enhanced by the continued achievement of the short-term benefits cited. The net effect of the proposed project would be to provide an improved environment for the people living and working in the Kihei area.

VI. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

A. The major irreversible and irretrievable commitment of resources will be the land directly required for the proposed system; and that land which would be converted to urban uses in accordance with the Civic Development Plan.

Direct requirements of land are:

Water reclamation plant	23 acres
Humus ponds	2 acres
Spray Irrigation field	50 acres initially; 225 acres at maximum flows[1]

In addition, sewer rights-of-way would be committed; however, these will generally be in existing public highway rights-of-way.

B. The other principal commitment of resources would be the capital costs of the project (estimated at $10,000,000); operation and maintenance costs (estimated at $84,000 per year); and the raw materials required for construction.

C. The project provides flexibility for future expansion, changes in disposal methods, or for the addition of advanced wastewater treatment facilities. It does not commit future generations to an irreversible approach to water quality or resource management.

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1 At maximum application rate of 1/2"/acre/day

VII. PUBLIC ACCEPTANCE AND INVOLVEMENT

The latest public meeting on the Kihei Sewerage System was held on 22 February 1973 at the Kihei Elementary School. The first part of the meeting was devoted to presentation of the plan and alternatives considered with a question and answer period. The second part of the meeting was for public testimony. Approximately 50 people attended the meeting. Twenty people testified in favor of the proposed improvements with no one in opposition. A transcript of the meeting is included in Appendix A.

Prior to this meeting public meetings were held in 1971 on the Comprehensive Sewer Plan which included the Kihei area. Information concerning these meetings is included in Appendix B.

A formal hearing was held on the County of Maui Sewerage and Drainage Master Plan in 1972. Information concerning the hearing is included in Appendix C.

Over the past three years information has been available to the public through news coverage and informal meetings. Numerous meetings were held prior to 1970 in efforts by the Kihei residents to obtain public sewers for their area.

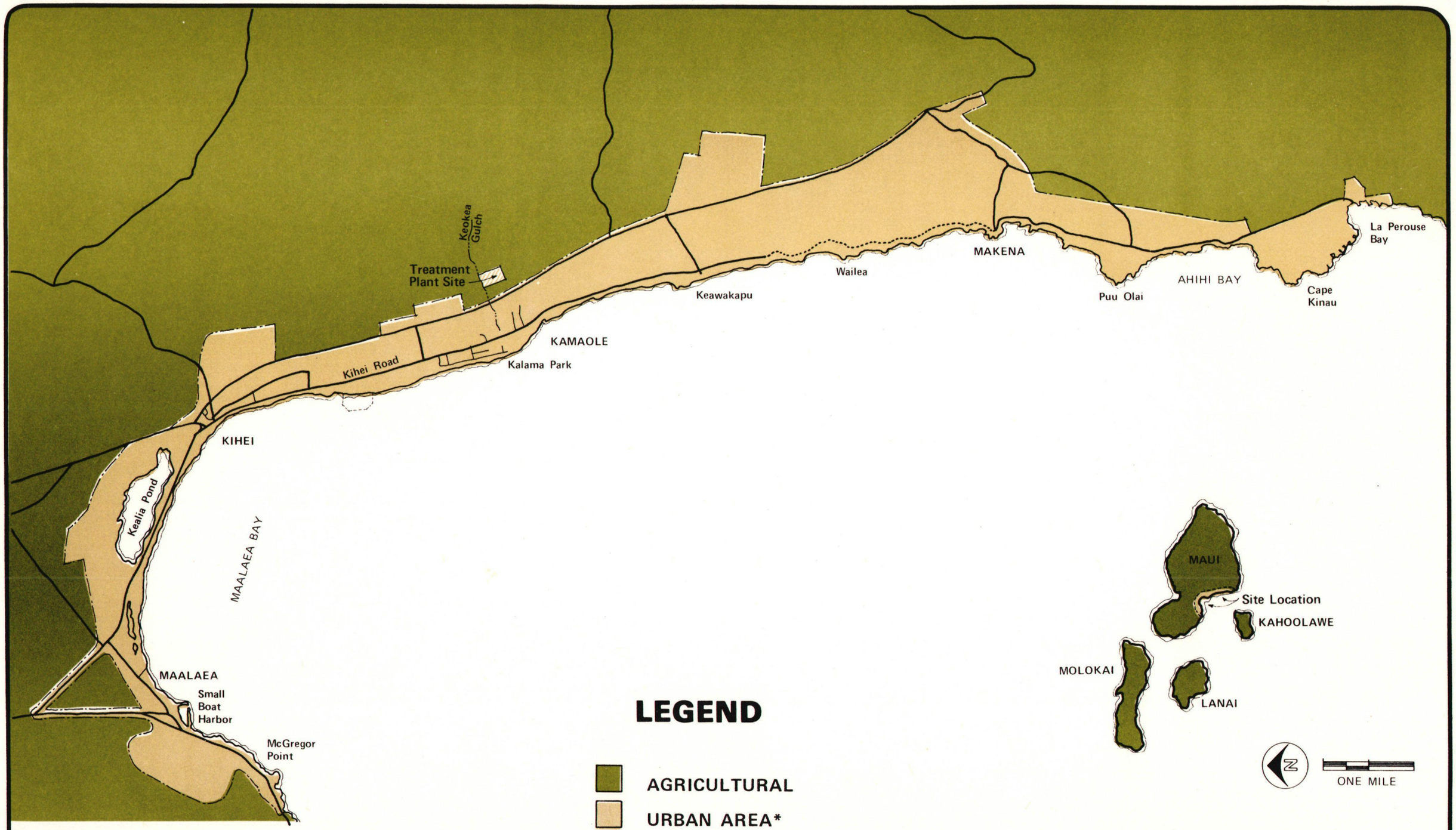
VIII. AGENCIES CONSULTED

The following agencies were consulted prior to preparing the draft statement.

1. County of Maui
2. Department of Water Supply, Maui
3. State of Hawaii
   a. Office of Environmental Quality Control
   b. Department of Health
   c. Department and Land and Natural Resources
   d. Department of Transportation
   e. Department of Planning and Economic Development
4. U.S. Environmental Protection Agency
5. Maui Electric Company
6. Wailea Development Company
7. Haleakala Ranch

The Office of Environmental Quality Control (OEQC), State of Hawaii distributed draft copies of the Kihei Sewerage System Environmental Impact Statement to various governmental agencies and private organizations which are involved and concerned with environmental matters. Comments on the draft statement received by OEQC are included in Appendix D.

Maui County's responses to comments received are included in Appendix E.



LEGEND

AGRICULTURAL

URBAN AREA*

*AS DEFINED IN KIHEI CIVIC DEVELOPMENT PLAN

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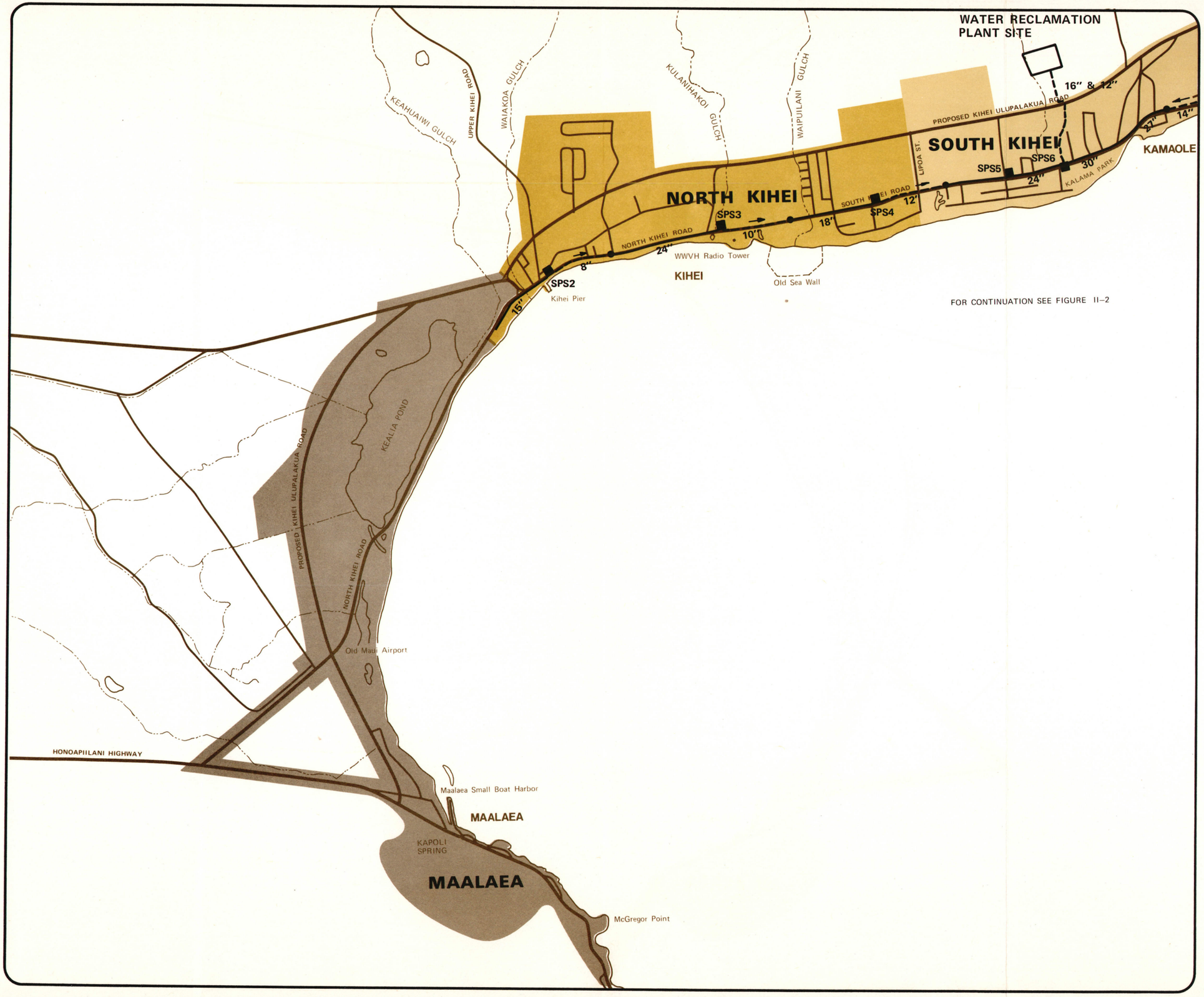
CLAIR A. HILL & ASSOCIATES

FIGURE I-1

KIHEI SEWERAGE AREA

REVISED MARCH 1973



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CLAIR A. HILL & ASSOCIATES

1500 0 3000
SCALE IN FEET

NOTE:
STUDY AREA BOUNDARY IS THAT USED FOR THE KIHEI CIVIC DEVELOPMENT PLAN.

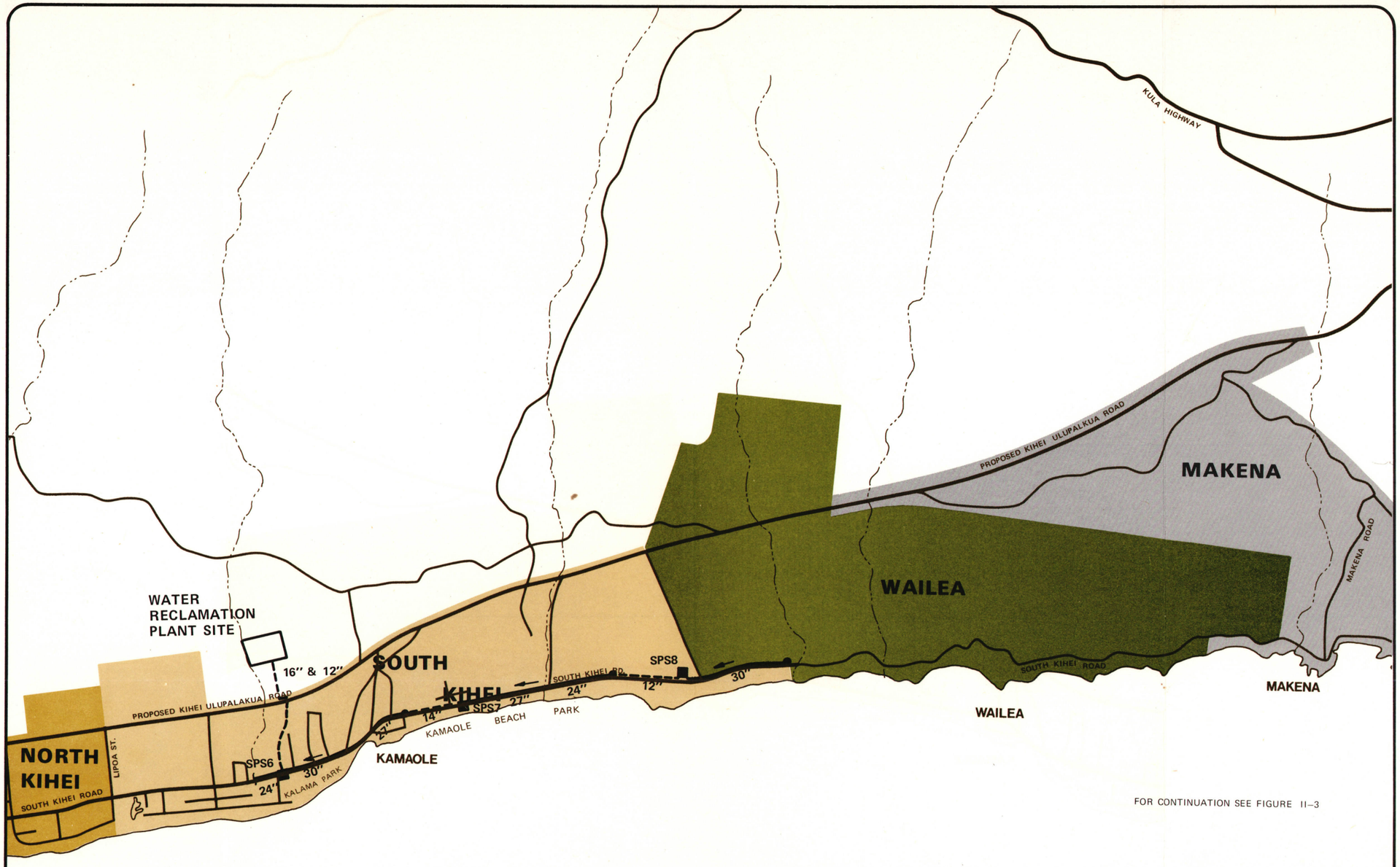
LEGEND

- SPS10 — GRAVITY SEWER
- 12" — PRESSURE LINE
- SPS3 — SEWAGE PUMP STATION
- DIRECTION OF FLOW

FIGURE II-1

NORTHERN STUDY AREA
(MAALAEA & NORTH KIHEI)

REVISED MARCH 1973



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SCALE IN FEET

NOTE:
STUDY AREA BOUNDARY IS THAT USED FOR THE KIHEI CIVIC DEVELOPMENT PLAN.

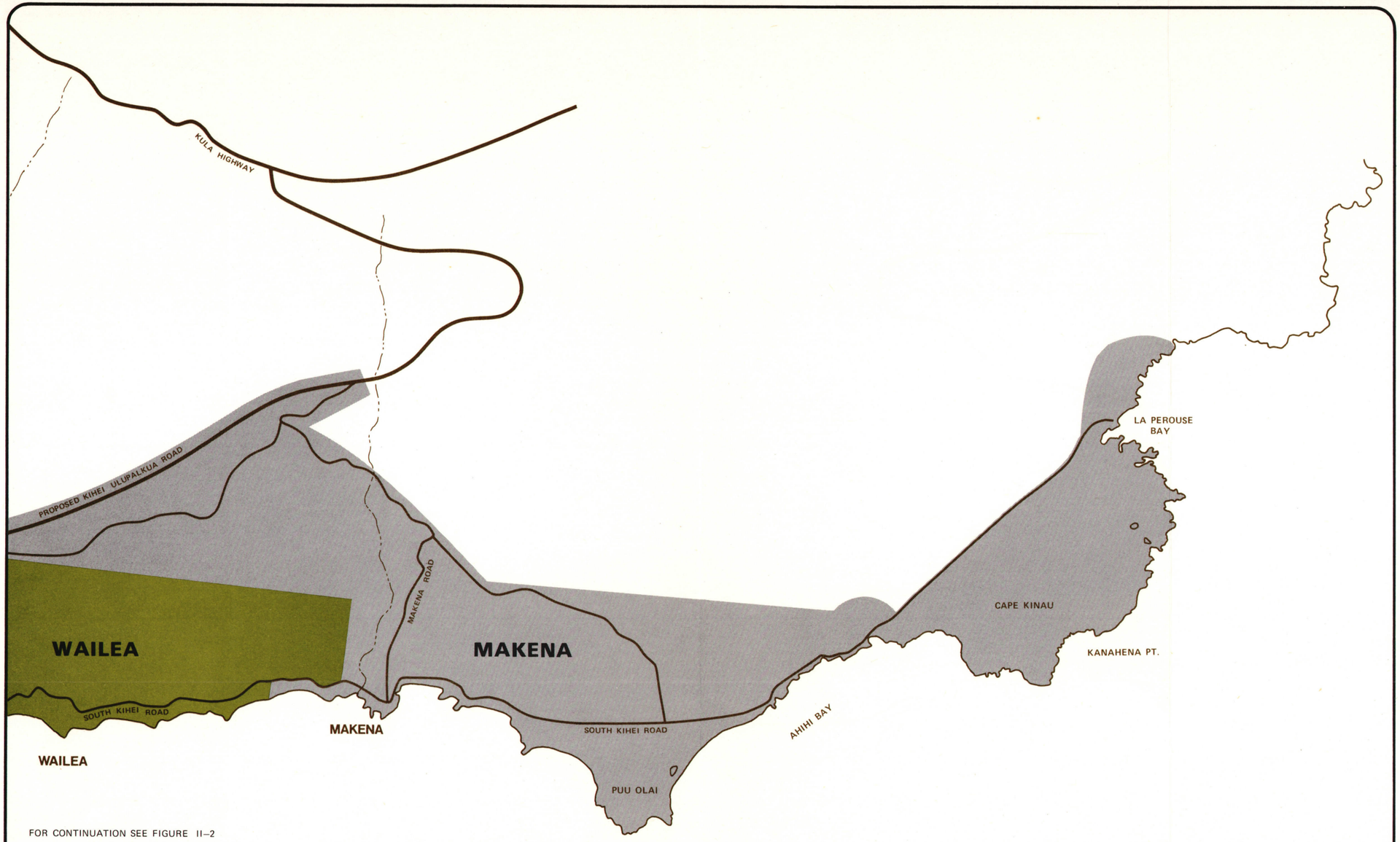
LEGEND

- 18" — GRAVITY SEWER
- 12" — PRESSURE LINE
- SPS10 — SEWAGE PUMP STATION
- DIRECTION OF FLOW

FIGURE II-2

CENTRAL STUDY AREA
(SOUTH KIHEI & WAILEA)

REVISED MARCH 1973



FOR CONTINUATION SEE FIGURE II–2

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SCALE IN FEET

NOTE:
STUDY AREA BOUNDARY IS THAT USED FOR THE KIHEI CIVIC DEVELOPMENT PLAN.

FIGURE II-3

SOUTHERN STUDY AREA
(MAKENA)

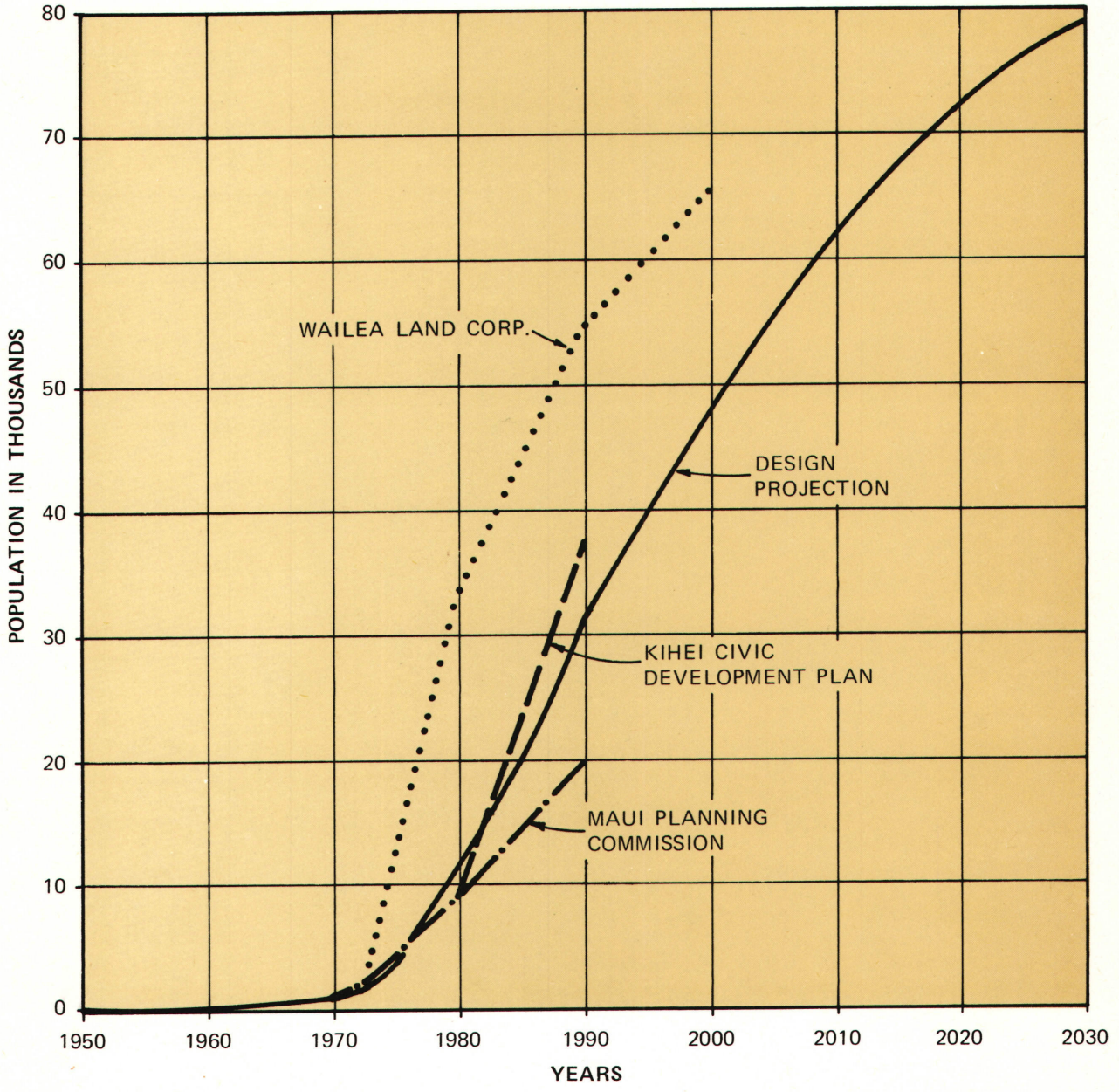

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FIGURE II-5

POPULATION FORECAST

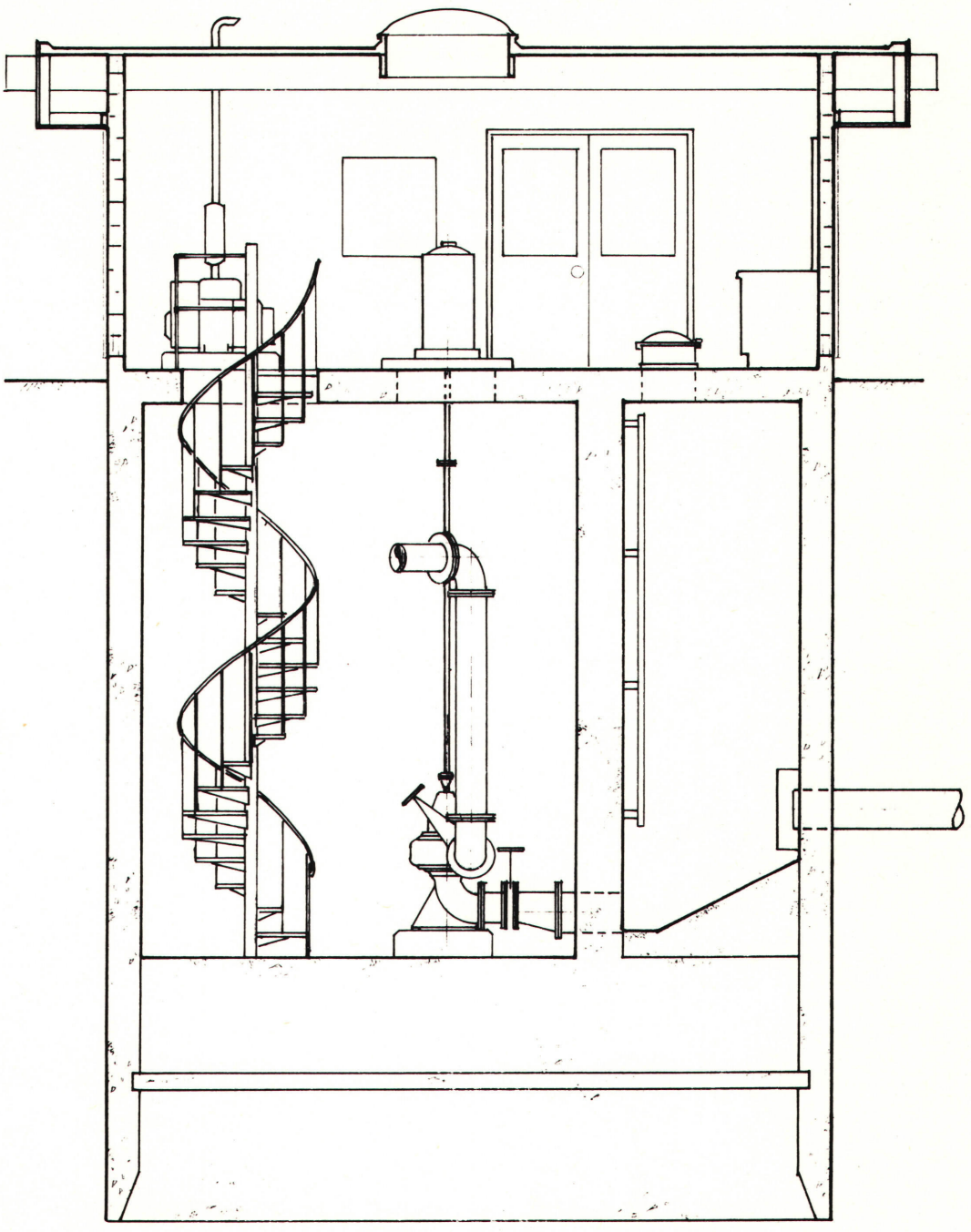

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FIGURE IV-6

TYPICAL PUMP STATION

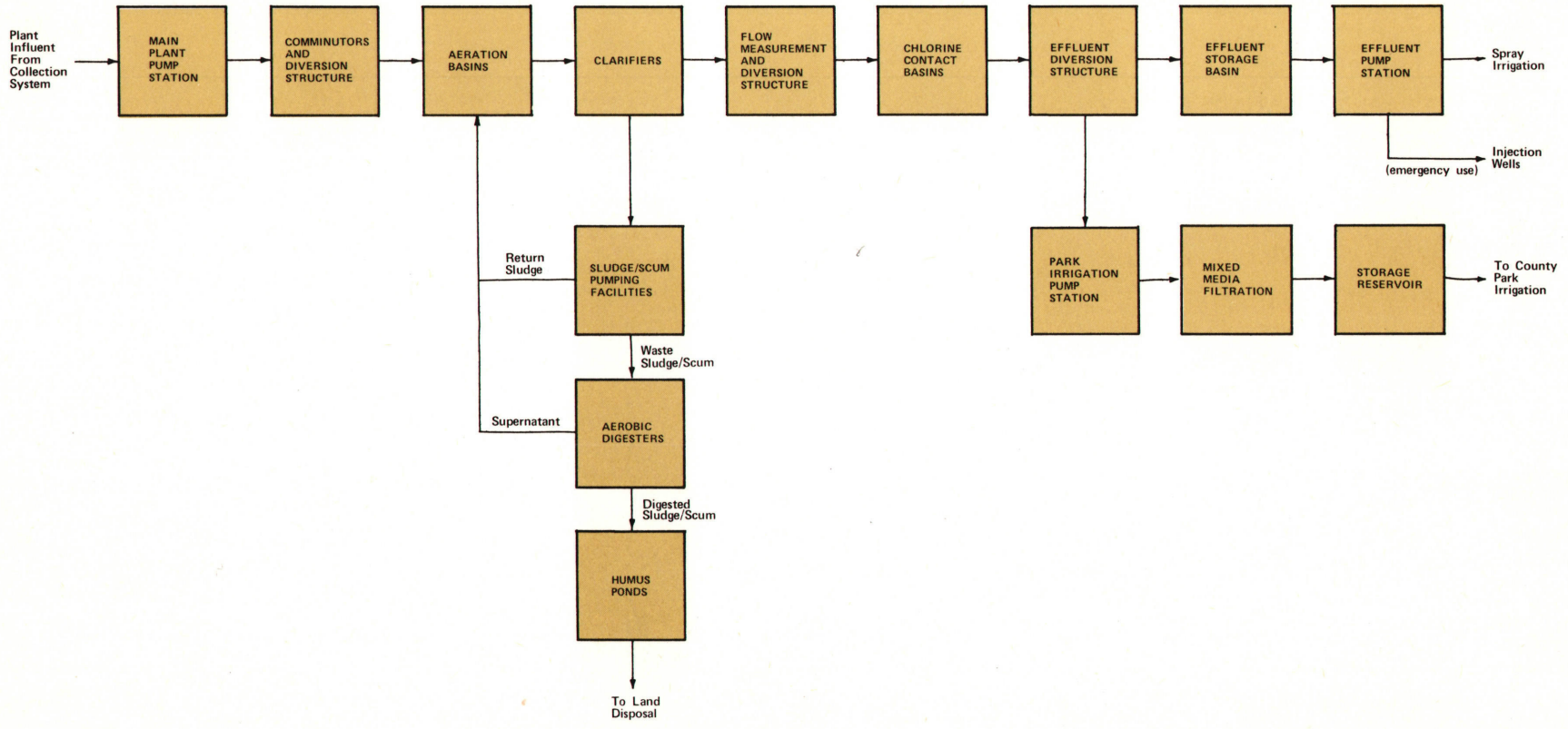

FIGURE V-1

PROPOSED PLANT FLOW SCHEMATIC

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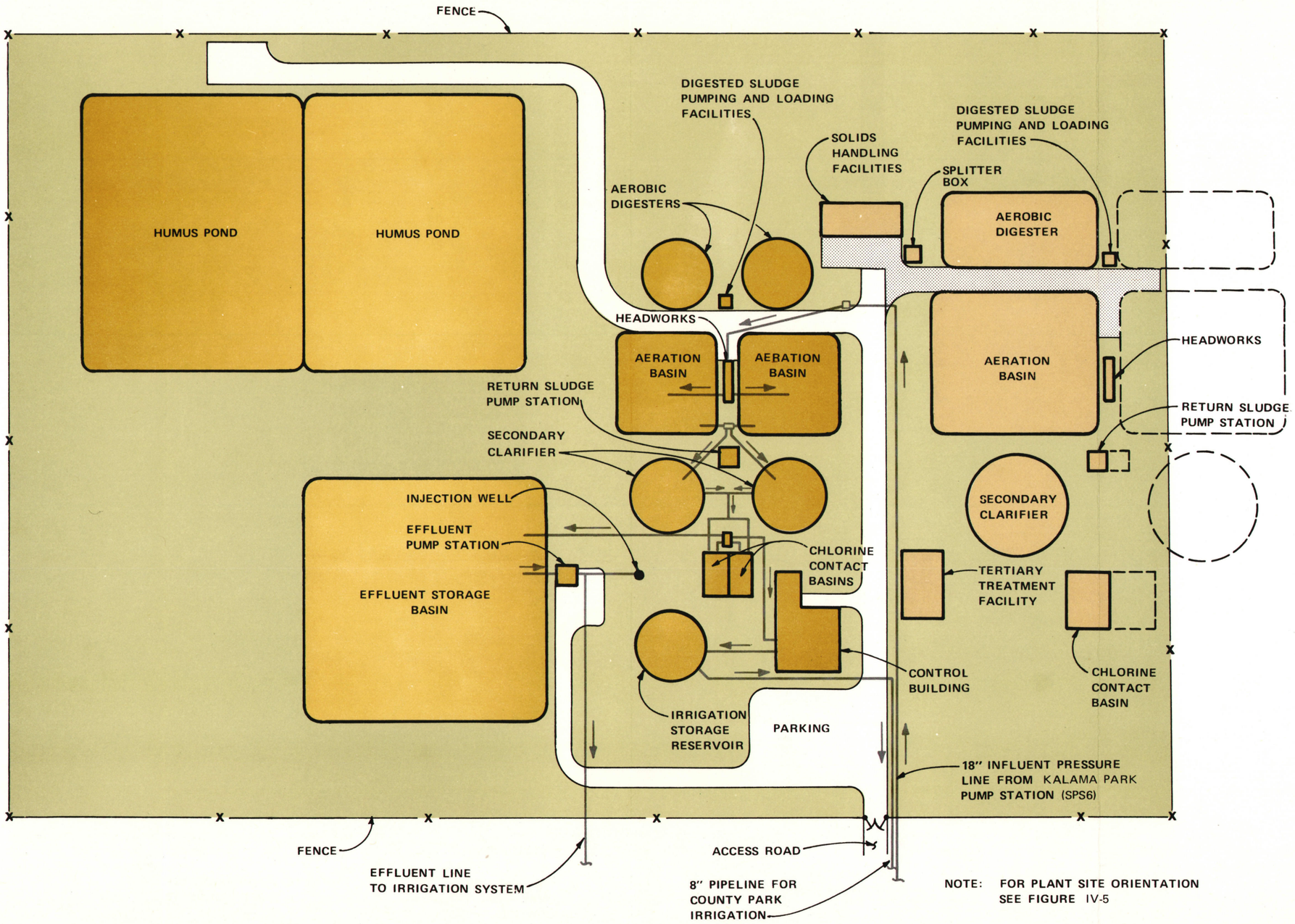

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SCALE IN FEET

LEGEND

- PROPOSED
- FUTURE
- ULTIMATE
- PIPES

FIGURE V-2

PROPOSED WATER RECLAMATION PLANT

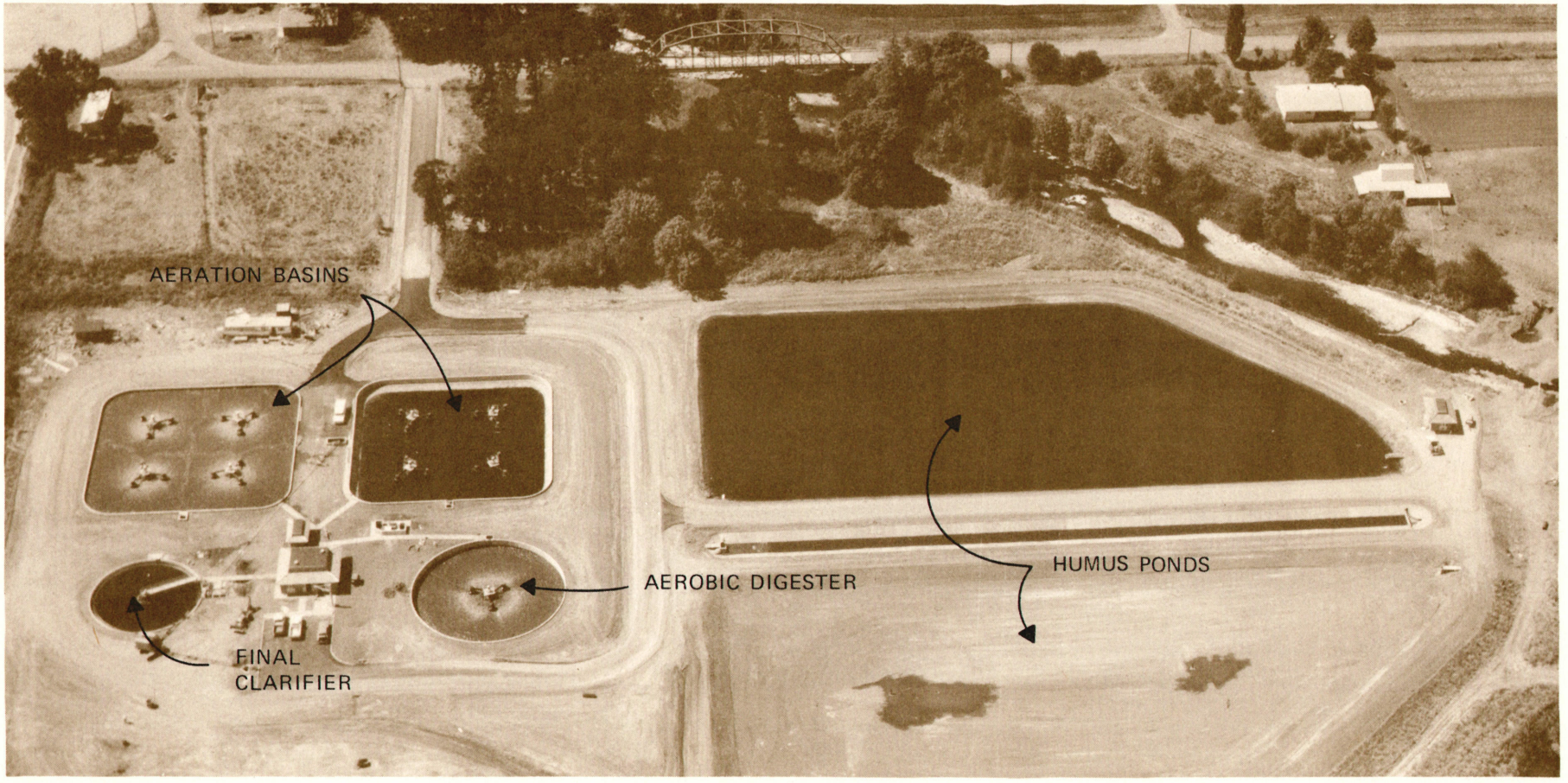

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FIGURE V-3
TYPICAL TREATMENT PLANT



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FIGURE V-4

TYPICAL AERATION BASIN

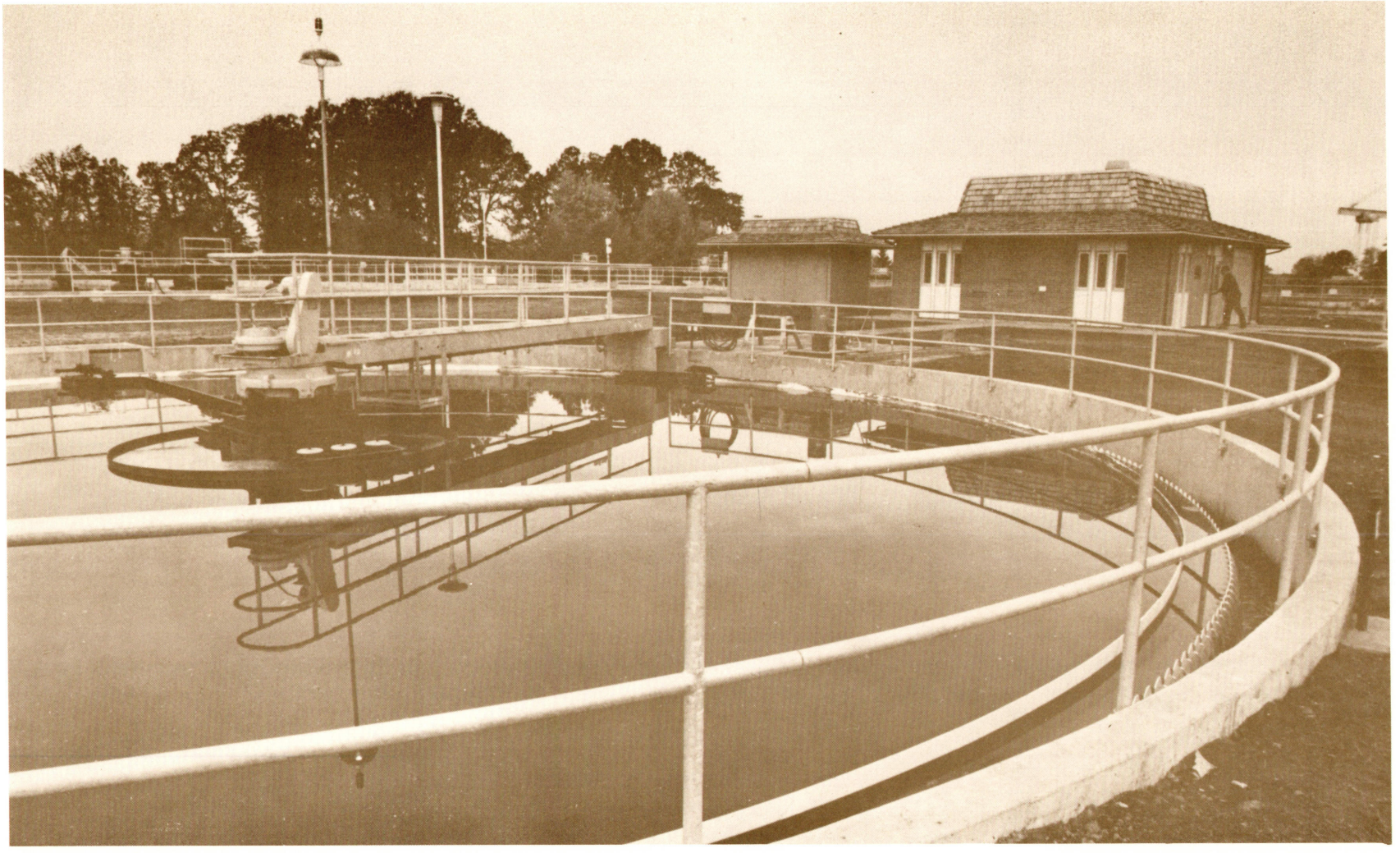

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FIGURE V-5
TYPICAL CLARIFIER

APPENDIX A

Transcript of Public Meeting on Kihei Sewer System and Wastewater Reclamation Plant held 22 February 1973 at Kihei Elementary School

KIHEI SEWER SYSTEM AND WASTE WATER RECLAMATION PLANT

PUBLIC MEETING -- FEBRUARY 22, 1973

KIHEI ELEMENTARY SCHOOL CAFETERIA

The public meeting on the Kihei Sewer System and Waste Water Reclamation Plant was called to order by Stanley S. Goshi, Director of Public Works, at 7:15 P.M., Thursday, February 22, 1973, at the Kihei Elementary School Cafeteria, Kihei, Maui, Hawaii.

STANLEY S. GOSHI: Ladies and gentlemen we would like to get the public meeting underway. I would like to call this public meeting to order and start by reading into the records the notice of public meeting.

See Attached Notice

My name is Stanley S. Goshi, Director of Public Works for the County of Maui. The purpose of this public meeting is to have the County explain to the people and show the people of Kihei area the status of the current planning for the system and to receive comments and testimony from the interested residents of the area. Before going any further, I would like to introduce a few of our distinguished people here this evening. First of all the Chairman of the County Council's Environmental and Ecology Committee, Councilman Manuel Molina, and the Chairman of the Council's Public Works Committee, E. Loy Cluney. Our Environmental Scientist, Dr. Marvin Miura.

Although this public meeting will be conducted on an informal, friendly basis, we would like to establish a few rules so that we can maintain some order and complete the meeting on time. To begin with, we will have the County's consultant for this project, Norman M. Saito Consulting Engineers, Inc., to explain the project, after which we will have a question and answer period on the explanation then we will have a short recess while people who wish to testify can come up and review the display data and sign in on the sign up sheets before testimony. So with that I would like to turn this part of the meeting over to the consultant engineer.

LES WIERSON: My name is Les Wierson and I will be handling the first part of the presentation. During the question and answer period Mr. Buck Rogers in the back of the room and Mr. Norman Saito in the front of the room will help fill some of the questions. Before I get into my presentation, and as soon as the refrigerator stops, I want to tell you a little bit of the display boards first.

The diagram or the elevation on the left hand side of the Kihei Sewage plan is the typical architectural treatment being considered for the pump stations in the area. The next figure shows the detail sewer layout of the mains and sewers. Can you hear me if I

am over here a minute. As you will see in my presentation, the main part or the backbone of the Kihei System, is an interceptor sewer located on Kihei Road and drains from beyond Suda Store clear down to Kalama Park, flows in this direction, the other half flows from the Wailea cattle gate area on down again to Kalama Park where it pumps into pump station. As you can see then, anything mauka of Kihei Road will drain down onto the system by gravity.

Other displays -- these are the control building, the architectural treatment for the control building at the treatment plant and a floor plan of that.

An artist's rendering of the treatment plant site and this is an aerial photo that we thought might help you locate where the treatment plant is a little bit better. This is the treatment plant site itself. It has some 25 acres in it. The nearest from Kalama Park at Kihei Rd -- it is approximately 3/4 of a mile mauka of Kalama Park. The nearest house that we can find is right in this area which is about 1,800 ft. Auhana Road, which is this road right through here, the nearest house here is 2,400 ft. or almost 1/2 mile from the treatment plant site. The other houses are over 3,000 ft. This public use area is what shows up on the Civic Plan. There hasn't been exactly determined what facilities will be in there. The one idea is to which will be on about Lepoa Street on the extension of it. It again is better than 2,000 ft. The closest here is about 1,500 ft. In the kiawe it is up about elevation of 120. The last one in here are some photographs of a typical plant that I will be showing you some slides of.

In September of 1971 (let us leave the other side on -- I'm not going to be able to read my notes unless I have it) in September of 1971, the County retained Norman Saito to develop plans and specifications for the Kihei Sewerage Plans. The final plans for the Kihei area were to be in accordance with the adopted master sewer plan for Maui County and there is a copy of the Master Sewer Plan over here at the table if you would like to look at it. In doing this work, our first task was to develop the design criteria and recommend an initial construction program. We did this in a report which was referred to in the notice and it also is located on the table over here for you to look at.

We found that the existing homes in the area and the businesses in some of the older resorts were served primarily by individual cesspools. And at the present time there is more than 2,000 people using cesspools in this area. Larger resorts constructed after 1969 are served by small package sewerage treatment plants. At the present time there is 25 treatment plants located in this area. They are either in operation or now under construction. There is also another 4 that had been approved which will be built yet this year. These treatment plants treat the wastes from living units or resort units that have living or dwelling units of about 1,500 to 2,000

rooms or apartments for it. And this would represent a population, let us say at 80 to 100% occupancy, of some 4,000 to 5,000 people. By the end of 1973, while you can say Kihei only has a population of about 2,000 people, really, there is a population of anywhere from 6 to 8 thousand people living in this area and sewerage problems happen not at an average occupancy -- they happen at the peak periods when you have 80 to 100% population.

We found that the existing systems had numerous problems and it has been my experience that these will just multiply at a much rapid rate in the future and let me tell you some reasons why. Just in septic tank pumpings, in 1969, residents of Kihei requested their septic tanks to be pumped, there is 21 of them that requested it at that time. In 1972, 87 cesspools were pumped -- four times over that period. It went from 21 to 36 to 57 to 87. So you can see people are having more problems with their cesspools as more homes are built in the area and as the systems become older.

The package plants. 1969 -- 3 of these plants were built. 1970 -- 3, 1971 -- 4 plants were built, 1972 and 73 there are 15 plants built. Now all of these plants built 72 and 73 haven't been in operation long enough to really know how they're performing or to experience problems. The Department of Health, in meeting with them today, indicated that the 10 plants built prior to 72, between 1969 and 1971, the majority of these are already experiencing problems in effluent disposal and treatment.

It was our findings then, on existing situation, is that Kihei needs sewer to meet the present demands and also for future planned orderly growth in accordance with your Kihei Civic Plan. We feel that this should be of utmost importance to the people that are living in Kihei. Any delay in the project means higher costs in the future. Right now in sewer construction and treatment plant, construction is going up 8 to 12% per month and I will give you the figures on the cost of the total system in a minute and 1% per month is a lot of money for the improvements are needed. It will also more importantly mean that more cesspools and more package plants will be built in the Kihei area and people will be making investments in individual units where a community system is really needed.

Can you see that. This isn't the best auditorium to make the presentation in. Figure that I have behind me here on the wall is the general sewerage area that was considered in the Kihei plan, and as you'll see we have the figure of the civic plan here, too. It covers essentially the same area. In our design criteria report, we included the entire area from Maalaea clear down to La Perouse Bay. Now this doesn't mean that sewers are planned for that entire area. Actually in the material I will be presenting to you tonight, it's primarily the central Kihei area with the Wailea Development. We divided this area into smaller service areas and they are discussed in detail. The one that's on the screen now is the Maalaea

area and this one in the future, the waste from this area could be pumped to the Kihei plant or initially there could be a small package treatment plant built in that area that would be operated by the County.

This is the north, south Kihei area and the Wailea area that would be included in the master plan.

The last slide is of the Makena area and here again this is an area that eventually would come into the system but no development is presently planned for that area until a need is actually better demonstrated than now. In the future the system is provided for capacity. Here again, to meet first demands in that area, it may be more economical as we mentioned in the report to have a smaller regional plant in that area.

As I discussed with you before in showing you the map over here, the sewerage collection system is made up of interceptor sewers, lateral sewers which are the ones that feed down the hills and sewer connections that go from the properties over to the laterial sewers. The interceptor sewers and laterals in Kihei area will vary from 8 to 36" in the initial program in the south and north Kihei area. Again the area for initial construction as now considered is basically from Suda Store down to the Wailea Development. In developing the plans for the sewer system, the pipeline sizes right now are not sufficiently sized to handle the entire area. We felt that the populations provided in the Kihei Plan, where populations that may be considered in the future, however, there was a great variance from what is here today to what could be in the entire civic planning. We therefore developed a system where we built on Kihei Road smaller lines which could handle approximately 50 to 60 thousand people in the future and provided plans for bypass or relief sewers on the mauka side of civic plan in the future if the need is there and in our population project this would be after the year 2000.

Sewers are something that you want to plan well in advance or ahead. You bury this line in the ground and there is no way you can come back in and jack the pipe out to get some extra capacity and it is expensive operation. You can lay a 10 or 12" sewer for about the same price as you can lay an 8" sewer, except for the pipe cost difference for it. So you try to be realistic in sizing it and I think we're fortunate in here in being able to provide a system that could be expanded in the future.

The system, once you get down to the interceptor, is entirely by gravity flow. It comes into a series of 7 pump stations where it is picked up and flows on by gravity to the next pump station down to the Kalama Park pump station which is the main one where it is lifted up to about elevation 120 at the treatment plant site.

The pipelines will be tested prior to acceptance for water tightness. We do not anticipate a salt water problem in the lower areas from infiltration into the sewer system. There is a lot of older house lines in that area and possibility of breaks in the sewers in the future. If this happens, we found that in the treatment process that is being proposed here, that bacterial growth in the biological process, actually the bugs will adapt themselves to a salinity content and it is really not anticipated that it would be a major problem.

Also there would be no drainage permitted into the sewer system. This is by State codes and common practice. You are not going to want to spend the money to treat drainage water or ditch side water or roof drains and this type of thing. They will have to be handled by separate storm system.

The sewers are located in street right of ways in almost all cases. There are some minor amount of easements that will be needed. Once the lateral are installed in the individual streets as we've shown, and we have lateral sewers provided for almost all the homes in the Kihei area, there will be a small 6" pipe over from the main sewer to the property line and that is where you would be hooking up your system.

These are just some slides out of the report that shows some of the sewer locations and since I had to leave the lights on to read my talk you can't read the slides so we will run it through quickly. This is a typical sewer trench, not in a street in this case, but there is water in the bottom of this trench as you'll have water in many of the lower areas in Kihei and contractors do make provisions for removal of that water during construction. In some areas they would probably have to go to well pointing in order to dewater. We have included this consideration in our cost estimates. As you get into the upper area, we anticipate that the majority of the sewers will be constructed in rock. Here again we have used what we feel are sufficient rock prices for this allowance.

This is a figure of a sewer line under construction prior to back-filling. It is just a pipeline being laid out in the trench.

This is a figure of a manhole that is constructed periodically along the sewer line which allows the maintenance people access to the sewer pipe in order to do any cleaning or routine maintenance that is needed.

This is a cross section of the pump stations that are used in the Kihei area and the station is of a caisson or circular type in the lower areas where they pour the ring wall up at the ground and then they dig out the center of this pump station and this station sinks by its own weight. That is the ground line. That's the bottom of the station. Because of the ground water they don't pour that plug

until after they pour these sections. They dig out the center and it goes down and makes its own form. Then they pour the plug in the bottom and that is the way we get around how you dig where there is water only 2 ft. below the ground. The pump station itself below ground is where the basic equipment and machinery is and the sewer comes in to the wet well in the station. This wet well is closed on the top. It has ventilation equipment that vents the wet well and then there is an oxidizing scrubber agent that removes any obnoxious odor that might occur at that point.

The sewerage pumps are another key element. These pumps take the sewage out of the wet well all in pipe, pump them up to the next gravity sewer or up to the treatment plant. The pumps have a variable speed. They can run at different speed where you can remove this sewage then just as rapidly as it comes in. There is no of and on condition or long detention time in here.

Up above on the first level is the building itself. This building is the one that we are considering are on the ground over there and in here there will be an emergency engine generator. They will provide power to run the pump in the event of a power failure. There will be no bypass conditions to the ocean or any other place. There is also a minimum of two pumps in each station so in the event of any mechanical failure we would not have a possibility of raw sewage coming to the ground or being bypassed. So we have reliability from the standpoint of power and mechanical. The elevation of each pump station is set well above any known flooding conditions that we know of in the area. Question of noise I am sure is going to come up. The pump stations inside aren't any noisier than that. And outside you wouldn't notice them if they are adjacent to you. And there is no odor, I can assure, and I am sure there are some people in the audience that have been around pump stations and can assure you of this. The station itself will be about 20' x 20'. The building and theproperty that will be utilized for it will be a 100' x 100', about a 1/4 acre. They will be landscaped and they will be irrigated so that they will be attractive and an asset to the area if you like pump stations. OK from the main pump station at Kalama Park the sewage is pumped up to the site you see in the aerial photograph over here about 1000 ft. up in the kiawe area and about 25 acres will be the plantsite property. Now the plant will be a 3,000,000 gallon per day plant. It has full dual facilities. There is two of everything and there is also emergency power generation at the treatment plant site. The population projections that we considered for the treatment plant were 1980 we're expecting from Kihei, and this has to include your visitors too, we're expecting 6,500 by 1980, and by any calculations I get, by 1973 you are going to hit that figure and we hadn't included any from the Wailea area at this time. 1990 we considered from Kihei 18,000 people and from Wailea 12,000 and that is population equivalent which restaurant or laundry facility is going to have a higher number of population equivalent.

I am going to leave the mike again. Sewage flow comes in to the headworks of the treatment plant. Now the headworks, I will show you a slide later, there is a grinder facility there that takes the larger solids and reduces it down to the smaller size so that they won't clog the piping or the process. From the sewage shredder they come in to an aeration basin and this is where we just mix the sewage and add air to it and because you add air to it, you will not get odors from that basin. At the headwork, I missed one here, the basin is entirely covered. It is housed and it again is vented possitively with an air scrubber for any odor control. From the aeration basin it goes on into a clarifier which is just a basin where the water is stilled or the sewage is stilled for a period of time. In the clarifier the solids are settled down to the bottom of the clarifier and the clarified effluent or the clear water now goes on out over the weirs and continues on the process.

The solids, we've got two different flows right now so let me handle the solids first. These are what are collected in the bottom of the clarifier. These are pumped off from the bottom of the clarifier and they go to what is called an aerobic digester and here they are retained in that area from 15 to 20 days in the aerobic digester where the solids are further reduced down to a point where there is no longer biological activity going on in the solid state. From the aerobic digesters the solids are then released into to a humus pond where they are dried. After drying them they are picked up by a front end loader and loaded into a truck for it and these solids can then be used as a soil conditioner on the parks or any place where you can till the material into the ground. They can have further treatment. I have heard of a few people on Maui that are buying mill organite to fertilize their ground, which is nothing more than a fortified sewage from the City of Milwaukee, Wisconsin, and it is being shipped all the way out here. We anticipate that we'll try test plots of this on the soil in the Kihei area to build it up and I think there is great potential for restoration of soil in that area. Should all of these not prove beneficial to use, the material can be land disposed in a landfill area and is used as a cover for solid waste in many areas.

The clarified water that has been treated continues on from the clarifier into a diversion channel and that effluent disposal -- we have two primary methods of disposal (1) we're taking off 250,000 gallons of flow per day. Let me go back, I missed one. We have to chlorinate the sewage first. We chlorinate it for bacterial control and retained in that basin for a ~~year~~ day which is sufficient to knock down the harmful bacteria that are still existing. Then we pull 250,000 gallons of the flow. It is given a further treatment through mixed media filtration and then is used for irrigation at Kalama Park. And this, after it goes through mixed media filtration, is better then 98% pure water and it is a good use for it and by using it at Kalama Park it will free up domestic water for your use in the very water short Kihei area.

The balance of the effluent flow will be used for spray irrigation adjacent to the site. We have sufficient land on the site and adjacent to it where we will have 60 acres, 16 for the plant site and 44 for the spray irrigation that we can just spread it on the kiawe and use it just to dispose of it. Negotiations are underway with both Haleakala Ranch for the possibility of range land irrigation and with the State Highway Department for beautification of the new Kihei Bypass Road where they will have a parkway and also the possibility of further park use of the water. There is many uses that you can make of it and I don't see any problem of the County disposing of it.

We have also, say it is raining -- you have a Kona storm that came in and you've got 2 or 3 days of rain -- you are sure not going to want to spread it out on the countryside up there. We have a million and a half gallon storage that will take probably all the initial flows for the next 3 or 4 years at least.

But in the event that we can't use our storage pond or we can't use our irrigation systems, then we will use an emergency injection well that will be drilled at the site. A test hole has been drilled on the site and this injection well would be cased so that the effluent would not be discharged until we reach elevation -50, between that point and elevation -120. And if those that are familiar with geology in the area, you know that the lenses or layers of rock and cinder are sloping so we're back here a mile from the ocean or more and by the time you get out to the ocean, discharge will be considerably removed from the ocean beaches. Again it is an emergency case. I really don't anticipate that we will be using it, but it is hard to get rid of 1 or 2 million gallons per day if you don't have other use for it.

The staff on the plant will be 3 full time men and I think the plant, from the people that have investigated it, from our standpoint, it is very easy to operate. It is of a newer design than, some of you may have seen the Kaanapali plant. It is of a newer design than this one and is one that is much easier to operate.

We also looked at possibility of tertiary treatment, bringing it directly to potable water, which you can do technologically right now. Because of the potential of using it for irrigation at this point, secondary treatment is good for this type of use. In the future you can add additional tertiary treatment to it if you need it. The process is completely compatible with it.

I have some slides of treatment plants that I'll run through in a minute but before I do, let me tell you what the costs are, the capital costs for the treatment plant. We call it a water reclamation plant -- reclaiming water and solids, it is sewage is

is what you're treating -- $3,100,000. For the south Kihei interceptors and pump station -- $2,200,000. For the north Kihei interceptor and pump stations -- $2,600,000. For the basic system, the backbone of the system, along Kihei Road with the pump stations and treatment plant, if you total those three, you come up with $7,900,000. The lateral sewers coming up into the existing homes in the south Kihei -- $800,000; in the north Kihei -- $900,000.

I would like to briefly go through these other slides. (Why don't you kill the rest of the lights now.) That is thelayout of the figure that you will see up here and it shows how the plant can be expanded to as much as 12,000,000 gallons per day if it's needed in the future. We are talking about 1/4 of that increment. We looked at the possibility of building a 2 mgd plant instead of a 3 mgd plant and found that we could only save about $500,000 for the loss of that 1/3 capacity, which we recommended that the County consider the 3 instead of the 2 mgd.

That is an aerial view of an existing plant that is very similar to the one that will be built here at Kihei. It is actually at Dallas, Oregon. That is their control building, these are the aeration basin, clarifier and the aerobic digesters. These are humus beds in Dallas where the solids are dried. And in Dallas - they actually - the plant here handles an equivalent population of closer to 150,000 people, only they are a town of 6,000 people. They have a high cannery load that is the reason for the large humus beds. That is raw sewage at it's coming in to the treatment plant and that is the grinder that shreds it about. Has a very grey color to it. Actually it is really not too odorous at that point. In Dallas, or in Canlis where this picture was taken, they don't cover that basin. Now in Kihei we are planning on covering the basin. That is the aeration chamber and here is where the solids come in. You have some of the returns, solids off of the clarifier, that are mixed in with it. The solids coming off the clarifier back to this basin have all the hungry bugs in it and they are real happy to see your sewage coming in and we mix them up and provide them with air for it and they treat your waste for you. That's the close up of the aerator. That is what it looks like when it doesn't have the water. You can see it is just 2 or 3 floating pontoons with a little paddle wheel in the middle and an electric motor.

We took noise tests, decibel reading, for it right at the edge of the basin and it has about 60 decibels at that point, 60 to 70 decibels which is about equivalent to a dishwasher or a vacuum sweeper if you are standing right next to it. If you moved 50 ft. away from the basin, the decibel level drops down to 50 which is about the noise level that is in this room without the refrigerator working. If you move a 100 ft. away, you really can't hear any noise.

To give you a little variety, this is Bend, Oregon, and that is snow on the roof. And that is the final clarifier after it comes

to the aeration basin you saw the brown mass and this is where those solids are settled out of it. And that is the effluent coming off the weir and it is as good as it looks. It has about 90 to 95% removal of the pollutional load and after it comes off the clarifier, it is disinfected by chlorination. That is the chlorine contact chamber and the final effluent at Dallas.

Architecturally this is the control building at Dallas and in yours the architecture will be a little bit different but it should have the same feel. I put the picture in to show you the low profile the building has and I would also like to have you go through the building with me. That is the motor control center. There is alarms that would alert the operator of any problems. When the operator is not on duty, the alarm will be brought back to the County shop or to the County Police Department where they can alert an operator if there are problems. That is the motor control center in some of the pumps in the building. That is the laboratory which provides for the high quality of treatment needed in this type of process and also provides tests that results can be submitted to the State and County for monitoring. That is the locker room, the shop. That is an overall view of a similar plant. Again note that it is of a low profile. And that is the aeration basins with the other facilities in the background. Thank you.

STANLEY S. GOSHI: Thank you very much Les. At this time we are open for any questions on the presentation, if you need any clarification on what Mr. Wierson has spoken.

QUESTION: What would be the average depth of these pumping station. I thought it was interesting.

LES WIERSON: They get down as much as 20 to 30 ft. Is that right, Buck? In the - where we are in the rock area they are not quite as deep as that but in the lower ones, you have a very flat area, and the sewer has to be graded downward for it so we can go just so far, and we are down below where you can really build the sewer and you put in a pump station where it goes. But we've put these in as deep as 50 ft. under this same principle.

QUESTION: In your anticipation of the drainage on the beach side of Kihei Road, do you feel that the sewer line itself will be deep enough to afford gravity flow or will it be necessary to pump from say the various condominium developments along the makai side.

LES WIERSON: We have made every effort to pick up all the homes on the makai side for it and Buck do you know of any specifically.

BUCK ROGERS: One home in Keawekapu, too close to the beach. Some of the condominium apartments probably will have to pump in.

LES WIERSON: In Keawekapu. I might say that if you have questions on specific areas for your house or an area you are interested in, all three of us will be available after the meeting and during the recess so we could handle those.

QUESTION: I was wondering about the -- we have a problem with sheet flow in this area. What gulches are near or are through the site.

LES WIERSON: We have one major gulch on the Wailuku side of the site, the north side and we stay out of that one. We have a very small gulch coming through the site and it was my first thought just to kick it over on the thing. We moved it around the site and brought it back into this same gulch and we are protected by some berming of the area so that the plant isn't flooded on the high side, mauka side.

QUESTION: Thank's a lot.

QUESTION: There are some homes below the sewer line. You did mention that the plan takes the line to the property line. Then what happens.

LES WIERSON: The County, under County statutes, is authorized just to construct sewers in public rights of way or on easements. When you get to the property line then it is going to be individual home owner's responsibility to take his sewer line somewhere between the cesspool and the building and bring it around and connect it in to the sewer. Now if the house is too low then there would have to be an individual home pumping station put in. We have made every effort to eliminate this but sometimes you can't afford to push that sewer any further in the ground.

QUESTION: Well there is a possibility of putting it deep enough in the gulch for 8 or 10 in the Keawekapu area.

BUCK ROGERS: There is only one home in the Keawekapu area that is not being picked up. All the rest are.

QUESTION: You personally guarantee that. Who is the one home?

BUCK ROGERS: According to my notes is Texeira.

QUESTION: I am lower than he is. I have a lot lower than he is so are my two neighbors.

LES WIERSON: Why don't we handle that one. You and Buck can argue that one in the back of the room.

QUESTION: What is your anticipated construction period? When do you anticipate starting the construction and what do you expect will be the period of construction after you start?

LES WIERSON: I can't give you a real good date on start of construction. Once the bids are taken, it takes about 60 days to go through the bidding procedure and award the contract, and we feel the system can be constructed in about 12 months thereafter. We do have environmental assessments and Federal grant applications and such that are being processed right now. I can't tell you whether that is going to be 3 months or 6 months to the starting but I would say that if everything moved just as rapidly and if everything just fit perfectly together, the earliest that you can anticipate an operating system in Kihei area is anywhere from 1½ to 2 years.

QUESTION: I was wondering the odor from the reclamation site. I am familiar with two treatment plants -- one in Kaneohe and I don't know if the set up is similar to the one that you are proposing but the odor from that one is terrible at certain times. Is that a different set up or are you familiar with that?

LES WIERSON: I am not familiar with that plant but I am familiar with plants that do have odor problems. And primarily a plant will have an odor problem for 2 reasons or 3 reasons. Actually 1) it has been poorly designed to start out with, 2) you've got too much flow on it, too many solids going into the system and 3) they are not operating it properly. In this case, some of the residents in the area have actually seen this Dallas plant. It has been in operation now for almost 5 years and I know of no odor problems it has and it is handling shock cannery loads and the main difference b etween the plant you've seen and this one is that it is aerobic process. It is complete mix activated sludge aerobic process and that means that the total process is with a sufficient amount of air in the process which does not allow bacteria of the type and absence of air that give off gasses. You get a different form of bacteria that do not give off odoriferous gasses in the digestion process as you smell in your cesspool when you open the cover -- that is an anaerobic digester without air.

QUESTION: There is no danger of just down wind of you then.

LES WIERSON: No. I can give you my guarantee, but.

QUESTION: Now we know approximately where the lines will go. Now in relation to the road, will it be in the side of the road, middle of the road or where will these lines go?

LES WIERSON: We have tried, and whenever we could, to keep them off on the sides of the roads. There are cases where the roads bend and we are going to have to make crossing of the roads. There will also be the sewer laterals coming across the road. There will have to be a very carefully planned out program for traffic control and detours which we will provide in our specifications that the County has to approve it before he puts in any detours or blockage. There

is also going to be dust and some noise during that time. We do provide in the documents that we have right now that the contractor to undertake dust control by watering is what we are considering right now.

QUESTION: Just a side thought. As a result of cutting through the road, there is the possibility that perhaps Kihei Road can be properly surfaced when it is all pau.

LES WIERSON: We will patch it.

QUESTION: After the system is in operation, will it be mandatory for every building to connect, or will it be left up to the option of the owner?

LES WIERSON: I heard Stanley answer that question last night. The County is presently adopting and updating their sewer ordinances and that they will probably incorporate that into the system.

In other areas it is always mandatory. You are not going to invest 7 million dollars in an area and allow a public health hazard to exist in your area. And I've found from experiences the worst offender, that is the last one, that you have to take to court to get him to hook up.

And usually a County or City will give you from 6 months to 12 months to connect to that sewer.

STANLEY S. GOSHI: Before we take this short intermission, I think I have been remiss by not introducing our District Health Officer for the County of Maui, Dr. Broadhurst.

QUESTION: You made a point of this being a public meeting. Will you explain the distinction between public meeting and a public hearing. It is, we have to assume that there will be more meetings.

STANLEY S. GOSHI: Yeh. There may be more meetings. I am pretty sure we would be holding meetings to get input on the sewer ordinance, revisions.

QUESTION: You called it a public meeting. What is the distinction between public hearing and a public meeting.

STANLEY S. GOSHI: Well we call it a public meeting to keep it more on an informal basis so we'll have freer exchange of views.

QUESTION: I was just wondering.

MR. MAC HARLAN: Is there any estimate as to the cost of property hook ups? I mean bringing laterals in from the streets to the house.

STANLEY S. GOSHI: We have not explored that.

STANLEY S. GOSHI: I was wondering Dr. Marland, I mean Dr. Miura, do you want to answer the question on the Kaneohe Plant?

DR. MARVIN MIURA: I guess the reason why I have been asked to answer the question, I know your problem there. I used to live in Kahaluu and everytime I used to drive in on that to the shopping center there, there would be a smell. That is true. When I would ask the engineers about this, the environmental engineer would say no it doesn't smell. That is the response you get.

But really what the problem there is,it is a different type of treatmentplant. It is a trickling filter. They have a big tub there and on this they have crushed rocks and what they do is there is an arm that comes out that drops this, that trickles the sewage right over this and on top of this rocks they growing this zoogloea, which they call, which is basically just a bacteria protozoids that is sitting there waiting for it and as this sewer water trickles over it, they grab hold of this organic matter.

OK. They also have problems right now. They used to have problems right there because they used to get this organic matter, you know the sludge, rather than using an aerobic digester they had an anaerobic digester and also what they did was they had sludge drying beds. And as they took the sludge from the anaerobic digester, and put it out on the beds, there used to be a smell. So what they've done now is they have installed, after considerable cost, right now a centrifuged system. It is just like when you spin dry your clothes - the use the same process. So I don't think they should have too much trouble or problem out there.

The system that is being proposed for the Kihei Sewer Treatment Plant is completely aerobic. The only thing that is going to be coming out is carbon dioxide.

And as Mr. Wierson mentioned what the problems are:

1) You are not going to have overload - we are designing that.

2) The problem may result from poor operation. Well we have programs right now which would be implemented to train our operators.

3) What was the third? Good consultants, yes.

STANLEY S. GOSHI: With that we will take a break and will you sign up if you want to testify or give comment. Please sign up on the sheets and you can look at the displays and we will reconvene in a short while.

RECESS: 8:10 P. M. to 8:25 P.M.

STANLEY S. GOSHI: Meeting is reconvened. We will now go into the presentation of comments and testimony. Before we start, I have two written communications received earlier that I would like to read into the records.

See attached written testimony from

1. Department of Water Supply

2. Maui Chapter of Hawaii Society of Professional Engineers

STANLEY S. GOSHI: The first person to testify this evening will be Dr. Broadhurst. Will you come up to the front and use the microphone, identify yourself, and proceed.

DR. BROADHURST: My name is Dr. Alice Broadhurst. I am District Health Officer with the State Department of Health and the following is a statement, short, which represents the State Department of Health's feelings on the new sewerage proposal system.

See attached written testimony

TOM NICHOLS: I am Tom Nichols, a resident of Kihei, and a professional registered civil and structural engineer and I am of the feeling that this project should go ahead without any further delays. Thank you.

MR. LES SKILLINGS: I am Les Skillings, resident of Kihei. Tonight I won't be speaking for Life of the Land. It's sort of fun to step out of my role as County bad mouth or maybe new missionary and I'd like to compliment Stan and the Department of Public Works on one reason, on the fact that the documents were put in the Wailuku Library. I think this is a good idea and in fact I would like to see it continued and extended to the public library system so that the public has an opportunity to have for access to information so that it can and if it desires to sit down, look it over, be well informed, and make the decisions, which a democracy is founded on. So to this I like the first step that has been taken in this particular hearing and I would like to see it continue as a general practice not only with the Public Works but with all County departments and commissions.

The presentation by the consultants, I thought, was also excellent. I might suggest the thing I found interesting in the package that you were presenting was the activated sludge, secondary stage. The complete mix system. I think for the benefit of the public you might elaborate in some way, shape or form, and maybe consider using the news media, to explain simply what the complete mix system is and what the advantages over this system is as opposed to the typical activated sludge system is or the trickling system. Maybe you better I did not get into that -- you don't want to confuse them any more than you have to.

So generally I like the proposal, the plant looks good so anyway that is about all I have to say. Thank you.

MR. WALTER WITTE: Thank you Mr. Goshi. My name is Walter Witte. I am a resident of Kihei. I am also a developer and a builder. I have been in this field for a long long time, since 1946. Mostly on the mainland side with the same serious problems that we have here abound. What we are doing, and you all appreciate that I am sure, is we're merely defending ourselves against ourselves. Man creates the pollution. He causes a biological environmental imbalance and now in this move tonight that we are doing here and we are doing throughout the island, to provide a proper sewerage system for providing that defense so that we can provide better housing for our fellow man. I think it is the most important thing to do. We have to defend ourselves against ourselves. It is a fine move. I can only say that God speed. Time certainly means everything. The sooner you can do this, the better off we are.

I might say further that at this moment I represent ownership or control of land for some 1,500 living units that we propose here in Kihei over the next five years and I assure you that the people that will be living in there want a good, sound, ecological system and I think this is what we are going to have. Thank you.

MR. GENE GROUNDS: President of the Kihei Community Association. We feel that this is a much needed project. Our present system of cesspools which are untreated have served as a temporary measure. Projections for construction and population are for increased rapid rise. With the limitation of developable land in the central Maui area there will be increased pressures on outlying areas such as Kihei to accommodate the housing needs of present Mauians and those that move here from other areas of the state, the nation, and the world. A look at the Kihei 701 Master Plan shows considerable potential for development of single family units as well as apartment, hotel, and condominium units.

Regarding the plant itself, we cannot satisfy everyone, for no one wants to live next door to a sewerage treatment plant. The County has taken measures to segregate this area at a reasonable distance from the population areas and we feel that this is sufficient for the needs of the community. Over this past several years several sites were decided on at various times. These have been changed from time to time. It first started out in the Keawekapu area, later on around 1970 it was changed down to the south end of the Wailea area, and now we find it in the central Kihei area best suited to serve the total Kihei situation.

We feel that the type of system proposed is the best to meet the needs of the community. It appears that there is ample capacity within the framework of future development.

We strongly support the project as proposed here tonight.

MR. DAVID NISHIDA: Mr. Goshi, my name is David Nishida. I am a resident of Kihei. I am happy to hear at least we have the sewer system going on and I hope you will start as soon as possible. Thank you.

MR. MAC HARLAN: I did not ask to testify. I signed up. I am in favor of it. I second every motion that has been made so far.

MR. FRED DIXON: I am an architect of Kihei. I just want to say that I am for the sewerage system.

MR. DONALD GARD: I just want to commend the presentation and the answering of questions and go on record as in favor of the plan as it was presented. I am Don Gard, resident of Kihei.

MR. KENNETH WOOD: Thank you Stanley. My name is Kenneth Wood and I have been a resident of this area for about 17 years -- not as long as some of the people here but quite awhile. And I would like to say that it is with a great deal of satisfaction and pleasure that I see this project going on and about to be implemented as it is. When I first moved down here we had a little community association that is still going and still effective, and one of the projects which I took on for myself at that time was the implementation of this sewer system and it looked a long way off at that time. We didn't have any hotels or condominiums, just a lot of people that needed to have something done and started in this direction. And our association and the committees that I have been on have written a lot of letters and made a lot of telephone calls and done a lot of lobbying that doesn't show up right here now but has helped to get this thing going. Our community association is a good thing. It deserves all of your support and this is just one of the things that it has been effective in getting done. You should all join and belong to it. When we first started all that time ago we did not have any money. It appears now that we do have enough money to go ahead with this and it is on the way and we are going to have this project and have it completed. It has been moved several times and this, where the project is now located, where the plant is now located, is the original location that we recommended. It gives me a great deal of pleasure to see this come about. Thank you very much for this opportunity.

MR. FRANK MORSE: I am Frank Morse, resident engineer for AmFac Communities at Kaanapali. We have a sewerage plant there with some attendant problems that we have. In regard to that, about a year and a half ago I made a trip to Oregon. Visited a number of plants up and down the Willemette Valley. This plant in Dallas is one of them, and I was most favorably impressed there. There are no odors, there is no sound problem, there are no flies -- I wish I had that plant at Kaanapali. I wouldn't be a bit afraid of living down wind with such a plant.

MRS. MARGARET CABRINHA: Just in favor of this all.

MR. MEYER UEOKA: My name is Meyer M. Ueoka, resident of Wailuku, also property owner here in Kihei. As most of us know, Kihei is a great deal low and it is very difficult to have a sewer system

properly operating. We have a home here in Kihei which we rent and I can remember immediately after we purchased the place we had to call the County to have the place pumped. I think public, in the interest of public health, safety, and welfare of the people, that we should move with dispatch in having this particular sewer treatment system completed. Lot of planning had gone into it, lot of thoughts have gone into it, and I think the time has come when we have to move so I am fully in support of this program.

MR. GIBSON: I am Mr. Gibson of Maui Lu. Have been here for about 18 years, almost 20. And in that 18 years there hasn't been a month go by that I don't think that we haven't had trouble disposing of our, we've got 18 - 20 septic tanks. It is ever increasing, the trouble we're having. I did not think that I was going to, that it was anybody else's business, and I minded ourselves, and have done it.

Many of you have been there for dinner and for something strange happens after you use sand for disposal. Our whole front lawn you see there in front of the restaurant is a network of underground trenches trying to get away all the waste from the dishwashing machine. That is our biggest problem by far and it is very very costly. And these things that are costly refer right back to the public both in wages that we otherwise should be able to pay the employees or cost that you have to put on to the person buying your meals.

I hoped for a sewer for a long long time, but did not ask it because until now I think it has been uneconomical, but now things are growing here so fast. In fact building is going up quicker than I ever dreamed of. I can think right across the street here, and I haven't been curious enough nor have I any idea, but there are about 100 apartments going up right on our beach and I know that the health department has looked into how to handle it but it must be a very very costly thing. I know that with our place I put off all thoughts of developments which means employing more people or making a grandeur place because waiting for the sewerage system.

I am, can't be any, there is nothing I can say that will really express how pleased I am because it is going in. And the cost, if you ever start thinking the thing is too costly now, you put it off for another year, it is going to be more costly. And I think it is a thing we just can't do without.

If anybody is in opposition to this, I can tell them and you can send them to me, because I still live and for many years lived in Vancouver. It is on the outskirts of Vancouver. It is a very rocky district and it still has 75% cesspool. And every neighbor is blaming each other neighbor for the smell and odor and they have just one thing that they put off -- there is a pump plant that broke 30 miles from there and they blame the pump plant, but it is really their next door neighbor -- the cesspools. Now there's a thing as I'd just

tell you practically what happens. These things clog up after awhile. Certainly the first year they are not bad. Gradually the soap and stuff gets in there and you have to, they won't empty themselves or get rid off the way they should. So here is West Vancouver that put it off for years and years and now they have a public health that is costing us tremendous money after the population.

I just bring it to you all and say that if anybody is opposing this, I think it is those that ought to get up here tonight and let us hear what their argument is while we have people capable here telling them why it must be in and I will be the first one, and I am older than most of them, and I am one of your very old residents here, to really testify that this is something that shouldn't be put off. We ought to cooperate. It is about the one thing we have here in Kihei and that is if people were to start ever saying that our beaches are polluted or there is something wrong with our sewering system here, property values here, not that I care about that any more than the rest of you do, would drop very very rapidly so I think the government should go ahead with this unless they get serious opposition which I don't hear signs of here at all.

I talked too long.

MR. YOICHI KAWANO: My name is Yoichi Kawano and I speak as a resident of Kihei. When I first moved here 22 years ago, I had to dig my own cesspool because I couldn't get the contractor to do it. When I say I, I literally mean I, with my two hands. And ever since then it has been a constant headache -- a constant worry to me thinking about when my cesspool is going to fill up. And I just want to put into the records as a resident of Kihei I am very much in favor of this project and the sooner we get started the better. Thank you.

MR. HANS RIECKE: My name is Hans Rieche. I speak as a resident of Kihei. I would like to thank the Mayor and the Public Works Department and all the other people that have pushed this plan along to the point where it seems like we can implement the system. I think the only thing wrong with the plan is that it takes another two years to get it done. Thank you.

MR. TY BENSON: My name is Ty Benson. I have been a resident of Kihei for 22 years and I own some cottages and apartments down on Iliili Road and I certainly have to convey to everyone of you people that are involved in cesspools, it is a problem. I've got 12 cesspools that cost me a lot of money. If I could have put this money into a sewer system which we the taxpayers are having to pay for, when I think about the condominiums, the money they have poured in to their sewerage disposal plants and they are not satisfactory -- some of you have been in Anchor Cove and had a nice dinner and come out and you get hit with that odor -- if that

money could have gone in to our sewer system, how far we would have been ahead as a taxpayer.

I just would like to ask a coupe of questions for I really don't know what the schedule is. As I understand the priority, Stanley, is the Kahului Sewer System - that is the number one priority on the County.

STANLEY S. GOSHI: That is correct.

MR. TY BENSON: Then is Kihei the No. 2?

STANLEY S. GOSHI: Lahaina

MR. TY BENSON: Lahaina is the No. 2 and then we are No. 3. I don't like that, but I guess I would have to live with it as I am a resident here.

Well I like to also express my appreciation to our County Fathers and Administration in getting this where it is today. It is a worry, as I said, this year we have had heavy bookings here in Kihei, well we have been booked solid since about the middle of December and it worries me that somebody's going to be knocking on the door and say "I've got some trouble and how are you going to correct them". You can't. We have to go out and re-do two cesspools and that is a problem. It really is a problem. You've got to move people out to do that.

As I said it has been 22 years I had liked to see this thing move ahead before. I just hope in the engineering, I am not an authority in the sewer system disposal plants, but I have seen mistakes made in my own profession. We do not have the proper foresight where we can expand these systems. If we go back and look what's happened in Kihei -- we first got water we got a 6" line and by the time we got the dam thing in and people started to use it, we were short of water. We had to go back and put in an 18" line. Now I hope this don't happen in our sewerage disposal plant. By the time we get it in we can't expand it to take care of future, these things get expensive. I hear the gentleman say that to put in an 18 or certain size pipe, it is only the cost of pipe. That is true. I think that you were on the Board here at the time when we put the 6" line in and we see the mistake we made and I hope that we are not making the same mistake in our sewer system.

And since we're tied in third, now we residents of Kihei certainly got to support the Kahului and get that off. We know that there is opposition there. We got to support Lahaina and get that on account that we don't get any sewer system now as I have been told until we get these two rolling. And I understand tomorrow night that we are going to have a public hearing for the Kahului.

I might add in closing this is the first dam time I have been at a meeting in Kihei that there has not been a hell of a lot of opposition about something. Thank you.

MR. ALBERT WEIZER: My name is Albert Weizer. I am a resident here in Kihei. I just want to say I endorse the plan. It sounds like a good plan and from what Mr. Wierson says it seems like we are sitting on a valuable asset by not using this for landfill and water for irrigation, etc. I guess it is a case of not letting our waste go to waste. Thank you.

MR. WILLIAM MARTIN: Thank's Stanley. I am William Martin. I am a resident of Kihei. I am employed at the Maui Memorial Hospital. I am speaking tonight in favor of the proposed plan. I want to especially thank the consultants, the planners of our County, the elected officials, for coming up with a real excellent plan. I just hope we can implement it sooner than the two years. Thank you.

MR. HANNIBAL TAVARES: Mr. Goshi, County Officials, ladies and gentlemen. My name is Hannibal Tavares, Director of Community Relations for Alexander and Baldwin, Inc., and I am representing Wailea Development Company, a joint venture of the Northwestern Mutual Life Insurance Co. and Wailea Land Corp., an A & B subsidiary.

It is a real pleasure I know tonight for people like me and Les Skillings to come here and find that we are not in disagreement over anything. I hope there will be more sessions like this.

See attached written testimony

Let me repeat what the gentleman said before -- let us not waste our waste.

STANLEY S. GOSHI: Dick Myer, did you have your question answered?

STANLEY S. GOSHI: Is there anyone else here who wishes to testify at this time.

QUESTION: Why is Maui Meadows left out of this plan?

LES WIERSON: Maui Meadows is included. At the present time we didn't feel that there are enough houses in the area to run the lines up. But there is capacity in the system and the laterals would be extended into the area as soon as development warrants it. So Maui Meadows is in.

STANLEY S. GOSHI: Anything else. Well perhaps in closing I would like to explain why we have been so careful in having people sign up and do everything according to the numbers. Well this is for inclusion in the environmental impact statement and all of the public record and public participation that we can have will be included in the records. This is very important for all of the paper work yet to come.

So before closing, I would like to repeat once more really the primary objective of this system that we are proposing. We have been keeping records of the number of cesspools that we have pumped since 1969 we had 21 of them, 1970 - 26, 1971 - 57 and in 1972 - 87. So the trend is there. And you might say that from the amendment to the public, the State's Water Pollution Control Regulations, there was a nondegradation policy statement which was added as an amendment, part of which reads as follows:

> And to provide that no waste be discharged into any waters of this State without first being given the degree of treatment necessary to provide for the prevention, abatement and control of new and existing water sources.

This is the key of what we are trying to do on this project -- the prevention. With those words if there is nothing else to be said, this public meeting is closed. Thank you very much.

Meeting adjourned at 9:00 P.M.

Kihei Sewer System and Waste Water Reclamation Plant
Public Meeting - February 22, 1973
Kihei Elementary School Cafeteria

Attachments:

1. Notice of Public Meeting

2. Letters

   a. Dept. of Water Supply
   b. Dept. of Health, State of Hawaii
   c. Wailea Development Company

3. Resolutions:

   a. Maui Chapter of the Hawaii Society of Professional Engineers

AFFIDAVIT OF PUBLICATION

STATE OF HAWAII, County of Maui. } ss.

Rose Alcomindras ..... being duly sworn deposes and says, that he is Classified Sales ..... of the Maui Publishing Co., Ltd., publishers of the MAUI NEWS, a newspaper published in Wailuku, County of Maui, State of Hawaii; that the ordered publication as to NOTICE OF PUBLIC MEETING .....

..... of which the annexed is a true and corrected printed notice, was published 1 ..... times in the MAUI NEWS, aforesaid, commencing on the 8th ..... day of February ....., 19 73 ....., and ending on the ..... day of ....., 19 ....., (both days inclusive), to-wit: on .....

February 8, 1973 .....

.....

and that affiant is not a party to or in any way interested in the above entitled matter.

Rose Alcomindras .....

Subscribed and sworn to before me this

19 day of Feb. A.D. 19 73 .....

Notary Public, Second Judicial Circuit, State of Hawaii.

My commission expires August 31, 1975

NOTICE OF PUBLIC MEETING

COUNTY OF MAUI
KIHEI SEWER SYSTEM AND
WASTEWATER RECLAMATION PLANT

Notice Is Hereby Given of a public meeting to be held by the County of Maui in the Kihei Elementary School Cafeteria on Thursday, February 22, 1973, at 7:00 P. M., or as soon thereafter as those interested may be heard to consider the proposed Kihei Sewer System and Wastewater Reclamation Plant for the County of Maui.

The following documents will be available for public review at the Department of Public Works, County Building, Wailuku, Maui and the Wailuku Library, Wailuku, Maui.

1. A copy of the Kihei Civic Development Plan
2. The Sewerage Master Plan for the County of Maui
3. The Interim Basin Plan
4. The Final Design Criteria Report for the Kihei Sewerage System and Wastewater Reclamation Plant
5. The Draft Environmental Impact Statement
6. A map showing the schematics

All testimonies regarding the proposed project should be filed in writing to the Department of Public Works, County of Maui, 200 South High Street, Wailuku, Maui 96793, before the date of the public meeting or presented in person at the time of the public meeting.

COUNTY OF MAUI

(Sgd.) STANLEY S. GOSHI
STANLEY S. GOSHI
Director of Public Works

(MN: Feb. 8, 1973)

RECEIVED
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DEPARTMENT OF PUBLIC WORKS
COUNTY OF MAUI

JOHN A. BURNS
GOVERNOR

WALTER B. QUISENBERRY, M.P.H., M.D.
DIRECTOR OF HEALTH

WILBUR S. LUMMIS, JR., M.S., M.D.
DEPUTY DIRECTOR OF HEALTH

STATE OF HAWAII
DEPARTMENT OF HEALTH
54 HIGH STREET
STATE OFFICE BLDG.
WAILUKU, MAUI 96793

February 21, 1973

STATEMENT REGARDING PROPOSED SEWAGE DISPOSAL SYSTEM - KIHEI

The primary responsibility of the State Department of Health is to protect the "Health of the Public." This is of paramount importance in sewage disposal.

Of primary consideration when any land is scheduled for building is proper planning for treatment and disposal of such sewage. No other factors outweigh this one if an ecologically sound building program is contemplated.

An acceptable sewage disposal system consists of three parts:

1. Correct engineering and planning for a new system.
2. This unit must be of sufficient capacity to allow existing private disposal units to be connected with it.
3. All existing disposal units must have proper maintenance and frequent checks to be sure that breaks and seepage have not occurred.

The Health Department hereby wishes to go on record that no future building requiring sewage disposal, especially when located adjacent to sensitive water areas, will be approved without adequate plans for same.

The Health Department similarly will monitor existing sewage disposal plants for adequacy, bacteriological safety and proper maintenance.

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
P. O. BOX 1109
WAILUKU, MAUI, HAWAII 96793

February 21, 1973

Mr. Stanley Goshi, Director
Department of Public Works
County of Maui
Wailuku, Hawaii 96793

Dear Mr. Goshi:

Subject: Kihei Sewer System and Wastewater Reclamation Plant

The demand for potable water have increased steadily over the years along the southerly coastline in the area.

Developments that have taken place along the coastline in this area is placing a heavy burden on the existing source as well as on the water system.

Therefore, any reuse of treated water for irrigation purposes will be of tremendous help in decreasing the demand for potable water.

Sincerely,

Tatsumi Arasda
for Carl Kaiama, Director

TI/ao

cc: Central Office, DWS
Engr. Div., DWS

RECEIVED
FEB 21 1973
DEPARTMENT OF PUBLIC WORKS
COUNTY OF MAUI

STATEMENT OF HANNIBAL TAVARES

ON BEHALF OF WAILEA DEVELOPMENT COMPANY

AT THE PUBLIC MEETING HELD BY THE PUBLIC WORKS

DEPARTMENT OF THE COUNTY OF MAUI AT 7 P.M. AT THE

KIHEI ELEMENTARY SCHOOL CAFETORIUM,

KIHEI, MAUI, HAWAII, FEBRUARY 22, 1973,

RELATING TO THE KIHEI SEWAGE TREATMENT

MR. GOSHI, COUNTY OFFICIALS, LADIES AND GENTLEMEN: I AM HANNIBAL TAVARES, DIRECTOR OF COMMUNITY RELATIONS FOR ALEXANDER & BALDWIN, INC., AND I AM REPRESENTING WAILEA DEVELOPMENT COMPANY, A JOINT VENTURE OF THE NORTHWESTERN MUTUAL LIFE INSURANCE COMPANY AND WAILEA LAND CORPORATION, AN A&B SUBSIDIARY.

THE KIHEI CIVIC DEVELOPMENT PLAN STUDY STATED: "THE DESIRABLE SOLUTION TO KIHEI'S SEWERAGE PROBLEM IS CONSTRUCTION OF PUBLIC SEWER SYSTEMS WITH CONSTANT PROFESSIONAL SUPERVISION. FOR THE DEVELOPMENT FORECAST BY THIS STUDY, SUCH SYSTEMS ARE MANDATORY."

THEREFORE, IN 1969, AN ENGINEERING CONSULTING FIRM, RETAINED BY THE COUNTY OF MAUI, PREPARED A STUDY WHICH RECOMMENDED THAT A SEWER TREATMENT PLANT BE ERECTED IN THE WAILEA PROJECT TO SERVE THE WAILEA DEVELOPMENT AND THE SURROUNDING REGIONS.

ACCORDINGLY, WAILEA'S PLANNERS AND ENGINEERING CONSULTANTS DEVOTED A SUBSTANTIAL EFFORT TO THE CREATION OF A MASTER SEWER SYSTEM, ASSUMING A TREATMENT PLANT WITHIN WAILEA.

SUBSEQUENTLY, THE SEWER MASTER PLAN FOR THE COUNTY OF MAUI, PREPARED BY THE R. M. TOWILL CORPORATION IN LATE 1971, RECOMMENDED AGAINST A SEPARATE FACILITY AT WAILEA, IN FAVOR OF A LARGER REGIONAL SYSTEM WHICH WE ARE DISCUSSING THIS EVENING.

THIS MASTER PLAN RECOMMENDATION WAS BASED ON THE EXPERTS' CONCLUSION THAT THE ECONOMIES OF SCALE WOULD BEST SERVE THE OVERALL INTEREST OF THE COMMUNITY AND THAT SMALLER, MORE NUMEROUS FACILITIES WOULD BE MORE EXPENSIVE, NOT ONLY TO CONSTRUCT, BUT TO OPERATE. WE ARE VERY MUCH IN SUPPORT OF THIS REGIONAL APPROACH.

ALL OF THE SEWER WORK WITHIN WAILEA WILL BE CONSTRUCTED AT OUR COST.

WE BELIEVE THAT THE HIGH PRIORITY WHICH THE COUNTY HAS PLACED ON PUBLIC SEWER SYSTEMS IS A MAJOR STEP IN PROTECTING OUR NATURAL ENVIRONMENTAL RESOURCES.

WE HAVE CONSIDERED THE ENVIRONMENTAL IMPACT OF THE PROPOSAL AND BELIEVE THAT IT WILL ENHANCE THE ENVIRONMENT OF THE ENTIRE AREA, ELIMINATE THE THREAT OF POLLUTING THE NEARBY OCEAN, AND WILL RESULT IN IMPROVEMENT OF THE HEALTH AND WELFARE OF THE SURROUNDING COMMUNITY.

WE BELIEVE THAT THE LOCATION SELECTED FOR THE WATER RECLAMATION PLANT IS A PROPER ONE AND, THEREFORE, WE WOULD LIKE TO VOICE OUR SUPPORT FOR THE PROPOSED SYSTEM AND SIMPLY SAY -- THE SOONER THE BETTER.

MAUI CHAPTER
HAWAII SOCIETY OF PROFESSIONAL ENGINEERS

Mr. Stanley Goshi
Director of Public Works
County of Maui
Wailuku, Maui, Hawaii

Dear Mr. Goshi:

Please be informed that at a regular meeting of the Maui Chapter, Hawaii Society of Professional Engineers held on February 18, 1973, the following resolution was adopted by the membership:

> "The Maui Chapter, Hawaii Society of Professional Engineers hereby is officially on record as being in favor of the location and design of the Waste Water Reclaimation Plant as proposed by the County of Maui for the community of Kihei, and urges that the County, State of Hawaii and the Environmental Protection Agency to proceed as expeditiously as possible to approve and implement these plans without undue delay."

Yours truly,

Alvin Fukunaga

Alvin Fukunaga, President
Maui Chapter
HSPE

APPENDIX B

Record of Public Meetings on Comprehensive Sewer Master Plan held 19 March, 22 March, and 23 March 1971 at Kahului, Makawao and Lahaina.

April 15, 1971

Mr. Shinji Sonoda
Executive Officer
Environmental Health Div.
State Dept. of Health
P. O. Box 3378
Honolulu, Hawaii 96801

Dear Mr. Sonoda:

Re: Public Meetings on Comprehensive Sewer Master Plan

Attached for your information are copies of memos for the record covering our public meetings on the comprehensive sewer master plan for Maui County.

Please transmit one set to Mr. Martin McMorrow of the local EPA office.

Very truly yours,

JOHN M. FERNANDEZ
Director of Public Works

SSG:gs

Attachs.

April 15, 1971

Honorable Elmer F. Cravalho
Mayor, County of Maui
Wailuku, Maui, Hawaii

Dear Mayor Cravalho:

Re: Public Meetings on Comprehensive Sewer Master Plan

Attached for your information are copies of memos compiled for the public meetings.

Very truly yours,

JOHN M. FERNANDEZ
Director of Public Works

SSG:gs

Attachs.

[illegible] FOR THE RECORD

Public Meeting - Kahului Library March 19, 1971

Approximately 35 - 40 people

1. What is the difference in cost between secondary and tertiary treatment?

   Based on a 10 mgd plant, add perhaps 1½ million to capital costs and double operating costs because of adding chemicals.

2. What about nutrients -- are they removed with only secondary treatment?

   Approximately 60% of nutrients removed by secondary treatment.

3. Why not go all the way to tertiary treatment now?

   It is not necessary at this time as the water quality standards can be met with secondary treatment -- and it pays to stay with paying for it when you need.

4. Statement -- The proposed site near the Kanaha Pond is ideal. It is airport property and no residences are permitted. It would be a mistake to take 11 acres of good land from the quonset hut area.

KIHEI - MAKENA

1. What are the depths of the collection system?

   Not available at this time. However check with the Public Works Department as they will have the information as the plans develop.

2. Concern was expressed that disposal or injection wells are not a preferred method of effluent disposal. Quote was made from a paper by Kingman.

   Answer was to pump it down deep enough below the interface and into the salt water level.

3. Statement was made for preference for complete treatment now.

4. Statement was made for re-thinking on the entire waste disposal system. Instead of concentrating it in sewage treatment plants, we should go back to individual septic tanks.

LAHAINA - March 22, 1971

Approximately 18 - 20 people

1. Concern was expressed over irrigation reuse endangering domestic water supply.

   Answer was it would not.

2. Request was made for baseline studies of the existing shore waters to determine present quality.

3. Statement was made that sugar plantation could get 1.5 to 2.0 tons of sugar per acre additional if properly irrigated.

4. Statement was made for tertiary treatment or to the degree of drinking water.

MAKAWAO CIVIC CENTER - March 23, 1971

Approximately 25 - 30 people

1. Another statement or question on go to tertiary instead of stopping at secondary treatment.

   Ans. 1. Increase in capital cost and double operating cost.

   2. Tertiary treatment would be used if needed.

      a. If there was a shortage of water.

      b. If effluent discharge was into a closed body of water.

2. Why not pump sewage from Paia to Wailuku-Kahului site?

   It depends on the economics of two treatment plants versus transmission lines.

3. General statements against incineration or disposal of sludge. Why not create a market for sludge. A profit was not necessary for sludge disposal. Forget about incineration of sludge and go into composting.

4. Suggestion was made to run Pukalani-Makawao-Haliimaile sewage by gravity to Wailuku-Kahului plant and pump only Paia to Wailuku-Kahului.

5. Suggestion was made to have a treatment plant in the upcountry area and feed effluent to dry land area of Kihei-Makena for irrigation purposes.

MEMORANDUM FOR THE RECORD March 25, 1971

SUBJECT: Public meetings on preliminary County-wide Sewage General Plan.

The following comments, suggestions and criticisms were offered at the various public meetings held from March 19, 1971 to March 23, 1971:

A. WAILUKU-KAHULUI and KIHEI-MAALAEA-MAKENA
(approximately 40 persons in attendance)

1. Some feeling was expressed that the County should expend the required money to build tertiary plants rather than secondary. However, it was pointed out by the consultants that sufficient land area will be set aside to permit expansion to tertiary facilities should it become required.

2. It was suggested that the Wailuku-Kahului plant be located in the existing keawe lands southwest of Kahului Town. This would prevent the possibility of odor problems. Constraints were pointed out as pumping costs and the effect on future land use.

3. The Kanaha Pond site was supported from the standpoint of:

   a. More compatible land use in the vicinity.

   b. It would eliminate the necessity for removing approximately 11 acres of valuable recreational land from the area behind the Quonset huts.

4. It was suggested that consideration be given to utilize individual septic tanks, and forget about complete systems of collection and treatment.

5. It was requested that should any outfalls be constructed, consideration be given to its effect on surfing sites.

6. The consultants were requested to study the possibility of recycling the sludge and using it for compost.

7. Question was raised as to the effect of deep well disposal and whether this would ultimately cause contamination of either shoreline areas or domestic water systems.

8. The proposed treatment plant site on the Makena side of the Wailea development was basically supported.

B. LAHAINA
(approximately 20 persons)

1. Question was raised as to whether domestic water supply would be endangered through the use of irrigation reservoirs for effluent storage.

2. Question was raised as to whether an ocean outfall would be desirable for the Napili area.

3. The question of tertiary against secondary plants was again raised in Lahaina.

4. No opposition was voiced to the location of a plant in the vicinity of the Civic Center. A plant in the vicinity of Honokowai Stream was favored from the standpoint of being conveniently located to agricultural uses which may be able to utilize the effluent.

5. The importance of being able to expand to tertiary plants was stressed.

6. It was also brought out that there is need to establish a more effective monitoring system to establish the present degree of water pollution.

7. Question was raised as to priority between Lahaina District and Kihei.

C. MAKAWAO-PUKALANI-PAIA
(approximately 25 people)

1. The question of secondary rather than tertiary treatment was again raised.

2. Considerable sentiment was voiced as to the possibility of eliminating the Paia plant, and pumping the sewage to the Kanaha Pond site (providing that this site is chosen for Wailuku-Kahului).

3. Considerable discussion occurred regarding the re-use of the sludge as compost material and fertilizer. It was felt that even if such a process was not completely economically justified, it could be underwritten by government as a means of preserving the environment.

4. Opposition was expressed to the possibility of future incineration of the sludge.

5. It was suggested that a plant to serve Makawao and Pukalani be located in Pukalani and the effluent taken to the Kihei uplands for irrigation purposes. This could possibly permit additional diversified agriculture in the presently dry areas.

6. If the Kanaha Pond site is to be utilized, then the sewer line should run down Haleakala Highway.

7. Question was raised as to the priority between Makawao - Pukalani - Paia and Kihei.

APPENDIX C

Record of Public Hearing on County of Maui Sewerage and Drainage Master Plan held 27 January 1972 at County Building in Wailuku.

March 14, 1972

MEMORANDUM

TO: Members, Maui Planning Commission

FROM: Planning Director

RE: Summary of Testimony - Comprehensive Sewerage and Drainage Master Plans

The following is a summary of testimony received at the public hearing held on January 27, 1972, and written testimony submitted subsequently:

A. PUBLIC HEARING

R. K. ROGERS - objecting to certain design criteria for computation of peak discharges for areas of more than 100 acres (Drainage Master Plan)

ALEXANDER AND BALDWIN INC. BY GARNER H. IVEY

DRAINAGE

1. Questioned the need for a drainage channel to the sea in the Kahului area due to construction of the large drainage reservoir in the vicinity of Hale Mahaolu.

2. Questioned the tsunami inundation limits for Kahului.

3. Supported realignment of existing streams in the vicinity of Kealia Pond, Kihei.

SEWERAGE

1. Supported proposal as being well thought out.

ALLEN BARR

1. Questioned legality of certain members of the Board of Water Supply and Planning Commission.

2. Questioned timing of master plan and design contracts.

LIFE OF THE LAND BY LESLIE SKILLINGS

1. Criticized citizen's participation in development of the plans.

2. Questioned expenditures in support of Wailea Development.

3. Questioned time table for preparation of the master plan.

4. Requested additional hearing to include consideration of the Water Master Plan.

MEMORANDUM
TO: MPC
FROM: DIRECTOR
Re: Summary of Testimony

JOHN BOSE II

1. Questioned priorities, particularly regarding sewage treatment facility to Wailea.

2. Protested timing of master plans and design contracts.

3. Protested scope of the study which excluded the Kula area.

4. Protested separation of the Water Master Plan for public hearing.

5. Questioned the desirability of the injection well disposal system at Kanaha Pond.

6. Protested "secrecy" clause in the consultant's contract.

MAUI LAND & PINEAPPLE COMPANY BY RICHARD C. GILBERT

1. Opposed certain sections of the Flood Plain and Tsunami Inundation Ordinance recently enacted by the County of Maui.

B. SUBSEQUENT TESTIMONY RECEIVED IN WRITING

CONSERVATION COUNCIL OF HAWAII BY RUSSELL W. CAHILL, PRESIDENT

SEWERAGE

1. Questioned whether the proposed Kihei system was not too extensive for the present population.

2. Proposed costs sharing if the plan is to serve Wailea.

3. Recommended alternate Wailuku site rather than recommended site at Kanaha Pond.

4. Raised questions with regard to the desirability of the deep well injection system at Kanaha Pond.

5. Proposed alternate construction of a treatment plant in the Makawao-Pukalani area.

DRAINAGE

1. More emphasis should have been placed on prevention rather than treatment of flooding.

2. Opposed relocation of existing streams into Kealia Pond.

3. Supported retention of Kealia Pond for Open Space.

MAUI REALTY COMPANY, INC. BY DONALD H. TOKUNAGA, MANAGER

1. Recommended consideration of alternate site for the Lahaina treatment plant to the south of Honokowai Stream. The new site should be away from the highway and outside of the flood plain and tsunami inundation limit.

2. Suggested that designation of the flood plan and tsunami inundation area as shown would handicap and curtail

AFFIDAVIT OF PUBLICATION

STATE OF HAWAII,)
County of Maui.) ss.

Rose K. Alcomindras being duly sworn deposes and says, that he is Advertising Sales of the Maui Publishing Co., Ltd., publishers of the MAUI NEWS, a newspaper published in Wailuku, County of Maui, State of Hawaii; that the ordered publication as to NOTICE OF PUBLIC HEARING

of which the annexed is a true and corrected printed notice, was published 1 times in the MAUI NEWS, aforesaid, commencing on the 8th day of Jan., 19 72, and ending on the day of , 19 , (both days inclusive), to-wit: on Jan. 8, 1972

and that affiant is not a party to or in any way interested in the above entitled matter.

Rose K. Alcomindras

Subscribed and sworn to before me this
11th day of Jan. A. D. 19 72

Notary Public, Second Judicial
Circuit, State of Hawaii.

My commission expires August 31, 1975

NOTICE OF PUBLIC HEARING

COUNTY OF MAUI
SEWERAGE AND DRAINAGE MASTER PLAN

NOTICE IS HEREBY GIVEN of a public hearing to be held by the County of Maui in the Chambers of the County Council, County Building, Wailuku, Maui, Hawaii, on Thursday, January 27, 1972, at 7:00 p.m. or as soon thereafter as those interested may be heard to consider the proposed Sewerage and Drainage Master Plans for the County of Maui. Said Master Plans will include consideration of the location of major facilities, methods of treatment and disposal, and other pertinent factors relating to this subject.

Copies of the report may be received at either the office of the County Department of Planning at Naska, Kahului, Maui, Hawaii, or at the office of the County Department of Public Works, County Building, Wailuku, Maui, Hawaii. Copies of the proposed plan may be reviewed during normal office hours.

All testimonies regarding the proposed Master Plans should be filed in writing to the County Planning Department, P. O. Box 1487, Kahului, Maui, Hawaii, before the date of the public hearing or presented in person at the time of the public hearing.

COUNTY OF MAUI
By Howard K. Nakamura
Planning Director
and
Stanley Goshi
Director of Public Works

(MN: Jan. 8, 1972)

February 4, 1972

Mr. Donald H. Tokunaga, Manager
Maui Realty Company, Inc.
P.O. Box C
Wailuku, Maui 96793

Dear Mr. Tokunaga:

This will acknowledge receipt of your letter dated January 28, 1972, regarding the drainage and sewerage master plans proposed for the County of Maui. We will take your communication under advisement in formulating our recommendations to the County Council. We are appreciative of your interest and constructive comments on this matter.

Please feel free to call on us if we can be of further assistance.

Yours very truly,

HOWARD K. NAKAMURA
Planning Director

cc Public Works w/letter

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100 WELLS KANOA BLDG.
WAILUKU, HAWAII 96793

Maui Realty
company inc.

BRANCH OFFICE
P.O. BOX 5
LAHAINA, HAWAII 96761

January 28, 1972

RECEIVED
JAN 31 1972
DEPT. OF PL... ...
COUNTY OF MAUI

Mr. Howard K. Nakamura
Planning Director
County of Maui
Planning Department
P. O. Box 1487
Kahului, Hawaii 96732

Dear Howard:

Some observations and comments with regard to the Drainage Master Plan submitted for a Public Hearing on Thursday evehing, 27 January 1972.

Re the location of the Sewage Treatment Plant along the north bank of Honokowai Stream: it appears to me from Plate II-13 of Towill's Drainage Master Plan for Napili-Honokowai-Lahaina that the proposed site will fall within the Potential Tsunami Inundation Limit and the 10 Year Flood Plain. Perhaps an alternate site either to the south of Honokowai Stream and more towards the stream designed to handle drainage from Puukolii, or preferably a more inland location away from the view of passing motorists along the new State Highway Alignment proposed for the Area would be much more acceptable.

As for the adoption of the Flood Plain and Tsunami Inundation Areas - delineated by those maps for the various areas as contained in Towill's Drainage Master Plan - which in all probability will be recommended to be incorporated into the Flood Plain and Tsunami Inundation Area Ordinance which was adopted by the Maui County Council earlier this week: we continue to contend that the shot-gun approach covering Maximum Areas rather than Minimum Specific Areas will impose a set of difficult standards for improvements which will severely handicap and seriously curtail all future developments within these all-encompassing general areas. As you can see from the maps prepared by the Towill's study that most of Maui County's principal communities and developable areas nearby are already shown to be in areas designated as Flood Plains and Potential Tsunami Inundation Areas.

We understand Maui County's desire in this instance to propose Maximum Areas, all encompassing, to qualify for Federal Grants and Benefits covering Flood, Drainage and Sewage problems. However, we would like to recommend that this Flood Plain and Tsunami Inundation Area Ordinance start with specified areas covering only those Capital Improvements which Maui County desires to qualify/undertake first; and that additional areas be included subsequently, as the County's Capital Improvements Program warrants.

We submit our thoughts and observations with a desire to be helpful. Your consideration of our suggestions, likewise, will be appreciated.

Respectfully submitted,

MAUI REALTY COMPANY, INC.

D. H. Tokunaga
Manager

February 16, 1972

Mr. Russell W. Cahill
President, Maui Chapter
Conservation Council for Hawaii
RR 1, Box 648
Haiku, Maui, Hawaii 96708

Dear Mr. Cahill:

This will acknowledge receipt of your letter dated February 15, 1972, transmitting comments on the proposed Sewage and Drainage Master Plans for the County of Maui. Your comments will be taken into consideration prior to the forwarding of a recommendation to the County Council.

We are appreciative of the time and effort which went into the preparation of your transmittal as well as your sincere and constructive concerns for a better environment.

Please feel free to contact us at any time should you have additional comments to make.

Yours very truly,

HOWARD K. NAKAMURA
Planning Director

cc Public Works w/copy

Conservation Council for Hawaii
Maui Chapter
February 15, 1972

RECEIVED
FEB 16 1972
DEPT. OF PLANNING
COUNTY OF MAUI

Mr. Howard Nakamura
Director
County Planning Commission
249 Nasha
Wahului, Maui, Hawaii 96732

Dear Howard:

This letter is our statement to the County of Maui of our review of the Sewage and Drainage Master Plans done by R. M. Towill Corporation. Our review was done by a committee of professional people including a Geologist, a Hydrologist, and a Biologist who are members of the Maui Chapter of the Conservation Council for Hawaii

We are a group of men and women dedicated to working for a better environment. Our criticism is given in a constructive manner, and we hope it will be accepted as such. Our review addresses the Maui Island section only.

Sewage Plans

The Kihai system appears quite extensive for the present population in the service area. Federal funding cannot be found for this purpose with such a small service area. If this plant is to serve Wailea's future needs, then A & B should share in the cost as AmFac has done at Kaanapali.

We feel that the alternate Wailuku area disposal plant is located in a better place than the proposed Kahului drill site location for these reasons:

1. The Kahului site is within the Tsunami Inundation Line shown in Towill's drainage plan and falls within the scope of your proposed Floodway-Tsunami Building Restrictions.

2. The Wailuku site is outside the Kanaha Pond waterfowl refuge area.

3. The emergency outfall for the Wailuku plant would be down current from the Kahului Harbor area in the event of an inevitable overload or breakdown requiring sea disposal of untreated sewage.

4. There is a good chance that economical deep well disposal in the Wailuku site would have no adverse environmental impact, while the Kanaha site has definite drawbacks in this regard.

Kanaha Drill Site

Our concern about the potential damage to the Kanaha Pond waterfowl sanctuary has led us to form a committee to observe and look into the problem more closely. The committee consists of:

John Bose	Conservationist
Robert Bruce	Hydrologist
Russ Cahill	Biologist
Dr. Colin Lennox	Conservationist
Dr. Howard Powers	Geologist
Jerome Pratt	Wildlife Manager

The proposed plant has an estimated effluent level of 9 million gallons per day (MGD). With addition of the rapidly growing Pukalani, Makawao, Paia areas, this is increased to 12 MGD by 1980. Our committee has studied the potential effects of this volume on the hydrology of the basal ground water in and around the pond.

Although we have been allowed only a minimum of time for this study, our geologist and hydrologist have determined that the experimental disposal well is located within the perimeter of the original pond shore. The Kanaha Pond originally extended under the present sand dune. When the drillers encountered the fine sedimentary ooze of the old pond bottom 45 feet makai of the present drill hole, they pumped out the fine bottom material and caused a cave-in. The casing dropped out of sight into the hole, causing the drillers to move to their present location.

We also observed that after the drillers had grouted in their casing and sealed up the end 180 feet below ground surface, the drill water being pumped down through the drill rod caused liquid cement to flow up around the well casing; indicating no-seal.

We are filing this report in advance of the test period; however, we have suggested to you and to your consultants that these tests will be worthless unless they are correlated to pond levels. Several tubes should be inserted into the water table (4 to 6 feet below ground) before any volume tests are made, so that any drawdown or upsurge will be monitored. It is also important to establish elevation above sea level near the drill site and to test at various tidal conditions. Tidal fluctuations should be recorded concurrent with the tests and pond monitoring.

On February 10, at 10:00 A.M., the approximate water level in the pond was 2.7 feet above sea level (our figure). In pipe #1 on the fringe of the water pond, the ground water was approximately 2.6 feet, and in pipe #2, closer to the well, about 2.3 feet. These measurements give a

rough indication of the gradient of the ground water flow to the sea. Even though this is a rough check, it gives a sound indication that a relatively small rise in the piezometric surface of the cone of recharge formed on the water table surrounding the well could reverse the drainage flow back into the pond and with 9 MGD or 12 MGD of effluent, seriously pollute this priceless waterfowl refuge.

We believe that the duration of the well injection test specified in the contract is too short. We recommend that the County Engineer negotiate with the contractor for an extension of the pumping time. This should be done while the equipment is on-site and may be rented.

We will have more data on which to base our evaluations after the test, but Mr. Goshi made it quite clear to us at our November 17 meeting that if the County found any possibility of the disposal well polluting the pond, the plant would be moved out to one of the alternate sites and deep well disposal used at those sites. We would appreciate it if you would keep our organization informed of the County's Kanaha Pond well test. We would like to see the well logs and other pertinent data furnished by your engineering consultants.

Up-Country Sewage

We note that the favored plan for handling up-country sewage is to pipe it to the Kahului plant. We would like to ask that strong consideration be given to treating the up-country sewage at a site separate from the Kahului plant. With the growth projected for up-country urban areas, we see the Kahului plant having to expand in the future. Some of the costs of operating a separate plant could certainly be met by savings in pipeline trunk construction and pumping stations, and the re-use of this valuable high level water on the extensive drought stricken dry lands up country.

It appears that Towill's recommendation on using effluent on agricultural lands or golf courses has been dropped with very little investigation. We list for your consideration 14 areas which have experimented with or are using sewage wastes for farm crop production or for improvement of recreational facilities:

Melbourne, Australia
Maple Lodge, England
Jerusalem, Israel
San Francisco
University Park, Pennsylvania
Tucson, Arizona
Leipzig, Germany
Springfield, Illinois
Kankakee, Illinois
Stark County, Ohio
Canton, Ohio
New York City
Las Vegas
Orlando, Florida

We have details of these experiments and uses which we can furnish if you would like them. San Diego, California is turning former sand

barrens into lush oases with these procedures, while cleaning Mission Bay and San Diego Harbor from a putrid biological desert into one of America's cleanest harbors where swimming and fishing are now possible.

Drainage Plans

We see this drainage plan as treatment rather than prevention, although the recommendations on Floodway and secondary flood plain management, are quite good. We would like to see emphasis given to treating the causes of flood damage. As is so aptly described by Towill, the Iao Stream flood damage potential was bad in 1966 when the Corps of Engineers made its report. It has now gone from bad to worse because of development by those who knew they were building in a potential flood area, but also knew that County, State, and Federal money would bail them out.

Kealia

As you know, we have taken a strong position against development in the Kealia flood plain. We are determined to push for the preservation of this area as a wildlife refuge and sedimentation basin. If managed properly, it could act as both, as well as keep the sediment from flowing into Maalaea Bay.

We strongly oppose the arbitrary relocation of the natural courses of the streams entering the Kealia flood plain as shown on Plate II-19 of the Drainage Master Plan. The plan itself supports our position on page 51 where it states, "If the present drainages into the center of the pond area present no obstruction to future development, then it is recommended that these remain in their present position".

The artificial concentration of the flood waters of the extensive West Maui and Haleakala drainages into the east end of the pond as shown on Plate II-19 would, in our opinion, destroy much of the beneficial sedimentation flood control, and natural pollution control features of this pond. The drainage ways proposed in the Master Plan could divert nearly 29 billion gallons of water per day into the narrow east end of the pond near the proposed apartment and resort developments along the beach. This is a peak flow six times that which came down Iao stream during the disastrous flood of December 3, 1950.

Kealia Pond is worth a lot of money to the people of this island. The cost of replacing this settling pond with catch basins up-stream would run into millions of dollars of public funds.

Old time shore fishermen have told us that since the County and Fish Farms Hawaii have bulldozed the sand bar down, allowing the silt laden stream to flow seaward, the fish catch has suffered severely. This does not even mention the effects on the reef ecology of Maalaea Bay

(see recent report by Dr. John Maciolek).

Finally, we call your attention to the Comprehensive Open Space Plan presented to the 1972 State Legislature by Overview Corporation. Kealia Pond and its surrounding area is listed as one of the three outstanding Maui areas for open space preservation. We have fought for this in the past, and will continue to do so in the future.

We have a good land use law. We have a competent County government. We have an enlightened citizenry. Together, we should be able to solve our present flood problems, and eliminate any future ones with rigorous application of sound land use planning, coupled with stringent controls on the development of areas in the flood plain areas.

There is an old saying that "If a dog bites you once, it's the dog's fault. But if a dog bites you twice, it's your own fault". We support your efforts to solve those problems we have made for ourselves in the past, and we strongly urge action to avoid making similar mistakes in the future. Please call on us if we can be of any assistance to you.

Sincerely yours,

Russell W. Cahill

Russell W. Cahill
President, Maui Chapter
Conservation Council for Hawaii
RR 1, Box 648
Haiku, Maui, Hawaii 96708
Phone 572-7751

February 7, 1972

Mr. Garner H. Ivey, Jr.
Alexander and Baldwin, Inc.
P.O. Box 156
Kahului, Maui 96732

Dear Mr. Ivey:

Re: Sewerage and Drainage Master Plans

This will acknowledge receipt of your letter dated February 4, 1972, forwarding additional comments on the above subject. Please be assured that your comments will be taken into consideration by the County before the proposal is finalized.

Should you have any further comments, please feel free to transmit them to us at any time.

Yours very truly,

HOWARD K. NAKAMURA
Planning Director

cc Public Works ✓

RECEIVED
FEB 9 1972
DEPARTMENT OF PUBLIC WORKS
COUNTY OF MAUI

ALEXANDER & BALDWIN, INC.
P. O. BOX 156 • KAHULUI, MAUI, HAWAII 96732 • PHONE 877-5523
PROPERTIES GROUP

February 4, 1972

Mr. Howard Nakamura
Planning Director
County of Maui
Planning Department
P. O. Box 1487
Kahului, Hawaii 96732

Dear Sir:

Subject: SEWERAGE AND DRAINAGE MASTER PLANS

As we indicated in our testimony before the public hearing held on January 27, 1972, we would like to present additional comments on the Sewerage and Drainage Master Plans proposed for Maui County by R. M. Towill Corp.

We have asked Belt, Collins and Associates, Ltd., who have recently completed our master plan for Kahului, to review Towill's reports. Enclosed is a copy of their letter of February 2, 1972, commenting on the drainage, sewerage and water proposals, and specific items that relate to our Kahului Master Plan.

Our Belt, Collins Kahului Master Plan is presently being printed. Copies should be available next week. As soon as they are received, we will present copies to all concerned County departments.

Very truly yours,

PROPERTIES GROUP

G. H. Ivey, Jr.
MAUI MANAGER

GHI:dh

Encl.

cc A&B Properties Group, Hon.

Belt, Collins and Associates, Ltd.
Engineers, Planners and Landscape Architects
Hawaii Bldg., Suite 514, 745 Fort St., Honolulu, Hawaii 96813, Phone 521-3446

February 2, 1972

Mr. Garner Ivey
Kahului Development Co.
P. O. Box 156
Kahului, Maui, Hawaii 96732

Dear Garner:

Kahului Master Plan

We have made a general review of the sewer, water and storm drainage master plan reports prepared recently by R. M. Towill Corporation for the County of Maui to determine the impact of these reports on A & B's future development in the Kahului area, particularly with reference to the Belt, Collins development plan for Kahului now at the printer.

Towill's report was based on the existing County land use plan for Kahului, Wailuku, and Paupukalo. The report also included the Kahului airport area. Their development plans encompass expected growth to the year 1990. Our plan covers only the Kahului area, but extends beyond the present State urban district boundary. Therefore, the plans are not readily comparable.

Drainage

Towill's master plan considered the development of three drainage systems in Kahului. System 1 consists of an interceptor ditch east of Waiale Drive. System 2 consists of the existing sump and well field in the Kahului area, plus the addition of an overflow drainage ditch from the sump area into Kahului Harbor. System 3 consists of drainage ditches on both sides of Kanaha Pond plus localized drainage within Kahului primarily around the present fairgrounds. We feel that an alternate to the major channel from the existing sump area to the harbor could be implemented. Initially, additional field data should be obtained from the operation of the sump and well field. If favorable results are obtained, this system

Principals: Robert M. Belt, Walter K. Collins, James R. Bell
Associates: William D. Ng, Paul M. Hirota, Donald H. Chung, Masao Nakamura, Raymond F. Cain

could be expanded with the land area available to discharge additional runoff and, therefore, a major overflow drainage ditch may not be required. We further believe that it would be difficult to design a storm water outfall into Kahului Harbor which would meet water pollution standards. Finally, the cost of maintenance and expansion of the sump and well field would probably prove to be considerably less expensive than construction and maintenance of a major drainage ditch in the location suggested in the report. If the infiltration well field concept proves acceptable, drainage Channel 2 as shown on our plan, which ends in the sump area just below the Waiale reservoir, may be satisfactorily drained with the construction of additional wells with a capacity to discharge the design runoff. This will also, in the long run, reduce the drainage area feeding the existing sump and well field.

Sewage System

The Towill report suggests three treatment plant sites -- A, B, and C and using any one of the three will be acceptable. We have revised our plan to encompass sewage treatment plant site "B" at Kanaha Pond which we understand is the location preferred by the County. The design unit flows used in the report are very nearly the same as the unit flows which we have established for the Kahului area.

Two factors mentioned in the Towill report should be considered more fully in relation to their possible effects on A & B. The first is the statement that pre-treatment of industrial waste will be required before it is accepted into the Wailuku-Kahului collection system. This point should be clarified since not all industrial waste is toxic or upsetting and would not require pre-treatment. The requirement for pre-treatment should be based on individual discharges. Second, all Towill drawings reflect the effluent being pumped up to the Waiale reservoir. The concept is workable but additional study may be required to determine the possible adverse effects including what would happen if the reservoir should overflow during storm periods.

Water System

The 1990 projected water demand in the Towill report for Kahului of 5.9 MGD compares favorably with our estimate of 6.2 MGD. Towill has referred to our ultimate demand of 9.0 MGD and we should point out at this time that this is the ultimate low level system demand. Generally,

the basic distribution system for the Kahului area shown in the Towill report and our report is very similar, except that the Towill report recommends more storage capacity.

One of the first items of construction recommended for development of Wailuku-Kahului area with which we fully agree, is additional source development and expansion of the transmission capacity through the Wailuku area.

One of the primary differences between the reports is the difference in recommended storage capacity. Towill's recommended storage is based on an average day's supply; fire flow plus coincidental domestic flow; or peak hour flow for six hours, whichever is greater. The Belt, Collins recommended storage is fire flow based on the reservoir recorded three-fourths full at the time of fire. This allows one quarter of the reservoir capacity for peak hourly fluctuations. We feel that for an area the size of Kahului, the source and transmission system should be designed with sufficient safe guards to continuously supply the maximum daily demand without depleting the storage reserve rather than providing a full day's supply.

It is our understanding that the County has recently required a reservoir storage capacity of 1,000 gallons for every residential unit to be developed and 6,000 gallons per day per acre for industrial and commercial developments (one day's supply). To show the effect of this storage requirement in relation to our Kahului plan, listed below is a comparison of the storage requirements for the existing development, 20-year development and the ultimate development.

	Units	Storage in MG
Residential and Apartment Units*		
Existing.	2,816	2.8
20-year development (to the present urban boundary).	3,587	3.6
Remaining development.	3,588	3.6
		10.0 MG

*Including parcels owned by others in Kahului.

	Acres	Storage in MG
Industrial and Commercial Development*		
Existing.	393.3**	2.4
20-year development.	98.8	0.6
Remaining development.	27.2	0.2
		3.2 MG

*Including parcels owned by others in Kahului.

**Includes undeveloped parcels in Hana Highway industrial district.

As can be readily seen, this represents over 13 million gallons total storage whereas our suggested total storage requirement is 3.4 million gallons. Towill's recommended storage is 7.0 million gallons for the 1990 development.

Very briefly, we have outlined those portions of the Towill reports which will have the most impact to A & B's development plans and should be studied in more detail. Please contact us if you have questions or would like further study of any of our comments.

Sincerely yours,

James R. Bell

PPW:JRB:gk

cc: Richard Cox

PRESENTATION BY ALEXANDER & BALDWIN, INC.

DRAINAGE AND SEWERAGE MASTER PLANS FOR THE COUNTY OF MAUI

JANUARY 27, 1972

We appreciate the opportunity offered to comment on the County of Maui Master Plans for Drainage and Sewerage prepared by R. M. Towill Corporation. We feel that the development of such plans serve a real need in identifying problem areas and providing a valuable planning tool for the future.

While we have not had sufficient time to review the Towill reports in complete detail, we would like to offer a few comments:

1. Regarding the Kahului-Wailuku Drainage Plan, we note considerable difference in the overall approach to drainage for Kahului from that prepared by Belt-Collins Assoc. for A&B, Inc. Our general plans have been discussed previously with both the County and Towill. Our detailed report will be available shortly. Our recently constructed drainage reservoir is considerably larger than that proposed by Towill. We believe this reservoir and the four 16" disposal wells therein will alleviate the need for a drainage channel to the sea. Our plans involve diversion of much of the drainage from future development above the present town limits. We would appreciate the opportunity to discuss our plans with you in more detail at your convenience.

2. In view of the provisions of the Flood Plain and Tsunami Inundation Ordinance recently passing second reading by the Maui County Council, we are concerned about the Potential Tsunami Inundation Limit established for Kahului. We note that basically all of the commercial and industrial zoned land are included, as well as all of the Maui Community College site. We hope more reasonable limits will be considered for Kahului as well as other areas of Maui County. We do not believe the tidal wave history of the Kahului area justifies such limits as those established.

3. Regarding the proposal to realign several existing streams in the vicinity of Kealia Pond, we agree with the recommendation made by Towill that such relocations only be considered at such time as the future use of the Kealia Pond area is clearly determined. In addition to the interest in portions of Kealia Pond by Maui Electric Co. and Fishfarms of Hawaii, there is an active proposal that much of this area be utilized for wildlife sanctuary purposes. Again, we are concerned about the Tidal Wave Inundation Limit proposed by Towill in this general area.

4. Regarding the Sewerage Master Plan, we have only had opportunity to review the proposed Kahului-Wailuku system. It appears to be a well thought out proposal, one that will serve the greatest area in the most economical manner. We would, however, appreciate the opportunity to discuss our Kahului Master Plan and its impact on sewer capacities with you in the near future.

We will continue to review the Master Plans and should we have additional comments, will forward them to you at a future date. Again, we appreciate the opportunity given us for comment.

(Testimony at Public Hearing on the Maui County Sewer, Water, and Drainage Master Plan, January 27, 1972.)

My name is Allen Marr. I am a teacher at Baldwin High School and a voter, taxpayer, and property owner of Maui County.

The so-called "master planning" that is being furthered by this gathering is a bad joke upon the people of Maui County. While I feel a public responsibility to speak out, I am acutely aware that the public is rarely heard or taken seriously by this administration. I will therefore be brief, leaving unsaid much that should be on the public record.

The public supposedly is to here react to a comprehensive sewerage, water, and drainage master plan. In fact, the water plan is left out of this hearing. Presumably, we are to believe that the January 17 meeting of the water board satisfies the public hearing requirement of the water plan. That board, however, is no longer a legally constituted body, to say nothing of other irregularities in that earlier hearing. The Charter says in Sec. 13-2.5 that "No member of any board or commission shall be eligible for a second appointment to the same board or commission prior to the expiration of two years..." It appears that Mr. Harold F. Rice and Mr. Haruki Nakamura were reappointed in violation of this Charter provision. The same section of the Charter also says that "No member of any board or commission whose term has expired shall continue to serve on such board or commission." Both Mr. Koichi Tamanaha and Mr. Joe Kavamura are therefore not by law members of the board, since they have neither been reappointed or replaced according to law. Sec. 13-2.7 of the Charter says "A majority of all the members to which a board or commission is entitled shall constitute a quorum to do business." Since only three members are seated legally and Sec. 8-8.2 of the Charter provides for seven members, it is clear that the board could not on January 17 and cannot now muster a legal quorum to conduct water board business.

Incidentally, the Planning Commission, which presumbably must also somehow be involved in "master planning", is also now unable to muster a legal quorum, since four of its presumed seven voting members are not seated legally.

A master plan is supposed to be the basis for more detailed planning and for the carrying out of public improvement projects. As a matter of fact, contracts for more detailed planning, and, indeed, foractual engineering of sewer facilities, for instance, have already been let, far in advance of completion of the master plan. To justify such disregard for responsible planning on the claim that it was necessary in order to get federal funds this year is a fraud. For one thing, federal funds will be doled out again next year...and the next. It turns out to be an even more serious matter when one discovers overtly illegal acts to support this fraud. For example, the contract for the Chung, Dho, Ahn Kahului-Wailuku sewerage treatment plant study was signed October 15, 1971. Yet Chung, Dho, Ahn turned over to the County six and a half months earlier a study which appears to be the very thing wanted. Although I cannot believe the findings, all checks into the matter confirm that the $475,000 October contract is indeed to pay for work contracted for without legal authority, apparently in 1970, and completed in April of 1971, more than six months ahead of the legal authority.

I need not elaborate the numerous other exceptions that must be taken to the master plan except to say that it was developed in disregard of both law and logic and can serve as little more than the basis for the irresponsible expenditures and distorted priorities of the government of this county.

Ladies and gentlemen, I plead to all who understand what I am saying to join a common effort to reestablish a responsible and responsive government and a rule of law in Maui County. Lawlessness in government and irresponsible administration together constitute the single greatest threat to our future here in this county, in this state, and in this nation. Thank you.

PUBLIC HEARING ON THE R. M. TOWILL SEWERAGE, WATER AND DRAINAGE MASTER PLAN FOR THE COUNTY OF MAUI. JANUARY 27, 1972, 7:00 P.M.

I am Leslie Skillings, a resident of Kihei and teacher at Baldwin High School. I am a member of the Maui County Advisory Air Pollution Control Association, Conservation Council, Zero Population Growth, and vice president of the Maui Chapter of Life of the Land, a group for ecological research and action. Tonight I will be speaking on behalf of Life of the Land, whose record in the area of water pollution abatement speaks for itself.

The question we are asked to consider here tonight and the decisions which have and will be made will affect Maui County citizens for many years to come. The federal H. U. D. grant under which this Master Plan was partly financed "encourages the involvement of citizen and private sector groups that should be participating in local planning." This is the first problem. Intelligent citizen participation is limited by the availability of information, and in Maui County it has become damn near impossible to get that information during the planning process. Three copies of this Master Plan were made available to the public: one copy to be used in the Public Works office, where an employee must let you borrow his desk for a few minutes so you can look at the plan; one copy kept in the Planning Department office, where again there is no table or desk set aside for public use; and one copy to circulate for two or three days if you are lucky enough to get on the waiting list. Of the 100 copies paid for by the terms of the contract, certainly more could have circulated, and copies could have been placed on reference in all the county libraries. I can only conclude that this hearing is being held only to meet legal requirements, NOT to encourage citizen input. The county should take lessons from the National Park Service on conducting a public hearing.

Why the public is unwanted becomes clear as you look into this subject. I have been following the sewer question for almost two years, and for the past three months I have been trying to get a copy of the Towill Master Plan for personal use and for use by my ecology students. To date there are many questions that still need answers, but it is safe to conclude at this point that we, the public, are becoming committed to the expenditure of tens of millions of dollars so A & B can build Wailea. I don't believe the residents of this county want Wailea nor do they want to pay all the added costs which would result from the addition of 50,000 people in the Wailea compound. We have been lied to! It is time to open the door on this county's secrecy.

In the September 5, 1970 issue of the Maui News, a front page story quoted our Mayor as stating that Chung Dho Ahn was the consultant for the Wailuku-Kahului sewer treatment plant, and that Norman Saito was the consultant for the Lahaina area. The fact is that Norman Saito was contracted for the North Kihei Sewerage System, and when you read the contract you discover that "North Kihei" includes Wailea. Either the Mayor was misquoted before the last election, or he lied to the people of Maui.

A stated purpose of the Towill Master Plan is to help Maui meet requirements for Federal assistance, which we certainly need. Federal priorities are based on "MOST URGENT NEEDS". How will they feel about our needs when they learn that we have more than eight million dollars of state and county money earmarked for Kihei, where there is a population of about 1,500. Future growth? Matson bought Wailea in 1957 for $500,000, and after fourteen years all they have produced is a golf course and a lot of run-off into the ocean. Can we jeopardize all our federal assistance programs for this?

The Towill Master Plan was 158 days late. Was the $25 a day penalty clause enforced? What was the reason for the delay?

The Contractor presented the County with a bill on October 30, 1970, just 15 days after the contract was signed, in which they claimed to have completed 69.25% of their contract. It took twelve months and two extensions, or twenty four times as long, to complete the remaining 30.75%. One wonders if the study can be considered complete even now. The contract for the Master Plan requires Towill to "identify existing sewer and water systems and determine the capacity and condition". Towill did identify the Kahului sewerage collection system, but did not indicate that its condition is so poor that, due to massive infiltration problems, a treatment plant cannot handle the diluted influent. Extensive repairs will be necessary, and this fact is already known by both the Planning and Public Works Departments. Paying for these repairs is financially possible if we delete our grandiose plans for county assistance to Wailea.

Last Friday the County Council passed a Flood Plain and Tsunami Inundation Area ordinance. This ordinance, along with the drainage master plan, are necessary to secure Federal backing of flood insurance. The entire Kihei coast is a flood plain. Additional construction in low-lying areas will jeopardize our flood insurance, and the county may be liable for any damages due to inundation. We will all pay if Wailea is not stopped until necessary drainage protection is provided. The 1959 Master Plan for the Island of Maui (another Towill study, incidentally) contained this recommendation:"Drainage Canal. Included in the Master Plan for the Kihei area is a 100 feet wide drainage canal. This canal is proposed to intercept run-off water from the Kula area and thereby protect the lower Kihei areas from present floods. It will make the lands between the canal and the ocean desirable for agricultural, residence, apartments, hotels, and business uses." With this on the record, Wailea can require the county to provide flood protection if we issue building permits for the affected area. We are taking a very large gamble. Is it worth it?

I have only touched on a few points tonight, but I do feel that the following demands are in order at this time.

1. That the hearing of the Water Board of January 17, 1972, be declared void because a majority of the 7 members are now sitting illegally according to County Charter restrictions on terms of service and reappointment. (County of Maui Charter, Article 13, section 2, paragraph 5).

2. That all actions, contracts, plans, studies related to any aspect of this Master Plan be halted forthwith until a new hearing has been held on the entire Comprehensive Sewerage, Water and Drainage Master Plan, and such Master Plan has been fully and legally accepted and approved.

3. I further request that a reasonable number of copies of the complete 3 volume Master Plan be placed in public circulation immediately, and that additional copies be deposited for reference in each public library throughout the County of Maui.

4. At least twenty days prior to the requested public hearing, a brief summary of the comprehensive plan should be printed and distributed. Such summary should include a description of the purposes and scope of the study, and should detail all conclusions and recommendations embodied in the study.

5. A knowledgeable representative of the R. M. Towill Corporation be available for formal and informal meetings in accordance with the contract for this study. Such representative must have the authority to answer relevant questions that legitimately apply to this Master Plan without recourse to the secrecy clause embodied in the contract.

COUNTY OF MAUI SEWERAGE AND DRAINAGE MASTER PLAN
Public Hearing, January 27, 1972

My name is John Bose, II. I am a self-employed environmental information specialist residing at Haiku, Maui.

The importance of this hearing tonight cannot be overstated. The future existence of Maui as an attractive, uncrowded place to live and visit is in the balance. If those portions of this plan dealing with Wailea are implemented, we as a county will be irreversibly committing ourselves to the success of Alexander and Baldwin's dream of bringing 50,000 residents to Wailea. We will have invested nearly eight and one half million dollars of state and county money for a sewerage system in an area that presently has only 610 water customers, and therefore only 610 existing sewerage customers. Additional millions of dollars will be required to meet drainage and flood control standards, and for increasing the water supply. After these investments have been made, every one of us will have a built in financial stake in the success of the Alexander and Baldwin venture, since substantial taxes will not roll in until the projected residents buy houses and move in. Even successful developments such as this have been shown to cost the local government more than they bring in. Only the developers stand to gain.

This Master Plan, in addition to committing us to more than doubling our population, should also be of grave concern to every citizen of Maui because of its future application to numerous phases of our daily life and growth. Once this plan has been adopted, it has implications on subdivisions, on building permits and grading permits, and on whether Maui will be eligible for a whole host of federal programs involving public services, housing, and flood insurance. Those charged with the approval of this Master Plan should be fully apprised of its very broad implications.

It is good to have a master plan. I am very happy that the state and federal government have assisted us in its development. But let us act carefully, and make certain that this is a good plan that reflects the real desires of Maui's citizens. In that spirit, I would like to record six specific protests to the Master Plan under consideration here:

1. I protest the timing and sequence of events. The contract for this study states that time is of the essence, and I agree. Yet here we are, eight months and twenty seven days after the final report was to be printed, bound and delevered, holding the first public hearing on the sewerage and drainage portion. I do not encourage haste, and if there were valid reasons for delay, that is all very well. But we have already begun to implement various portions of this plan before it has even been accepted. A contract for the sewerage plant engineering plans for Kihei-Wailea was signed September 10, or four months and seventeen days prior to this public hearing, ostensibly to decide if we even want that sewerage plant to be build at public cost. We should, at this moment, declare a moratorium on all planning and projects included in this plan until it has achieved final approval.

2. I protest the scope of the Master Plan, since it includes Wailea, with a population of approximately zero, and omits the Kula area, where there are houses, farms, a school, a hospital, and numerous small businesses. The several hundred citizens who live in Kula know that they also have a very serious water problem and some drainage problems, but those problems were not mentioned in any phase of this study. I do not fault the contractor for this shortcoming, since the contracts did not call for inclusion of Kula in the so-called Master Plan.

3. I protest the separation of the Water Master Plan, hearings on which were held ten days ago, from the Sewerage and Drainage components of the overall plan. If this is to be a truly comprehensive plan as the contract spells out, it must be considered as a whole. The very purpose of this Master Plan is to coordinate an orderly development of public services, and the planning director should oversee all phases.

4. I protest the degree of public participation in the development of this Master Plan. Frank Doyle, representing the contractor, held a few public information meetings last March. There was very little information to give out at that time, and it was so tentative that no intelligent evaluation or participation was possible. The contract calls for citizen participation. I have been trying to find out what was going on with this study ever since our county budget came out last March. At the public hearing on the 1971-72 budget, only three citizens spoke out, and all three opposed the county's commitment to Wailea. Then there seemed to be a clam-up in the Public Works Department, the Planning Department, the office of the Coordinator of Federal Programs, and the Mayor's Office. We learned from the newspapers in May that Maui had beat out Honolulu for sewerage funds because of the advanced stage of our plans, but there were no plans for citizens to see. Not until January 9, after this hearing had been announced, were copies of the Master Plan made available on a very limited basis.

5. I protest the secrecy clauses included in the contracts for this Master Plan. Paragraph 18 reads as follows: "Findings Confidential. Any reports, information, data, etc., given to or prepared or assembled by the Contractor under this agreement which the County requests be kept confidential shall not be made available to any individual or organization by the contractor without the prior written approval of the County." The very essence of democratic government embodies the principle of freedom of information. This Master Plan will seriously affect the lives of every one of us. Who may decide what may be kept secret? What restrictions are placed on the exercise of this extraordinary power? What kind of meaningful public participation may exist under this cloud of secrecy?

6. I most strenuously protest the outrageous rationale for placing the interests of Wailea as a top priority in the Master Plan. Page 172 of the study lists these criteria: "The orders of priority reflects the degree of sewage necessity for each of the areas reviewed as related to the following:

A. Present population and future growth.
B. Present degradation of offshore waters....
C. Areas where existing or potential health hazards are."

Employing the second part of criterion A, future growth, and apparently nothing else, the Towill study awards top priority to the 610 homes in Kihei plus the inflated dreams of Alexander and Baldwin in Wailea. Well, if we all get together and build this huge treatment plant, their nightmare might come true.

In addition to these protests, I would advise extreme caution in implementing disposal of effluents from the Wailuku-Kahului system into injection wells at Kanaha Pond. The Environmental Protection Agency, which must approve these plans, considers subsurface disposal as a temporary means, to be discontinued as soon as an alternative enabling greater environmental protection becomes available. Governor Burns, Mayor Cravalho, and the Federal Government have all pledged to protect Kanaha Pond, a National Natural Landmark, state wildlife refuge, and home of endangered bird species.

This Master Plan, when it is approved, will join the innumerable other plans and studies that fill the shelves of county offices. In many instances they carry the effect of being law, since they set the standards for enforcement of other statutes and ordinances. If the rule of law is to retain the respect of the citizenry, we must make certain that these standards are adopted with the utmost caution and with honest, intelligent deliberation. Be aware that at a time when the state is taking a serious look at population problems, we are subsidising the importation of 50,000 wealthy, golf playing mainlanders to fill expensive apartments and hotels at Wailea. At a time when the state is promoting diversified agriculture, the water needs of Kula are left out of our master plan. At a time when the state is hard put to meet critical pollution problems, we are spending millions where there is no problem. At a time when hotels have surplus rooms, we are subsidising the building of more hotels.

January 27, 1972

Mr. Howard K. Nakamura
Director
Planning Department
County of Maui
P. O. Box 1487
Kahului, Maui 96732

Subject: Drainage Master Plan for
County of Maui

Dear Mr. Nakamura:

I am objecting only to the design criteria section of the report and particularly to use of Plate III-1 to determine peak discharge for areas of more than 100 acres. Specifically if one compares the stream runoff figures compiled by the U.S. Geological Survey for the Kihei area we find that during the period of record (admittedly short, having been started in the early 1960's) there is no apparent correlation between the curves of Plate III-1 and recorded flows. Both 1967 and 1971 had runoffs approaching magnitudes of a 200 year storm in the words of the Geological Survey. The use of the Plate would force design of drainage structures to care for flows of from 2 1/2 to 10 times greater than these measured flows.

Since this added cost factor will be borne by the public whether privately or publicly built, I submit that the adoption of this particular criterion would work a financial burden on the people of Maui with no proven added protection.

Very truly yours,

RK Rodrigo

Norman M. Saito
Consulting Engineer

RK:ah

For presentation at public hearing on
DRAINAGE MASTER PLAN FOR THE COUNTY OF MAUI
(Proposed Flood Plain and Tsunami Inundation Ordinance)
7:00 p.m., January 27, 1972.

My name is Richard C. Gilbert. I am the Field Utilities Superintendent of Maui Land & Pineapple Co., Inc.

The following comments are presented for the record on behalf of the Maui Land & Pineapple Company.

It is with regret that we must admit that through a lack of communications it was only yesterday, January 26, 1972, that we became aware of the proposed Flood Plain and Tsunami Inundation ordinance. Although much of our lands and our future pineapple operations are obviously directly affected by the proposed ordinance as written, we are present at this hearing with virtually no knowledge of the effect or impact that such an ordinance would have on our ability to continue to contribute to the economic welfare of the County of Maui and the State of Hawaii.

Lacking the opportunity to study in detail the plans and text that the ordinance was based upon, and the effect it might have on the ability of this company to continue to employ 2500 employees earning $8.5 million worth of wages per year, we have no choice but to strongly oppose the ordinance as written.

We oppose Section 4-C, Tsunami Inundation District.

We oppose Section 5-A, Standards of Development.

We oppose Section 6, Nonconforming Uses.

Section 6, as written, could possibly have a tremendous impact on our ability to expand, revise, rebuild, or construct any of a thousand things that a modern-day pineapple operation must do to remain

competitive in the world market.

In closing, we would like to state that we are in support of a much needed ordinance -- one that in reality would benefit the people of Maui as a whole.

We thank you for the opportunity to express our views and comments.

MAUI LAND & PINEAPPLE COMPANY, INC.
KAHULUI, MAUI, HAWAII

RCGilbert
January 27, 1972

APPENDIX D

Copies of Letters Received by the Office of Environmental Quality Control in Response to Draft

HAWAIIAN TELEPHONE COMPANY

P. O. BOX 2200 · HONOLULU, HAWAII 96805 TELEPHONE (808) 537 7111 · CABLE: TELHAWAII

April 18, 1973

Dr. Richard E. Marland
Interim Director
Office of Environmental Quality Control
550 Halekauwila Street
Tani Office Bldg., Room 301
Honolulu, Hawaii 96813

Subject: Draft Environmental Impact Statement for: Kihei Sewerage System

Ref: Your Memorandum dated: April 16, 1973

Dear Dr. Marland:

We have reviewed the Draft Environmental Impact Statement and have no objections to the project, nor to the content of the Environmental Impact Statement.

Very truly yours,

R. Mau

Richard Mau
General Outside Plant Engineer

SPARK M. MATSUNAGA
1ST DISTRICT, HAWAII

WASHINGTON OFFICE:
442 CANNON BUILDING
20515

HONOLULU OFFICE:
218 FEDERAL BUILDING
96813

Congress of the United States
House of Representatives
Washington, D.C. 20515

MEMBER:
COMMITTEE ON RULES
COMMITTEE ON AGRICULTURE
STEERING COMMITTEE

April 19, 1973

Dr. Richard E. Marland, Interim Director
Office of Environmental Quality Control
550 Halekauwila St.
Room 301
Honolulu, Hawaii 96813

Dear Dick:

Thank you for your letter of April 16, 1973 and also for providing me with a copy of the Draft Environmental Impact Statement for the Kihei Sewerage System.

I appreciated your kindness in making this information available to me and keeping me apprised of the activities of your Office.

Aloha and best wishes.

Sincerely,

Spark Matsunaga
Member of Congress

COUNTY OF
HAWAII

PLANNING DEPARTMENT

25 AUPUNI STREET • HILO, HAWAII 96720

SHUNICHI KIMURA
Mayor

RAYMOND H. SUEFUJI
Director

April 19, 1973

Dr. Richard E. Marland
Office of Environmental
Quality Control
550 Halekauwila Street
Room 301
Honolulu, Hawaii 96813

We have no comments to offer on the draft environmental impact statement for the Kihei Sewerage System.

Raymond H. Suefuji
Director

McG:mh

STATE OF HAWAII
OFFICE OF DISTRICT SUPERINTENDENT
DEPARTMENT OF EDUCATION
P. O. BOX 1070
WAILUKU, MAUI, HAWAII 96793

April 24, 1973

Mr. Richard E. Marland
Interim Director
Office of Environmental Quality Control
550 Halekauwila Street
Honolulu, Hawaii, 96813

Dear Mr. Marland:

SUBJECT: Draft Environmental Impact Statement for Kihei Sewerage System

We have reviewed the above draft statement and contend that the proposed Kihei Sewerage System will be a boon to the community.

The Maui District Office appreciates the opportunity to review the draft statement.

Sincerely,

Darrell Oishi
Acting District Superintendent

DO:ST:fmn

JOHN L. MC CLELLAN, ARK., CHA
WARREN G. MAGNUSON, WASH.
JOHN C. STENNIS, MISS.
JOHN O. PASTORE, R.I.
ALAN BIBLE, NEV.
ROBERT C. BYRD, W. VA.
GALE W. MC GEE, WYO.
MIKE MANSFIELD, MONT.
WILLIAM PROXMIRE, WIS.
JOSEPH M. MONTOYA, N. MEX.
DANIEL K. INOUYE, HAWAII
ERNEST F. HOLLINGS, S.C.
BIRCH BAYH, IND.
THOMAS F. EAGLETON, MO.
LAWTON CHILES, FLA.
MILTON R. YOUNG, N. DAK.
ROMAN L. HRUSKA, NEBR.
NORRIS COTTON, N.H.
CLIFFORD P. CASE, N.J.
HIRAM L. FONG, HAWAII
EDWARD W. BROOKE, MASS.
MARK O. HATFIELD, OREG.
TED STEVENS, ALASKA
CHARLES MC C. MATHIAS, JR., MD.
RICHARD S. SCHWEIKER, PA.
HENRY BELLMON, OKLA.
THOMAS J. SCOTT, CHIEF CLERK
JAMES R. CALLOWAY, COUNSEL

United States Senate
COMMITTEE ON APPROPRIATIONS
WASHINGTON, D.C. 20510

April 26, 1973

Dr. Richard E. Marland
Interim Director
Office of Environmental
Quality Control
550 Halekauwila Street
Honolulu, Hawaii 96813

Dear Dr. Marland:

I am writing to acknowledge receipt of the copy you sent of the draft environmental impact statement for the Kihei Sewerage System.

Your courtesy in sending this statement to me is appreciated.

With kind regards and aloha,

Sincerely yours,

Hiram L. Fong

Hiram L. Fong

HLF:vlo

STATE OF HAWAII

DEPARTMENT OF EDUCATION

P. O. BOX 2360

HONOLULU, HAWAII 96804

OFFICE OF THE SUPERINTENDENT

April 30, 1973

MEMO TO: Honorable Richard E. Marland, Interim Director
Office of Environmental Quality Control

F R O M: Shiro Amioka, Superintendent
Department of Education

SUBJECT: Draft Environmental Impact Statement for
Kihei Sewerage System

Thank you for forwarding the subject document to us for our review. May we point out that the Kihei Elementary and Intermediate School, containing kindergarten to eighth grade, is being planned for the 25-acre site approximately 1,200 feet northerly of the proposed sewerage treatment plant.

We are concerned that the treatment plant will be located on the land mauka of the proposed Kihei Ulupalakua Road and fairly close to Kihei School which is scheduled to open in September, 1976.

May we inquire as to what effect the sewerage treatment plant will have on the new Kihei School.

Your early reply will be greatly appreciated.

Shiro Amioka

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

440 Alexander Young Building
Honolulu, Hawaii 96813

April 30, 1973

Dr. Richard E. Marland
Interim Director
Office of Environmental
Quality Control
550 Halekauwila Street, Rm. 301
Honolulu, Hawaii 96813

Dear Dr. Marland:

Re: Draft Environmental Impact Statement for Kihei Sewerage System

This statement has been reviewed in this office.

We foresee no erosion or sedimentation problems to be generated by the project.

Soils information in the statement is very sketchy and inadequate; i.e., item IC, page 4. It also appears that insufficient consideration was given to soil conditions in planning effluent disposal by irrigation.

Effluent irrigation of Kalama Park is quite feasible since soils in the park are deep Jaucus sands with high infiltration and transmission rates. Due to the park's location next to the ocean, there is no hazard of pollution of ground water by overirrigation. However, the plan calls for pasture irrigation on ranch lands near the treatment plant to dispose of water excess to irrigation needs at the park.

It is difficult to locate the plant exactly on the soils map but the irrigated area will be on either Puuone sand or Waiakoa extremely stony silty clay loam, eroded. Neither of these soils is suitable for excessive irrigation at the rate mentioned (1/2"/acre/day - page 19). Both soils are shallow with low water-holding capacity and impermeable cemented layers or bedrock at depths of 20 to 30 inches.

The alternative of irrigating diversified crops may be practical but would require location of a favorable soil area at a practical distance from the source of effluent water.

Sincerely,

Fred Haughton

Fred Haughton
State Conservationist

cc: Robert Delzell
SCS, Wailuku

ELMER F. CRAVALHO
Mayor

STANLEY S. GOSHI
Director of Public Works

WAYNE S. UEMAE
Deputy Director of Public Works

DIVISIONS:
Building
Engineering
Highway Construction
and Maintenance
Sewers

COUNTY OF MAUI
DEPARTMENT OF PUBLIC WORKS
200 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAII 96793

May 1, 1973

Dr. Richard E. Marland
Interim Director
Office of Environmental
Quality Control
550 Halekauwila Street
Honolulu, Hawaii 96813

Dear Dr. Marland:

Subject: Kihei Sewerage System

Thank you for the mailing list for the draft EIS for the subject project.

As requested, a copy of the "Final Design Criteria Report for the Kihei Sewerage System" is enclosed for your information and files.

Very truly yours,

Stanley S. Goshi

STANLEY S. GOSHI
Director of Public Works

Encl.

UNIVERSITY OF HAWAII

Environmental Center
Office of the Director

MEMORANDUM

May 9, 1973

TO: Richard Marland, OEQC

FROM: Jerry M. Johnson

SUBJECT: Kihei Sewerage System Draft EIS

I have attached the WRRC review comments to the Kihei Sewerage System Draft EIS.

Jerry M. Johnson
Assistant Director

2540 Maile Way · Honolulu, Hawaii 96822 · Phone 944-7361

UNIVERSITY OF HAWAII

Water Resources Research Center
Office of the Director

MEMORANDUM

May 7, 1973

MEMO TO: J. M. Johnson
Environmental Center

FROM: R. Young

WRRC Review Comments: Kihei Sewerage System Draft EIS

1. The ultimate design capacity of the proposed treatment facility is not stated. The only flow data specified is the 250,000 gpd of reclaimed effluent for irrigation of Kalama Park and the 3 mgd capacity "for increased needs over the next 20 years".

2. The degree of treatment prior to disposal in the backup injection well system must conform to the requirements of the revised Chapter 38, Public Health Regulations.

3. Is the effluent application rate of 0.5 in/acre/day based on the initial irrigation area of 35 acres or the maximum flow area of 225 acres? No data is given to show the ability of the soil to accept this application rate. This rate could be significant in comparison to the historical record of cesspool and septic tank failures in the service area (or are all these past instances entirely due to disposal locations in areas of high groundwater table).

4. Land disposal of treated sludge solids is indicated, however, no evidence is given of firm agreements or acceptance of the material by local users for a fertilizer supplement and/or soil conditioner. Is this method of disposal merely speculative. If the material cannot be disposed of in this manner, and no other disposal facilities or alternatives are available the resultant situation could be extremely serious.

RY:pk

STATE OF HAWAII

DEPARTMENT OF PLANNING
AND ECONOMIC DEVELOPMENT

P. O. BOX 2359 • HONOLULU, HAWAII 96804

JOHN A. BURNS
Governor

SHELLEY M. MARK
Director

EDWARD J. GREANEY, JR.
Deputy Director

May 10, 1973

Ref. No. 8829

MEMORANDUM

TO: Dr. Richard E. Marland, Interim Director
Office of Environmental Quality Control

FROM: Shelley M. Mark, Director

SUBJECT: Draft Environmental Statement for the Kihei Sewerage System

We have reviewed the draft for the above subject and would like to make the following comments.

The draft appears to be quite adequate and the graphics are particularly helpful in identification of plan elements. The treatment plant which is detailed in this statement is a further implementation of the Kihei Civic Development Plan which was adopted by County Ordinance in 1969. The Kihei Plan recommended that such a facility is needed for the future development of this area and that the effluent should not be discharged in the ocean.

We appreciate the opportunity to review this draft statement.

cc: Public Works Department, County of Maui
Planning Department, County of Maui

LETTER NO. (P)1579.3

JOHN A. BURNS
GOVERNOR

KENAM KIM
COMPTROLLER

STATE OF HAWAII
DEPARTMENT OF ACCOUNTING
AND GENERAL SERVICES
P. O. BOX 119
HONOLULU, HAWAII 96810

MAY 14 1973

Dr. Richard E. Marland
Interim Director
Office of Environmental
Quality Control
550 Halekauwila Street
Room 301
Honolulu, Hawaii

Dear Dr. Marland:

Subject: Draft EIS for Kihei Sewerage System

The following are our comments to the subject draft EIS:

Project Description, 2nd paragraph, page 2

The reclaimed water is proposed to be used for irrigation at Kalama Park. The EIS should consider the use of the reclaimed water to also irrigate the proposed Kihei Educational Cluster. This will aid us in the development of the landscaping master plans for the school.

II Probable Impact of the Project on the Environment, E. Esthetics, 1. Odor, page 12

The Kihei Civic Development Plan shows that 74% of the wind direction is from the northeast to east sector. The EIS states that the prevailing wind direction is from the plant to the residential area which is contrary to the Development Plan. However, the Kihei Educational Cluster site will not be downwind of the plant. If for some reasons the proposed plant is resited, we would appreciate being apprised.

Thank you for this opportunity to review.

Very truly yours,

Mike M. Inouye
for KENAM KIM
State Comptroller

JOHN A. BURNS
GOVERNOR OF HAWAII

DIVISIONS:
CONVEYANCES
FISH AND GAME
FORESTRY
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT

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

May 21, 1973

MEMORANDUM

TO: Dr. Richard E. Marland, Interim Director
Office of Environmental Control

FROM: Sunao Kido, Chairman and Member
Board of Land and Natural Resources

SUBJECT: Environmental Impact Statement for Kihei Sewerage System

This project proposes the construction of a sewage collection system and wastewater reclamation plant for an area extending from Wailea northward to Kihei, Maui. The system will be built to accommodate future additions, extending the service north to the Maalaea area and south to the Makena area as needed.

This department has no objections to the environmental impact statement as presented.

Sunao Kido

SUNAO KIDO, Chairman

JOHN A. BURNS
GOVERNOR

E. ALVEY WRIGHT
Acting Director

LAWRENCE F. O. CHUN
DEPUTY DIRECTOR

MUNNY Y. M. LEE
DEPUTY DIRECTOR

DOUGLAS S. SAKAMOTO
DEPUTY DIRECTOR

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813

IN REPLY REFER TO:
ATP 8.2243

May 23, 1973

MEMORANDUM

TO: DR. RICHARD E. MARLAND, INTERIM DIRECTOR
OFFICE OF ENVIRONMENTAL QUALITY CONTROL

FROM: E. ALVEY WRIGHT, ACTING DIRECTOR
DEPARTMENT OF TRANSPORTATION

SUBJECT: DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR KIHEI SEWERAGE SYSTEM

We have reviewed the subject draft environmental statement and have no comment to offer as it relates to and affects our Department's transportation program.

However, since this much needed facility will primarily benefit the Kihei residents, we suggest that the future expansion plans of the service should also include Maalaea Boat Harbor area. Furthermore, we maintain that Maui County should coordinate the design of the sewer crossing of Piilani Highway with our Department.

E. Alvey Wright
E. ALVEY WRIGHT

Enclosure

JOHN A. BURNS
GOVERNOR

FREDERICK C. ERSKINE
CHAIRMAN, BOARD OF AGRICULTURE

WILLIAM E. FERNANDES
DEPUTY TO THE CHAIRMAN

STATE OF HAWAII
DEPARTMENT OF AGRICULTURE
1428 SO. KING STREET
HONOLULU, HAWAII 96814

May 23, 1973

MEMORANDUM

TO: Mr. Richard E. Marland, Interim Director
Office of Environmental Quality Control

SUBJECT: Draft Environmental Impact Statement for Kihei Sewerage System

The Department of Agriculture appreciates the opportunity to comment on the Draft Environmental Impact Statement for Kihei Sewerage System. We urge early adoption of the recommended system for use of treated effluent to irrigate Kalama Park, thus conserving domestic water resources. This proposal to recycle waste water will aid in determining the acceptability of the process in future installations in suburban and agricultural areas.

Frederick C. Erskine
Chairman, Board of Agriculture

DEPARTMENT OF THE ARMY
PACIFIC OCEAN DIVISION, CORPS OF ENGINEERS
BUILDING 96, FORT ARMSTRONG
HONOLULU, HAWAII 96813

PODED-P

25 May 1973

Dr. Richard Marland, Interim Director
Office of Environmental Quality Control
State of Hawaii
550 Halekauwila Street, Room 301
Honolulu, Hawaii 96813

Dear Dr. Marland:

We have reviewed the draft environmental impact statement for the Kihei Sewerage System and offer the following comments.

Response on Functional Areas of Responsibility for the Corps of Engineers.

Under the authority of a U.S. Senate Committee on Public Works resolution dated 5 May 1971, the Pacific Ocean Division has initiated a survey study of flood control problems in the Kihei district. As described on page 3 of the draft statement, the Kihei area is subject to rapid discharges down the normally dry watercourses and significant damages have occurred in the past.

Response on Full Disclosure Aspects.

The statement appears to provide a systematic analysis of the project's impacts and is well supported by the figures and appendixes accompanying it. Information on the status of the project, such as proposed construction and completion dates, and a definition of what provisions (p.3) have been made for expansion of the plant when needed would add to the completeness of the Project Description section.

Sincerely yours,

R. L. NICHOLS
Chief, Engineering Division

PLANNING COMMISSION
Yoshikazu Matsui, Chairman
G. Alan Freeland, Vice-Chairman
Joseph Franco
Kazuo Kage
Michael Kimura
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Howard Nakamura
Planning Director

COUNTY OF MAUI
PLANNING DEPARTMENT
200 S. HIGH STREET
WAILUKU, MAUI, HAWAII 96793

May 29, 1973

Dr. Richard Marland
Office of Environmental Quality
Control
Office of the Governor
State Capitol Bldg., Room 436
Honolulu, Hawaii 96813

Dear Dr. Marland:

Re: Draft Environmental Impact Statement -
Kihei Sewerage System

Thank you for affording us the opportunity to comment on the draft impact statement.

Overall, the report is well written and concise, and the exhibits are clear and readily understood.

However, the benefits from the use of treated effluent should be emphasized. For example, in the Kihei area, the use of recycled waste water would be of particular significance due to the dry climatic conditions. Reuse of the treated effluent in County parks, along roadsides and for pasture irrigation would appear to be an environmentally wise use of this precious resource.

Should you have any questions, please feel free to contact us at any time.

Very truly yours,

Howard K. Nakamura

HOWARD K. NAKAMURA
Planning Director

cc: Public Works
Dr. Miura

JOHN A. BURNS
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF HEALTH
P. O. BOX 3378
HONOLULU, HAWAII 96801

WALTER B. QUISENBERRY, M.P.H., M.D.
DIRECTOR OF HEALTH

WILBUR S. LUMMIS JR., M.S., M.D.
DEPUTY DIRECTOR OF HEALTH

RALPH B. BERRY, M.P.H., M.D.
DEPUTY DIRECTOR OF HEALTH

HENRI P. MINETTE, M.P.H., Dr.P.H.
DEPUTY DIRECTOR OF HEALTH

May 29, 1973

IN REPLY, PLEASE REFER TO:
FILE: EH-SE

To: Dr. Richard E. Marland, Interim Director
Office of Environmental Quality Control

From: Director of Health

Subject: Environmental Impact Statement for Kihei Sewerage System

We have reviewed the draft impact statement and submit the following comments:

Occupational and Radiological Health

1. Construction activities should be confined to the hours between 7:00 a.m. and 5:30 p.m. on week days and not allowed at other times.

2. All construction equipment as well as vehicles should be provided with appropriate mufflers to minimize noise from vehicular traffic.

Sanitary Engineering

1. Irrigation of public recreation areas with sewage treatment plant effluent should be accomplished with minimum or no exposure to the public and any detrimental health effects of the effluent should be thoroughly explored before routine use for irrigation.

2. The preliminary plans for the Kihei STP have been reviewed. At the present no adverse problems are anticipated. Should any problems arise that were not addressed by the Impact Statement, the Department reserves the right to impose further restrictions on the project.

Solid Waste

1. Detrimental health effects of the sewage sludge should be thoroughly investigated before use as a soil conditioner.

2. All solid waste generated from the construction and operation of the project should be properly stored and removed for disposal at an approved site.

Air Sanitation

1. The proposed use of aerobic digesters and oxidizing wet scrubber units at the pump stations and headworks are adequate for minimizing the odor potential.

2. We suggest that appropriate precautionary measures and the responsibilities for preventing fugitive dust from construction activities be included in the contractual agreement with the contractors.

Walter B. Quisenberry

Walter B. Quisenberry, M.D.

UNIVERSITY OF HAWAII

Environmental Center
Office of the Director

MEMORANDUM

June 1, 1973

TO: R. E. Marland, OEQC

FROM: Doak Cox

Kihei Sewerage System Draft EIS

In response to your telephoned request to us today I have reviewed very briefly the Maui County Draft Environmental Impact Statement for the Kihei Sewerage System submitted 16 April 1973. Your request for an immediate response precludes my involvement of the array of disciplinary competence usual in our EIS reviews. I have restricted my attention to water quality and associated matters.

The action discussed in the EIS consists essentially in substituting, for a sewage disposal system involving individual cesspools in part and cavitets plus injection wells in part, an integrated sewer system with a central secondary sewage treatment plant. A part of the effluent is normally to be used for irrigation of Kalama Park. The remainder is normally to be used for range-land irrigation. 1.5 mg storage (half-day storage for the design capacity of the treatment plant) will be provided to match the effluent discharge and irrigation demands in temporal characteristics. Excess effluent will be discharged underground through an injection well.

Present system and its minimal improvement

The EIS reports that difficulties are experienced with the present system in the inadequate drainage of the cesspools, causing backup of sewage and needs to construct additional cesspools, and the similar plugging of wells (p. 5). The well plugging is attributed to solids carryover, although no indication is given to the possibility that bacteriological slime development may be a primary source of difficulties even if there were no carryover of suspended solids. It is stated (p. 8) that the cesspools remove less than 50% of the sewage pollutants and that there is no provision for disinfection.

What is of major concern with respect to ambient water quality is not the quality of the seepage into the ground in the vicinity of the cesspools or injection wells but the quality of the groundwater which they influence at points of discharge along the shore or in irrigation wells. Although the statement is made that the conformance of the present system would not meet federal, state, or local water quality standards, no evidence is presented to indicate that in fact the standards are violated, or that a health hazard is presented at these points of discharge after the effluent has passed through the rock.

2540 Maile Way · Honolulu, Hawaii 96822 · Phone 944-7361

The hazard presented by backup and overflow could be controlled by constructing additional cesspools and injection wells, but the costs of this alternative are not discussed.

Proposed system

The proposed system would reduce the BOD and bacterial concentrations of the water before it is discharged into the ground, at least in comparison with discharge through cesspools, but as pointed out above evidence has not been presented to indicate that these have created a problem at ground-water discharge points. It might also reduce the nutrient concentrations of water reaching the ground-water aquifer after being used for irrigation, through adsorption on the soil and plant pickup. Whether this would result in reduction in nutrient concentration at discharge points is problematical. It would depend upon the adsorptive capacity of the soils and the extent to which the plants irrigated are cropped and removed, and, for nitrogen, the extent of atmospheric exchange. For phosphorus, possible precipitation as apatite or adsorption in the rock might be removal mechanisms applicable to water injected underground as well as water used in surface irrigation, but this mechanism would be equally effective with discharge through the present cesspools and injection wells. No mechanism similarly affecting nitrogen is known to exist in the rock.

Thus the superiority of the proposed system over the present system with respect to water quality seems not to have been demonstrated. The proposed system certainly would not be inferior to the present system with respect to total discharge of nutrients to coastal waters, but it might increase the concentration of the nutrient discharge in the vicinity of the treatment plant, park, and irrigation site. What effects this increased concentration might have on the marine ecology, I cannot say.

Miscellany

Not described in the EIS are: a) the relation between the proposed effluent storage capacity and the initial discharge rate of effluent from the treatment plant; b) the anticipated frequency and duration of use of the injection well; c) the possibility of adding to the storage later; d) the location and depth of the proposed injection well; or f) potential problems with plugging and means for cleanout.

Limiting the increase in the salinity of the sewage resulting from infiltration into the main interceptor is critical to the proposed use of the effluent from the treatment plant for irrigation. The groundwater chlorinity at the water table in parts of the area that will be traversed by the interceptor is considerably higher than the 500 mg/l maximum cited in the EIS(p. 10).

Testimony at the public hearing suggests (p. 10) that at least the booster pump sumps may extend as much as 50 feet below ground, hence perhaps more than 40 feet below sea level, where the ground-water salinity will be much higher. Whether the estimate of only 20-40 mg/l increase in chlorinity resulting from infiltration is reasonable or not should be closely checked.

Summary

The major potential advantage of the proposed system over extension and improvement of the present system appears to be mainly that the cost of the extension and improvement would be greater than that of the new system, but this advantage is not documented. A second potential advantage lies in the elimination of health hazards associated with the present system if these hazards would be associated with the present system even as it might be extended and improved, but again this has not been demonstrated. A possible disadvantage of the proposed system might be associated with marine ecological effects associated with the possible increased concentration of nutrient discharge in the general area of the treatment system disposal facilities.

Doak C. Cox, Director

APPENDIX E

Response to Letters Received by the Office of Environmental Quality Control

18 April 1973 — Hawaiian Telephone Company

No response needed

19 April 1973 — Honorable Spark M. Matsunaga

No response needed

19 April 1973 — County of Hawaii Planning Department

No response needed

24 April 1973 — State of Hawaii, Office of District Superintendent, Department of Education

Comment: "proposed Kihei Sewerage System will be a boon to the community."

No response needed

26 April 1973 — Honorable Hiram L. Fong

No response needed

30 April 1973 — State of Hawaii, Department of Education

Comment: "We are concerned that the treatment plant will be located on the land mauka of the proposed Kilhei Ulupalakua Road and fairly close to Kilhei School which is scheduled to open in September, 1976."

Response: As indicated in the environmental impact statement, the treatment process will be entirely aerobic without generation of noxious gases; structures will be low profile and landscaped; and a very low noise level maintained. The location of the plant should have no adverse effects on the new school site.

30 April 1973 — U.S. Department of Agriculture
Soil Conservation Service

Comment: "Soils information in the statement is very sketchy and inadequate; i.e., item IC, page 4. It also appears that insufficient consideration was given to soil conditions in planning effluent disposal by irrigation."

Response: Additional soils information has been added to the final statement. Soil condition was of primary concern in planning the irrigation system and actual application rates will be carefully controlled to prevent excessive irrigation rates.

Comment: "It is difficult to locate the plant exactly on the soils map but the irrigated area will be on either Puuone sand or Waiakoa extremely stony silty clay loam, eroded. Neither of these soils is suitable for excessive irrigation at the rate mentioned (1/2"/acre/day - page 19). Both soils are shallow with low water-holding capacity and impermeable cemented layers or bedrock at depths of 20 to 30 inches."

Response: Soils in the irrigated area are of the Waiakoa series. The application rate selected was made after discussions with the local office of the Soil Conservation Service (SCS). The SCS "In-House Use Only" Manual for Sprinkler Application Rate Groupings indicates a range of 0.5 to 1.0 inch per hour for Waiakoa soils. Should actual application indicate a lower application rate is needed, additional land is available adjacent to the site.

9 May 1973 — <u>University of Hawaii Environmental Center</u>

Comment: "The ultimate design capacity of the proposed facility is not stated."

Response: The ultimate design capacity of the plant without additional future construction is 3 million gallons per day.

Comment: "The degree of treatment prior to disposal in the backup injection well system must conform to the requirements of the revised Chapter 38, Public Health Regulations."

Response: Effluent from the plant will meet current discharge requirements.

Comment: "Is the effluent application rate of 0.5 in/acre/day based on the initial irrigation area of 35 acres or the maximum flow area of 225 acres? No data is given to show the ability of the soil to accept this application rate. This rate could be significant in comparison to the historical record of cesspool and septic tank failures in the service area (or are all these past instances entirely due to disposal locations in areas of high groundwater table)."

Response: The application rate would apply to both the initial and maximum flow. The amount of land required will depend on actual flows. Suitability of the soil for the stated application rate was discussed previously. Application rates for cesspools and septic tanks are effectively single point applications and consequently would be much higher than the irrigation rate stated.

Comment: "Land disposal of treated sludge solids is indicated, however, no evidence is given of firm agreements or acceptance of the material by local users for a fertilizer supplement and/or soil conditioner. Is this method of disposal merely speculative. If the material cannot be disposed of in this manner, and no other disposal facilities or alternatives are available the resultant situation could be extremely serious."

Response: In the first two years of operation, sludge production will be very low. During this period tests will be made in conjunction with the state to determine acceptable uses. At any time the solids can be disposed of at the County Sanitary Landfill.

10 May 1973 — State of Hawaii
Department of Planning and Economic Development

Comment: "The draft appears to be quite adequate and the graphics are particularly helpful in identification of plan elements. The treatment plant which is detailed in this statement is a further implementation of the Kihei Civic Development Plan which was adopted by County Ordinance in 1969. The Kihei Plan recommended that such a facility is needed for the future development of this area and that the effluent should not be discharged in the ocean."

No response needed

14 May 1973 — State of Hawaii
Department of Accounting and General Services

Comment: The reclaimed water is proposed to be used for irrigation at Kalama Park. The EIS should consider the use of the reclaimed

water to also irrigate the proposed Kihei Educational Cluster. This will aid us in the development of the landscaping master plans for the school.

Response: As future plans are developed, irrigation at the proposed Kihei Educational Cluster should be discussed with the County and could be considered.

Comment: "The Kihei Civic Development Plan shows that 74% of the wind direction is from the northeast to east sector. The EIS states that the prevailing wind direction is from the plant to the residential area which is contrary to the Development Plan. However, the Kihei Educational Cluster site will not be downwind of the plant. If for some reasons the proposed plant is resited, we would appreciate being apprised."

Response: The statement has been corrected.

21 May 1973 — State of Hawaii
Department of Land and Natural Resources

Comment: "However, since this much needed facility will primarily benefit the Kihei residents, we suggest that the future expansion plans of the service should also include Maalaea Boat Harbor area. Furthermore, we maintain that Maui County should coordinate the design of the sewer crossing of Piilani Highway with our Department."

Response: Maalaea Boat Harbor area has been included in the master sewer plan for the area and can be served when needed.

The sewer crossing of Piilani Highway will be coordinated with the Department of Transportation.

23 May 1973 — State of Hawaii
Department of Agriculture

Comment: We urge early adoption of the recommended system for use of treated effluent to irrigate Kalama Park, thus conserving domestic water resources. This proposal to recycle waste water will aid in determining the acceptability of the process in future installations in suburban and agricultural areas."

Response: Irrigation of the Park will be carefully monitored by County and State.

25 May 1973 — U.S. Department of the Army
Pacific Ocean Division
Corps of Engineers

Comment: Response on Functional Areas of Responsibility for the Corps of Engineers.

Under the authority of a U.S. Senate Committee on Public Works resolution dated 5 May 1971, the Pacific Ocean Division has initiated a survey study of flood control problems in the Kihei district. As described on page 3 of the draft statement, the Kihei area is subject to rapid discharges down the normally dry watercourses and significant damages have occurred in the past.

Response: Facilities have been located so as to not interfer with normal watercourses.

Comment: Response on Full Disclosure Aspects

The statement appears to provide a systematic analysis of the project's impacts and is well supported by the figures and appendixes accompanying it. Information on the status of the project, such as proposed construction and completion dates, and a definition of what provisions (p. 3) have been made for expansion of the plant when needed would add to the completeness of the Project Description section.

Response: Construction of the project is scheduled for the latter part of 1973 with operation to start late 1974. Provisions for future plant expansion have been shown on Figure V-2.

29 May 1973 — Planning Department
County of Maui

Comment: "Overall, the report is well written and concise, and the exhibits are clear and readily understood.

However, the benefits from the use of treated effluent should be emphasized. For example,

in the Kihei area, the use of recycled waste water would be of particular significance due to the dry climatic conditions. Reuse of the treated effluent in County parks, along roadsides and for pasture irrigation would appear to be an environmentally wise use of this precious resource."

Response: In developing the Kihei sewerage plan one of the primary objectives was to fully utilize this valuable resource rather than just disposing of the treated effluent. However, recycling of treated waste water until recent years has only been accomplished on a limited basis. For this reason, initially, the County will utilize the treated effluent only in controlled areas, specifically at Kalama Park and in pasture land adjacent to the plant. In these two areas, the effects of waste water reuse can be demonstrated for expanded use throughout the Kihei area and possibly from other treatment plants throughout Maui County.

29 May 1973 — State of Hawaii
Department of Health

Comment: "Occupational and Radiological Health

1. Construction activities should be confined to the hours between 7:00 a.m. and 5:30 p.m. on week days and not allowed at other times.

2. All construction equipment as well as vehicles should be provided with appropriate mufflers to minimize noise from vehicular traffic."

Response: The above restrictions will be included in the specifications for construction of the sewerage facilities.

Comment: "Sanitary Engineering

1. Irrigation of public recreation areas with sewage treatment plant effluent should be accomplished with minimum or no exposure to the public and any detrimental health effects of the effluent should be thoroughly explored before routine use for irrigation.

2. The preliminary plans for the Kihei STP have been reviewed. At the present no adverse problems are anticipated. Should any problems arise that were not addressed by the Impact Statement, the Department reserves the right to impose further restrictions on the project."

Response: Prior to starting the operation of the Kihei treatment plant, the County will develop a program, acceptable to Department of Health, for monitoring the reuse of treated effluent at Kalama Park and for range land irrigation.

Comment: "Solid Waste

1. Detrimental health effects of the sewage sludge should be thoroughly investigated before use as a soil conditioner.

2. All solid waste generated from the construction and operation of the project should be properly stored and removed for disposal at an approved site."

Response: In order to investigate the use of treated sewage sludge as a soil conditioner, small test areas will be developed at the treatment plant site. The Parks Department has also requested use of sewage sludges in their landscaping programs. In both of these cases, the use will be carefully controlled to prevent any adverse health effects.

All treated sludge from the Kihei plant could be wasted to the County Landfill if recycling does not prove feasible.

Comment: "Air Sanitation

1. The proposed use of aerobic digesters and oxidizing wet scrubber units at the pump stations and headworks are adequate for minimizing the odor potential.

2. We suggest that appropriate precautionary measures and the responsibilities for preventing fugitive dust from construction activities be included in the contractual agreement with the contractors."

Response: Contractual agreements with the contractors will require dust prevention programs, approved by the County, during construction of the facilities.

1 June 1973 — University of Hawaii
Environmental Center
Office of the Director

Comment: "Not described in the EIS are: a) the relation between the proposed effluent storage capacity and the initial discharge rate of effluent from the treatment plant; b) the anticipated frequency and duration of use of the injection well; c) the possibility of adding to the storage later; d) the location and depth of the proposed injection well; or f) potential problems with plugging and means for cleanout."

Response: Initial discharge rate of effluent from the treatment plant is expected to range from 0.5 to 1.5 million gallons per day (mgd) in the first three to five years of operation. Effluent storage will provide, at best, one days storage during that period. Since actual sewage flows will vary throughout any 24-hour period, the effluent storage pond is used primarily to allow uniform application rates to the irrigated areas. When average flows increase, additional storage can be added at the site, if required.

The location of the injection well is shown on Figure V-2 and will have a depth of approximately 230 feet, 120 below sea level. The injection well will only be used when treated effluent cannot be discharged to the irrigation system, possibly once or twice per year, for period of 24 to 48 hours. It is not expected that pugging will be a problem in this case.

Comment: "Limiting the increase in the salinity of the sewage resulting from infiltration into the main interceptor is critical to the proposed use of the effluent from the treatment plant for irrigation. The groundwater chlorinity at the water table in parts of the area will be traversed by the interceptor is considerably higher than the 500 mg/l maximum cited in the EIS (p. 10)."

Response: At the present time there are no sewers in the Kihei area. All new sewers constructed will have to pass very stringent tests for water tightness to insure against infiltration of groundwater before the sewers are accepted by the County.

Comment: "The major potential advantage of the proposed system over extension and improvement of the present system appears to be mainly that the cost system, but this advantage is not documented. A second potential advantage lies in the elimination of health hazards associated with the present system if these hazards would be associated with the present system even as it might be extended and improved, but again this has not been demonstrated. A possible disadvantage of the proposed system might be associated with marine ecological effects associated with the possible increased concentration of nutrient discharge in the general area of the treatment system disposal facilities."

Response: The main point here seems to be whether the existing system of cesspools and cavitets is satifactory to meet present and future needs. Investigations in the Kihei area show extensive problems with the existing facilities. As the existing systems age and the density of development increases, these problems become more acute. Since 1969 requests for cesspools to be pumped have increased from 21 to 87 in 1972, an increase of over 400 percent in four years. It is also known that requests for pumping are generally not made until the cesspool is plugged and no longer working. In 1969 there were three package plants in the area serving resort units. There are now 25 package plants in operation or under construction. According to the Department of Health, the majority of the 10 plants built prior to 1972 are already experiencing problems in effluent treatment and disposal even though many have been in operation less than three years.

At the Kihei public meeting held 22 February 1973 many comments by local residents were received on individual problems they were having with their existing system. In some cases, complete replacement of the old cesspool still did not work.

The cost of individual units is no small matter. Individual sewage treatment plants for the larger developments will cost between $50,000 and $200,000, depending on the size. Construction of new cesspools generally average between $700 and $1,500 each. These costs will increase in the future. In the County's opinion, public sewers are needed now, each delay will add to the duplication of funds expended on individual systems.

There is no practical means of monitoring effluent discharged from the existing private facilities. Construction of the sewerage system will allow monitoring of all wastes discharged from the Kihei area to eliminate public health hazards. Effects of this discharge can be carefully controlled and steps taken should any adverse environmental impact be anticipated.

Kihei Wastewater Reclamation Facility Expansion - Phase II

FINAL ENVIRONMENTAL ASSESSMENT

Prepared for:

County of Maui
Department of Public Works

September 1992

Michael T. Munekiyo Consulting, Inc.

RECEIVED
MAR 1 8 1993
State of Hawaii
LAND USE COMMISSION

Kihei Wastewater Reclamation Facility Expansion - Phase II

FINAL ENVIRONMENTAL ASSESSMENT

Prepared for:

County of Maui
Department of Public Works

September 1992

Michael T. Munekiyo Consulting, Inc.

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Preface

The County of Maui, Department of Public Works proposes to construct Phase II expansion improvements to the Kihei Wastewater Reclamation Facility at Kihei, Maui, Hawaii (TMK 2-2-24:10,11). Pursuant to Chapter 343, Hawaii Revised Statutes, and Chapter 200 of Title 11, Administrative Rules, Environmental Impact Statement Rules, this Environmental Assessment documents the project's technical characteristics and environmental impacts, and advances findings and conclusions relative to the significance of the project.

Summary

Applicant and Landowner

The Applicant for the proposed project is the County of Maui, Department of Public Works. The landowners of the affected property are the County of Maui and Haleakala Ranch.

Contact Person

For further information, contact Mr. George Kaya, Director, County of Maui, Department of Public Works, 200 South High Street, Wailuku, Hawaii 96793, or at telephone (808)243-7845.

Property Location and Description

The proposed project would take place within the boundaries of the existing Kihei Wastewater Reclamation Facility (WRF) which encompasses 23.943 acres and is located in Kihei, Maui, Hawaii (TMK 2-2-24:10, 11).

The project site is located mauka of the Piilani Highway - Welakahao Street intersection. To the immediate north of the project site is the Silversword Golf Course and Kihei Research and Technology Park. To the east are vacant lands containing low land dry vegetation which gradually slopes up to the Kula region. To the immediate south of the project is a construction baseyard and additional vacant lands. To the west of the project site makai of Piilani Highway are the Waiohuli Keokea Homestead and Kamaole Homestead residential areas.

Proposed Action

The proposed expansion of the Kihei WRF is intended to adequately serve ongoing and existing development in the Kihei-Wailea region. Additional odor controls are being proposed and alternatives for effluent reuse are also being developed.

The proposed project would increase the design flow capacity (based on peak month flow) of the Kihei WRF from 6.0 million gallons per day (MGD) to 8.0 MGD. Under the proposed improvements, the peak wet-weather capacity would be increased from 12.0 MGD to 16.0 MGD.

Headworks modifications are included in the project in order to control and mitigate odor emissions. A new caustic system will be housed in a new building near the plant's entrance. The headworks will also be enclosed to confine odors within the system. An activated carbon adsorption system will serve as an additional level of odor control for those instances when liquid-phase controls are not effective. A 40-foot high dispersion stack 15 inches in diameter is proposed to aid in dispersing emissions in the atmosphere. An approximately 30-foot high vegetation barrier will also be planted on the western boundary of the site near Piilani Highway in order to help in dispersing emissions.

A new 0.9 million gallon aeration basin and blower building is proposed in order to increase the capacity for treating organic loads. The new basin will be rectangular in shape, approximately 140-feet by 85-feet, and will contain a center wall to allow half of the basin to be taken out of service. During normal operation, flow to the new basin will be split to provide equal flow to each half of the basin. Fine bubble diffusers will also be installed in the two existing basins and the new basin in order to transfer oxygen into the wastewater more efficiently. The blower building is required for the diffused aeration system and would contain four 300-horsepower blowers and one 150-horsepower blower. The blower building would be constructed similar to the existing blower building which contains the agitation air and digester aeration blowers.

New effluent filters are being installed to provide low-turbidity effluent for proper disinfection of reclaimed water and to remove particulate matter to prevent clogging of injection wells.

Disinfection system improvements are being proposed in order to properly disinfect reclaimed water and to comply with 1988 Uniform Fire Code requirements. This includes

a new chlorine storage and handling facility. An ultraviolet (UV) system is being proposed as the primary method of disinfection of reclaimed effluent. The State Department of Health has recently given provisional approval of UV disinfection at the Lahaina WRF.

Step testing for each of the three injection wells will also be done to establish the rating of each well. This analysis would then determine whether additional injection wells would be required. Preliminary investigations show additional injection wells may not be required.

Determination

The expansion of the Kihei WRF is intended to adequately service ongoing and existing development in the Kihei-Wailea region. The proposed project involves increasing the reliability and efficiency of the facility and will help to meet the long-term wastewater reclamation demands of the Kihei-Wailea area.

The proposed project will involve earthwork, pipeline, mechanical, structural, and building construction activities. In the short-term, these activities may create temporary nuisances normally associated with construction activities. However, earthwork and construction activities involve a relatively small area within the existing Kihei WRF site. Impacts generated from construction activities are not considered adverse.

From a long-term perspective, the proposed project is not anticipated to result in adverse environmental impacts. There are no known surface archaeological features or rare/threatened species of flora and fauna at the project site.

Odor control improvements include the installation of permanent caustic and chlorine injection feed systems, enclosure of the headworks, and construction of a new 40-foot high dispersion stack which would be 15 inches in diameter. A vegetation barrier is being considered to aid in the vertical dispersion of residual odors. A carbon adsorption system is also planned for supplemental odor control. Implementation of these improvements would significantly reduce odor impacts upon the neighboring community.

Injection well capacity will be rated to determine whether additional injection wells would be required to service the increase in plant capacity. Although additional injection wells may be required, the primary disposal method at the Kihei WRF is anticipated to be water reuse. The emphasis on water reuse is considered a long-term mitigation measure and will likely result in decreased use or need for injection wells in the long-term, except during emergency conditions.

In the absence of scientific cause and effect analyses linking treated effluent from injection wells to algal blooms, the County proposes to embark on a study which may aid in the investigation of any such link. This study will supplement and augment other studies being carried out independently and may be viewed as a long-term mitigation measure to identify and define a possible cause. Currently, algal blooms do not persist along the Kihei shoreline and do not appear to be a problem.

The proposed improvements will result in no more than three additional employees assigned to the Kihei WRF. In this regard, the project is not considered significant in terms of its impacts to public services and other infrastructure systems.

In light of the foregoing findings, it is concluded that the proposed action will not result in any significant impacts.

Chapter I

Introduction and Background

I. INTRODUCTION AND BACKGROUND

The County of Maui Department of Public Works (DPW) proposes to construct Phase II expansion improvements to the Kihei Wastewater Reclamation Facility (WRF) (TMK:2-2-24:10, 11). The proposed project is anticipated to increase the plant's treatment design capacity from 6.0 million gallons per day (MGD) to 8.0 MGD. To provide the context within which the proposed project is to be undertaken, this Chapter describes characteristics of the existing Kihei wastewater system and the existing Kihei WRF.

A. EXISTING WASTEWATER RECLAMATION SYSTEM

The Kihei WRF was designed in 1972 and constructed in 1975. Included in the design and construction were the attendant collection, transmission, and pumping systems. The service area planned in the early design extended from Maalaea to Makena. All wastewater generated within this area was intended to be collected and pumped to the Kihei WRF for treatment and disposal. To date, sewer service has not been extended to Maalaea which is currently served by a private system.

The Kihei Wastewater Reclamation System currently consists of a number of pump stations and force mains which collect wastewater from the Kihei and Wailea area. Pump Station Nos. 2, 3, 4, and 5 convey wastewater from North Kihei to Pump Station No. 6 which is located adjacent to the Kihei Fire Station. Pump Station No. 16 services the Makena Surf Hotel and conveys wastewater to Wailea. Pump Station Nos. 10 and 9 service the Wailea area and convey wastewater to South Kihei. Pump Station Nos. 8 and 7 convey wastewater from South Kihei to Pump Station No. 6. The combined North and South Kihei, Wailea and Makena flows are then sent from Pump Station No. 6 to the Kihei WRF via two 20-inch force mains. (See Figure 1).

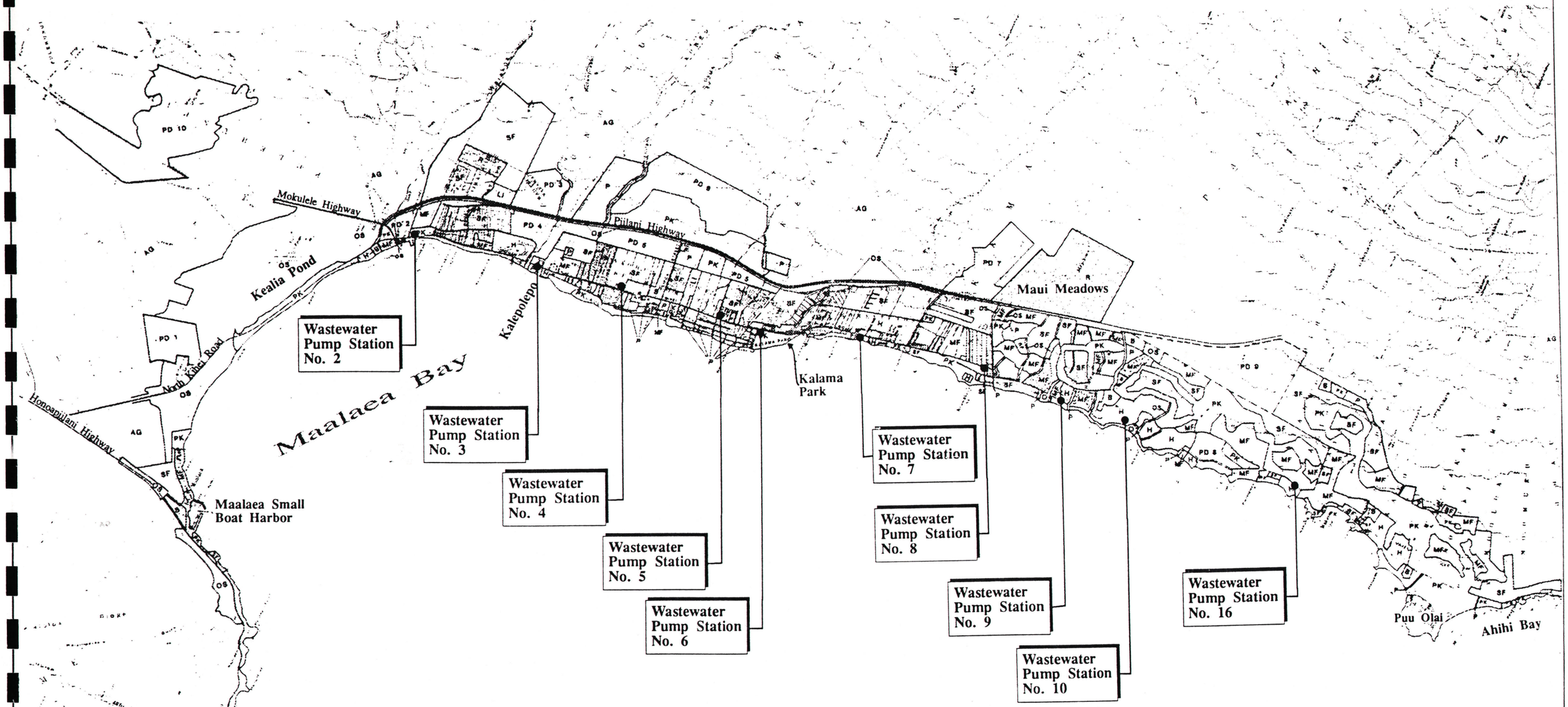


Figure 1

Kihei Wastewater Reclamation Facility Expansion

Location of Wastewater Pump Stations

NOT TO SCALE

Michael T. Munekiyo Consulting, Inc.

Prepared for: County of Maui, Department of Public Works

The Kihei WRF is a secondary treatment plant located on 23.943 acres of land (TMK: 2-2-24:10, 11). It utilizes an activated sludge biological treatment process without primary sedimentation.

Influent wastewater first goes to the headworks portion of the facility which screens the influent to remove objects such as rocks, roots, rags, and grit. (See Figure 2.) The existing headworks is presently open allowing odors from the wastewater to escape. No odor control equipment is presently installed at the headworks. However, chlorine and sodium hydroxide are injected into the force mains at the Kihei WRF to control odor.

Wastewater is then routed to aeration basins. The Kihei facility contains two square basins, each side measuring 104 feet in length. Each basin holds approximately 860,000 gallons when the basins have a liquid depth of 11.4 feet. Each basin has 4 mechanical aerators which entrain air from the liquid surface and force coarse (large) bubbles into the wastewater. The aerators have good mixing characteristics for shallow basins but are relatively inefficient in the transfer of oxygen to the wastewater.

The wastewater is then routed from the aeration basins to the secondary clarifiers. The Kihei WRF has four secondary clarifiers, each of which is 75 feet in diameter. Two of the secondary clarifier tanks have a sidewater depth of approximately 13 feet with sludge scrapers combined with suction lifts. The other two secondary clarifiers are approximately 18 feet in depth and are equipped with flocculation wells and suction lifts for sludge removal from the tanks.

The sludge from the secondary clarifiers is routed to aerobic digesters to stabilize and reduce the pathogens in the sludge prior to disposal. This reduces solids from a sticky malodorous mixture to one that is relatively

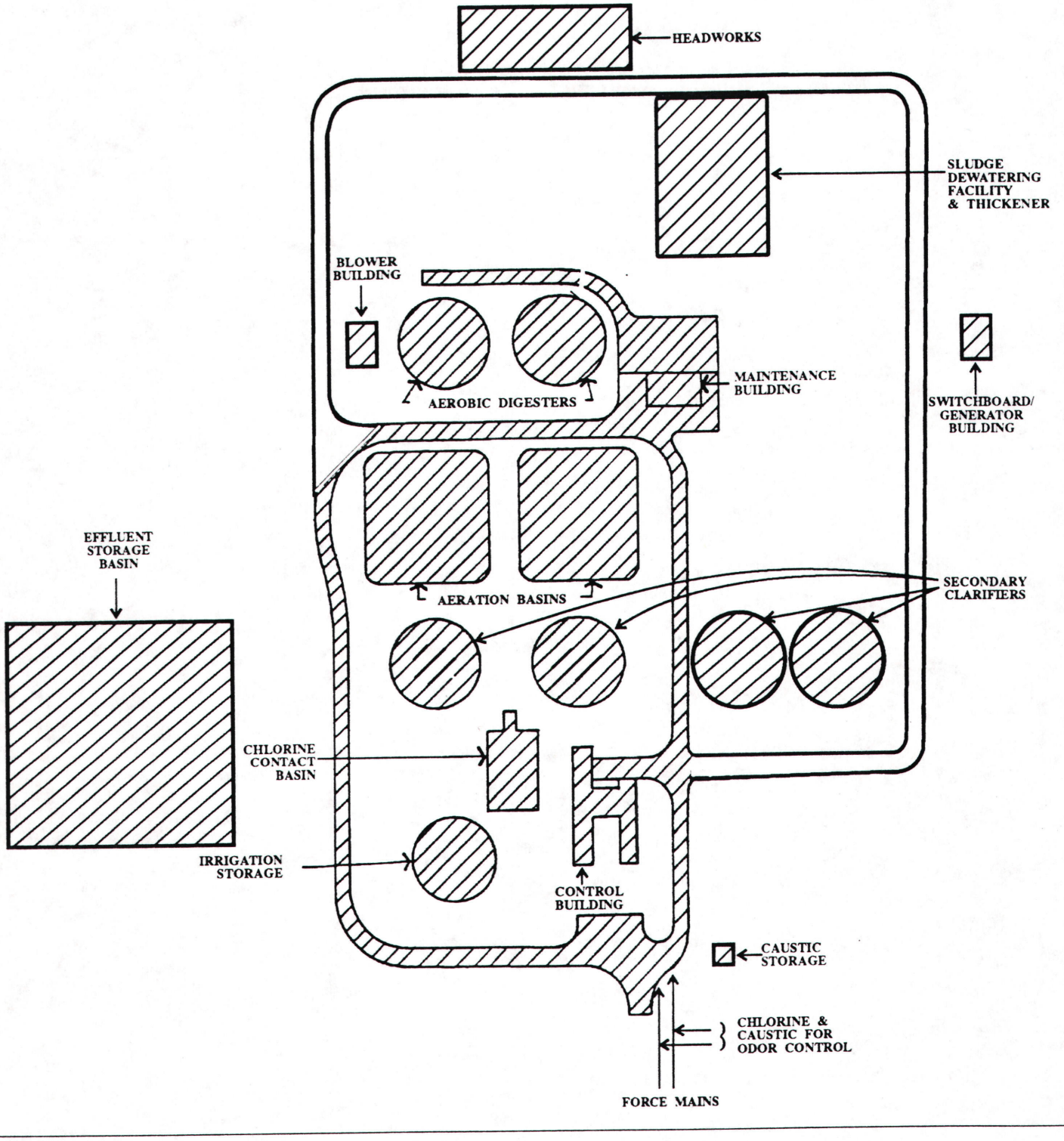


Figure 2 Kihei Wastewater Reclamation Facility Expansion

Schematic Representation of Existing Site Components

NOT TO SCALE

Michael T. Munekiyo Consulting, Inc.

Prepared for: County of Maui, Department of Public Works

odor free and readily dewatered. The Kihei facility presently has two aerobic digesters, each 75 feet in diameter with 12 feet sidewater depth.

Digested sludge from the aerobic digesters is then routed to the dewatering building. The Kihei WRF uses centrifuge technology to produce dewatered cake solids which are then transported to the Central Maui Landfill in accordance with applicable Federal regulations.

The effluent from the secondary clarifiers flows to the chlorine contact basin inlet chamber. The inlet chamber is equipped with a mechanical mixer for rapid dispersion of chlorine solution. Secondary effluent from the chlorine contact basin flows to an effluent holding basin or to the injection wells.

A portion of the secondary effluent is pumped to the Silversword Golf Course during the evening hours. The golf course, which is adjacent to the Kihei WRF, uses approximately 0.35 MGD during the winter and approximately 1.0 MGD during the summer season.

The remainder of the high quality effluent flows to injection wells. The Kihei facility presently has three injection wells. All three wells are approximately 300 feet deep with steel casing throughout their entire depth. The upper 200 feet is 18 to 20 inch diameter solid casing with the lower 100 feet consisting of 16 inch perforated casing.

The three injection wells reach into fractured volcanic rock approximately 200 feet below sea level. Because the plant site is approximately 100 feet above sea level, there is significant hydraulic pressure. The combination of fractured volcanic rock and significant hydraulic pressure results in a relatively high effluent intake capacity for each well.

Chapter II

Description of the Proposed Project

II. DESCRIPTION OF THE PROPOSED PROJECT

A. PROJECT NEED

The expansion of the Kihei WRF is necessary to adequately serve ongoing and existing development in the Kihei-Wailea region. The proposed improvements would increase capacity, reliability and efficiency of the facility, as well as improve effluent quality, thereby increasing opportunities for reclamation.

Additional odor controls are also being proposed which should aid in mitigation of any impact upon the community. Alternatives for reuse of high quality effluent for purposes such as golf course and park irrigation, which would minimize the use of injection wells, are also being developed.

The proposed project, in improving the facility's capacities and efficiency, will also help to meet the long-term wastewater treatment demands of the Kihei-Wailea area.

B. PROPOSED IMPROVEMENTS

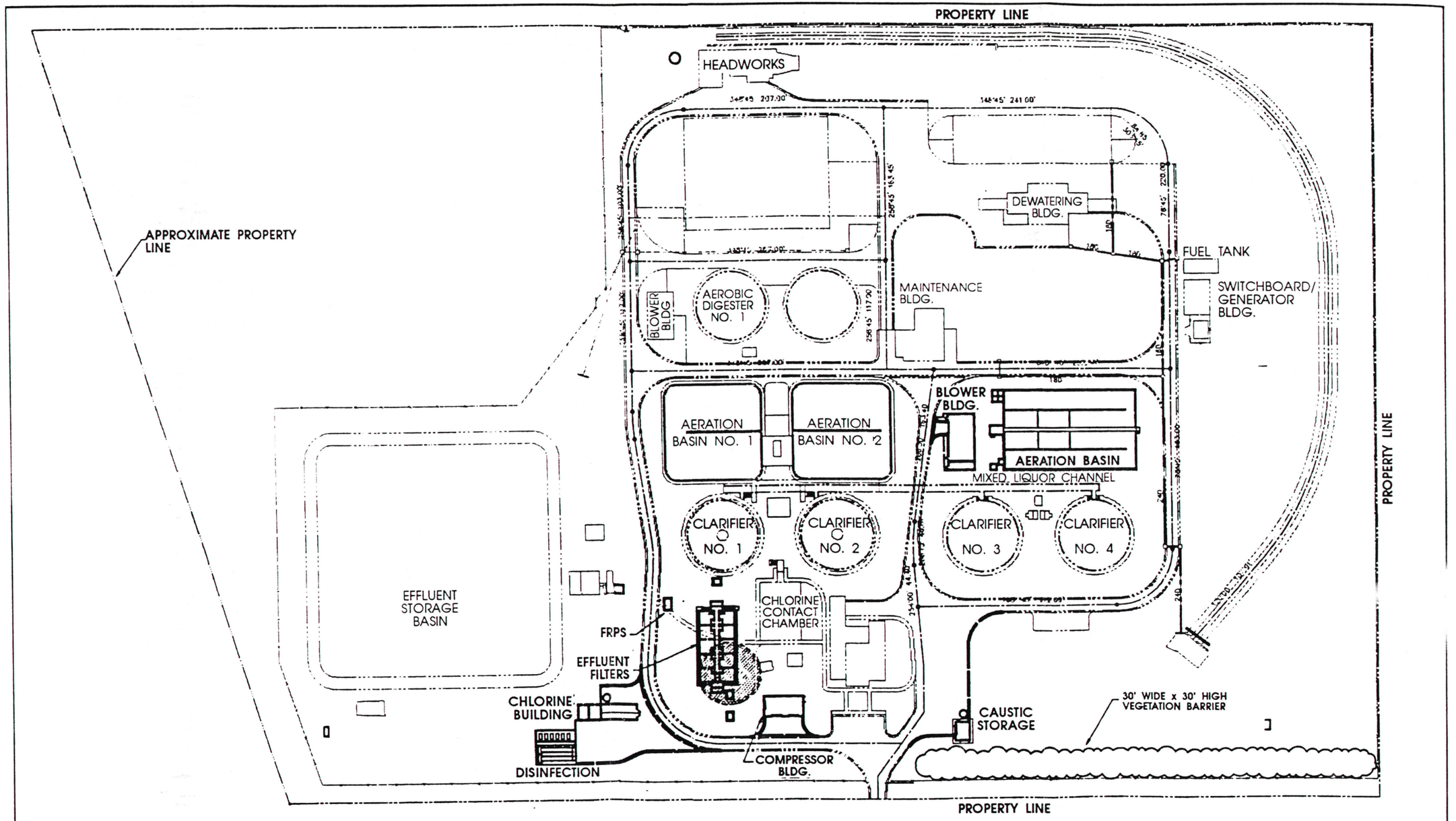
The proposed project would increase the design flow capacity (based on peak month flow) of the Kihei WRF from 6.0 MGD to 8.0 MGD. Under the proposed improvements, the peak wet-weather capacity would be increased from 12.0 MGD to 16.0 MGD.

Headworks modifications are included in the project in order to control and mitigate odor emissions. A new caustic system will be housed at a new building near the plant's entrance. Sodium hydroxide (caustic) will be injected into the force mains prior to entering the headworks in order to raise the pH level of the influent sewage. The addition of caustic, along with prechlorination, will aid in controlling hydrogen sulfide (H_2S) emissions

which is probably the major source of odor complaints (Brown and Caldwell, March, 1992).

The headworks will also be enclosed to confine odors within the system. An activated carbon adsorption system will serve as an additional level of odor control for those instances when liquid-phase controls are not effective. A 40-foot high dispersion stack 15 inches in diameter, is proposed to aid in dispersing emissions into the atmosphere. Finally, planting of an approximately 30-foot high vegetation barrier is being considered on the western boundary of the site near Piilani Highway in order to achieve vertical dispersion of residual odors, especially from the aeration basins and aerobic digesters. It would also aid in ensuring dispersion of stack emissions and other emissions at the headworks area. (See Figure 3.)

A new 0.9 million gallon aeration basin with anoxic zones and a new blower building are proposed. The new aeration basin with anoxic selector would increase the capacity for treating organic loads, remove nitrogen, reduce oxygen requirements, reduce the need for supplementing alkalinity, and provide additional operational flexibility. The new basin will be rectangular in shape, approximately 140-feet by 85-feet, and will contain a center wall to allow half of the basin to be taken out of service. During normal operation, flow to the new basin will be split to provide equal flow to each half of the basin. Fine bubble diffusers will also be installed in the two existing basins and the new basin in order to save energy by transferring oxygen into the wastewater more efficiently. The blower building is required for the diffused aeration system and would contain four 300-horsepower and one 150-horsepower blowers. The blower building would be constructed similar to the existing blower building which contains the agitation air and digester aeration blowers.



Source: Brown & Caldwell Consultants

Figure 3

Kihei Wastewater Reclamation Facility Expansion

General Site Plan with Proposed Improvements

NOT TO SCALE

Michael T. Munekiyo Consulting, Inc.

Prepared for: County of Maui, Department of Public Works

New effluent filters are being installed to provide low-turbidity effluent for proper disinfection of reclaimed water and to remove particulate matter to prevent clogging of injection wells. The filters would produce a water turbidity less than 2 NTU to facilitate downstream disinfection to produce Class A or Class B water under the proposed Guidelines for the Use of Reclaimed Water in Hawaii.

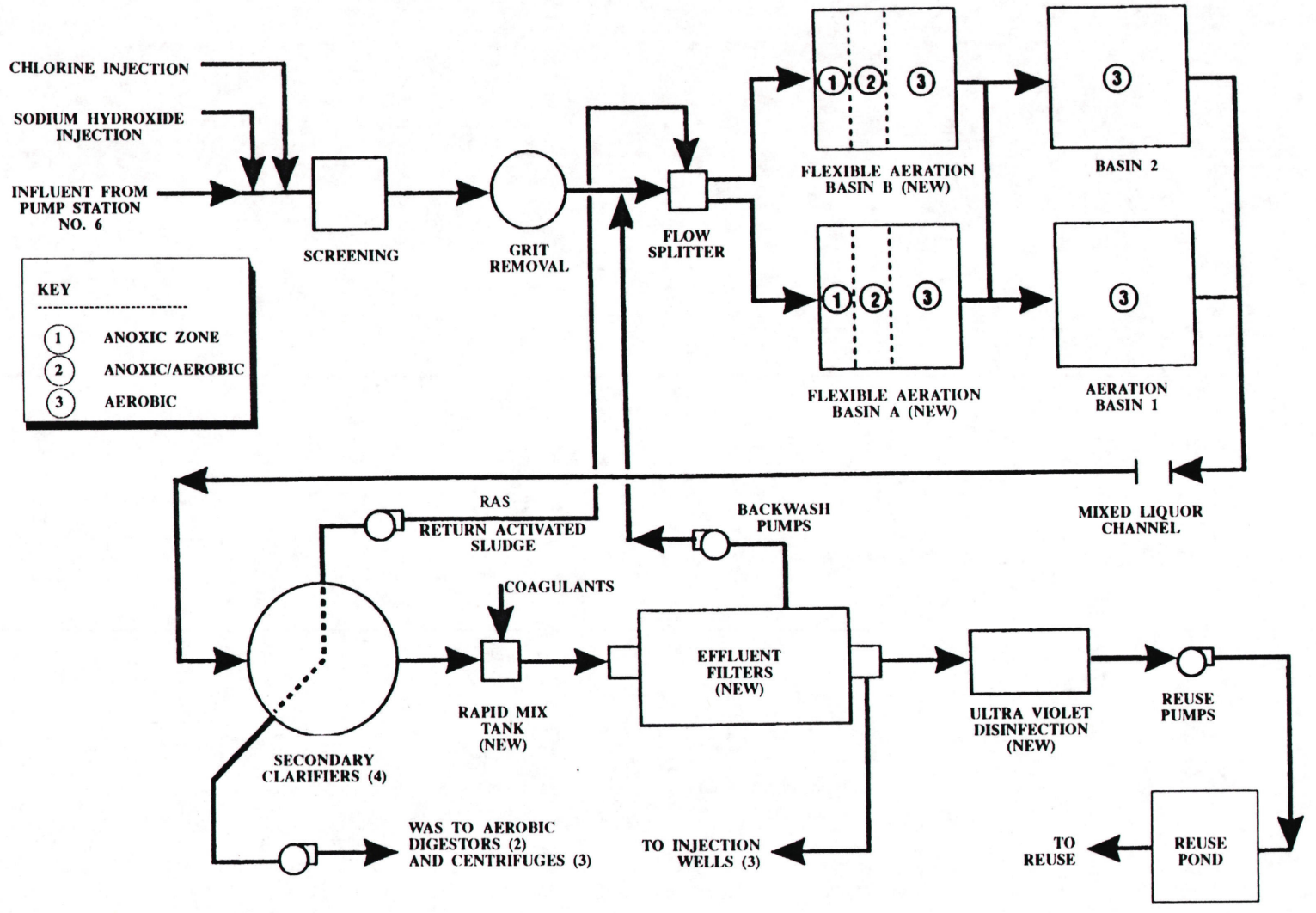
Disinfection system improvements are needed in order to properly disinfect reclaimed water and to comply with 1988 Uniform Fire Code requirements. This includes a new chlorine storage and handling facility. An ultraviolet (UV) disinfection system is proposed as the primary method of disinfection of reclaimed effluent. The State Department of Health has given provisional approval to UV disinfection in Lahaina and is expected to approve the Kihei system as well.

Step testing for each of the three injection wells will also be done to establish the rating of each well. The flow capacity requirements of each well would be established, in coordination with the Department of Health. This analysis will determine whether additional injection wells are required.

Figure 4 presents a schematic flow diagram of the Kihei WRF process.

The estimated construction cost of the improvements is $17-$18 million.

Construction of the proposed improvements is anticipated to begin in mid-1993, with completion in mid-1995.



Source: Brown & Caldwell Consultants

Figure 4 Kihei Wastewater Reclamation Facility Expansion
Flow Diagram

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Prepared for: County of Maui, Department of Public Works

Chapter III

Description of the Existing Environment

III. DESCRIPTION OF THE EXISTING ENVIRONMENT

A. PHYSICAL SETTING

1. Surrounding Environment

The project site is located in Kihei, Maui, mauka of Piilani Highway. Proposed improvements to the Kihei WRF will be contained within the existing boundaries of the site.

To the immediate north of the project site is the Silversword Golf Course and Kihei Research and Technology Park. To the east are vacant lands containing low land dry vegetation which gradually slopes up to the Kula region. To the immediate south of the project is a construction baseyard and additional vacant lands. To the west of the project site makai of Piilani Highway are the Waiohuli Keokea Homestead and Kamaole Homestead residential areas.

2. Climate

The Kihei Coast is generally sunny, warm and dry during the entire year. In Kihei Town, the average annual high temperature is 86 degrees Fahrenheit with the average low temperature being 63 degrees Fahrenheit (Environment Impact Study Corporation, 1982). June through August are historically the warmer months of the year while the cooler months are January to March.

Average rainfall distribution in the Kihei-Makena region varies from under 10 inches per year to 20 inches per year in the higher elevations. Rainfall in the Kihei-Makena region is highly seasonal, with most of the precipitation occurring in the winter months.

Northeast tradewinds prevail approximately 80 to 85 percent of the time. Winds average 10 to 15 miles per hour during afternoons with lighter winds during mornings and nights.

The Ma'alaea-Kihei-Makena region is subject to unique wind conditions due to specific terrain. The Ma'alaea area, which lies at the base of the central isthmus flanked by two mountain masses, is subject to a wind tunnel effect. As the wind squeezes between the mountain masses, its force becomes compressed, at times increasing in velocity to more than 50 percent above the normal velocity in the Wailuku area. The wind fans out over Ma'alaea Bay, retaining the added velocity, with the inshore segment blowing parallel to the Kihei Coast. Along the shore, it meets the eddy current of the trades deflected along the southeast slopes of Haleakala. This results in unpredictable local winds from Kalama Park to Cape Kina'u.

Between about October and April, the southerly winds of Kona storms may be felt. These storm winds, as well as the trades, are occasionally strong enough to damage vegetation and structures.

In the absence of tradewinds and of nearby storms, winds may become light and variable. Then diurnal heating and cooling of the land mass gives rise to onshore sea breezes during the day and offshore land breezes at night.

3. ***Topography and Soils***

The site is located on gently sloping land at approximately 100-feet in elevation. Throughout the region, slopes average 0.5 to 8 percent from the coastline to the 120-foot elevation and increases to

approximately 12 percent at the 250-foot elevation. Slopes in excess of 25 percent are encountered farther up the side of Haleakala at about the 800-foot elevation (Environment Impact Study Corp. and Muroda and Associates, Inc., 1982).

Underlying the proposed site is the Waiakoa-Keahua-Molokai soil association (See Figure 5.) This series consists of well-drained soils developed in material weathered from basic igneous rock.

The soil type at the project site consists of Waiakoa extremely stony silty clay loam (WID2) (See Figure 6.) This soil is characterized by stones which cover 3 to 15 percent of the surface with much of the surface layer removed by erosion. Runoff is medium and the erosion hazard is severe. (U.S. Department of Agriculture, Soil Conservation Service, 1972).

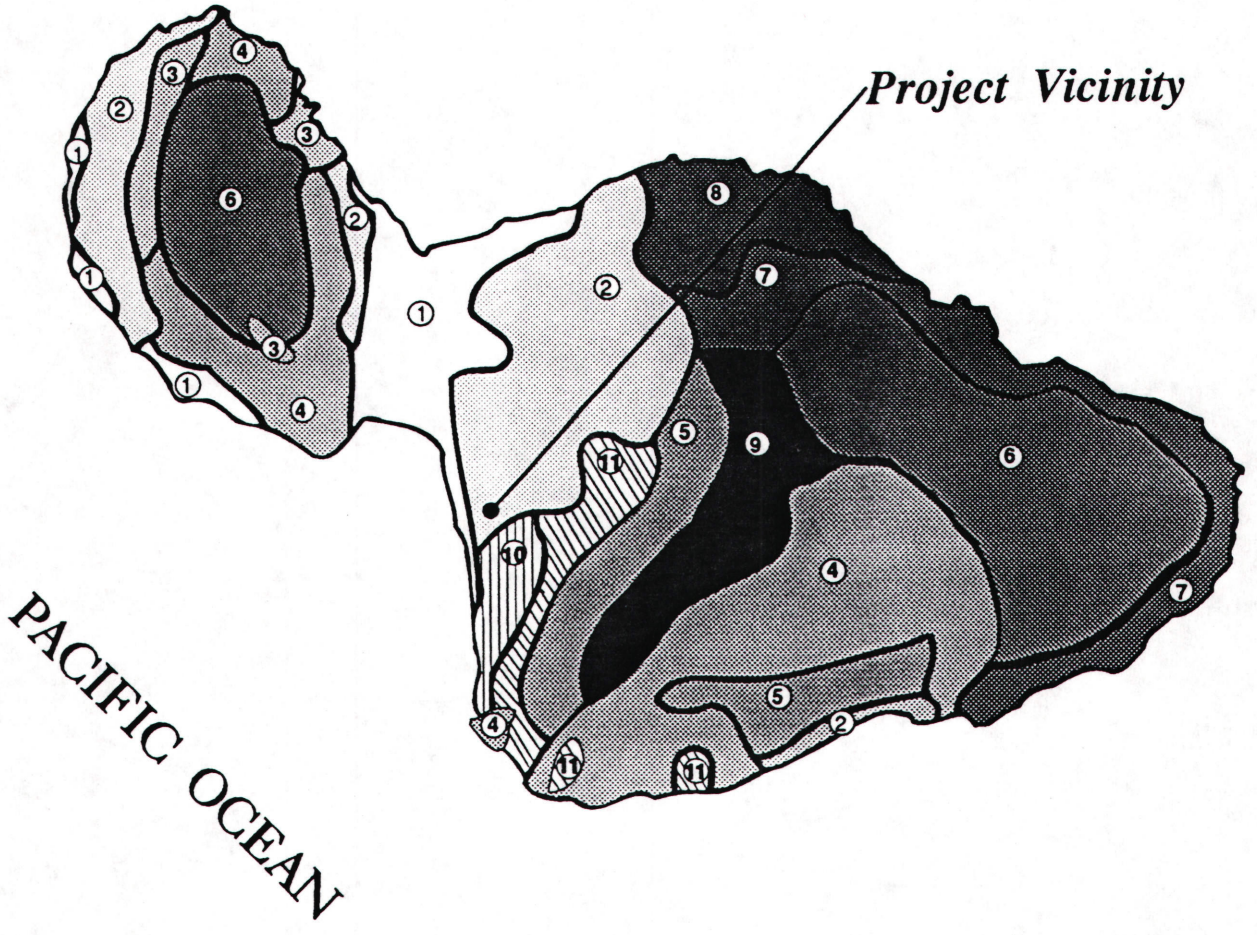
Lands underlying the project site are designated "E" by the University of Hawaii Land Study Bureau. This classification system rates lands on a scale of "A" to "E", reflecting land productivity characteristics. Lands designated "A" are considered to be of highest productivity, with "E" rated lands ranked lowest.

4. ***Flood and Tsunami Hazard***

The property site lies in an area of minimal flood and tsunami hazard as determined by the Flood Insurance Rate Map for this region. In particular, the site is located mauka of Piilani Highway, well beyond the coastal tsunami inundation areas. Moreover, the elevation and local terrain of the site provides for adequate drainage to preclude flooding from storm runoff.

LEGEND

- ① Pulehu-Ewa-Jaucas association
- ② Waiakoa-Keahua-Molokai association
- ③ Honolua-Olelo association
- ④ Rock land-Rough mountainous land association
- ⑤ Puu Pa-Kula-Pane association
- ⑥ Hydrandepts-Tropaquods association
- ⑦ Hana-Makaalae-Kailua association
- ⑧ Pauwela-Haiku association
- ⑨ Laumaia-Kaipoipoi-Olinda association
- ⑩ Keawakapu-Makena association
- ⑪ Kamaole-Oanapuka association



Map Source: USDA Soil Conservation Service

Figure 5 Kihei Wastewater Reclamation Facility Expansion
Soil Association Map

Michael T. Munekiyo Consulting, Inc.

Prepared for: County of Maui, Department of Public Works

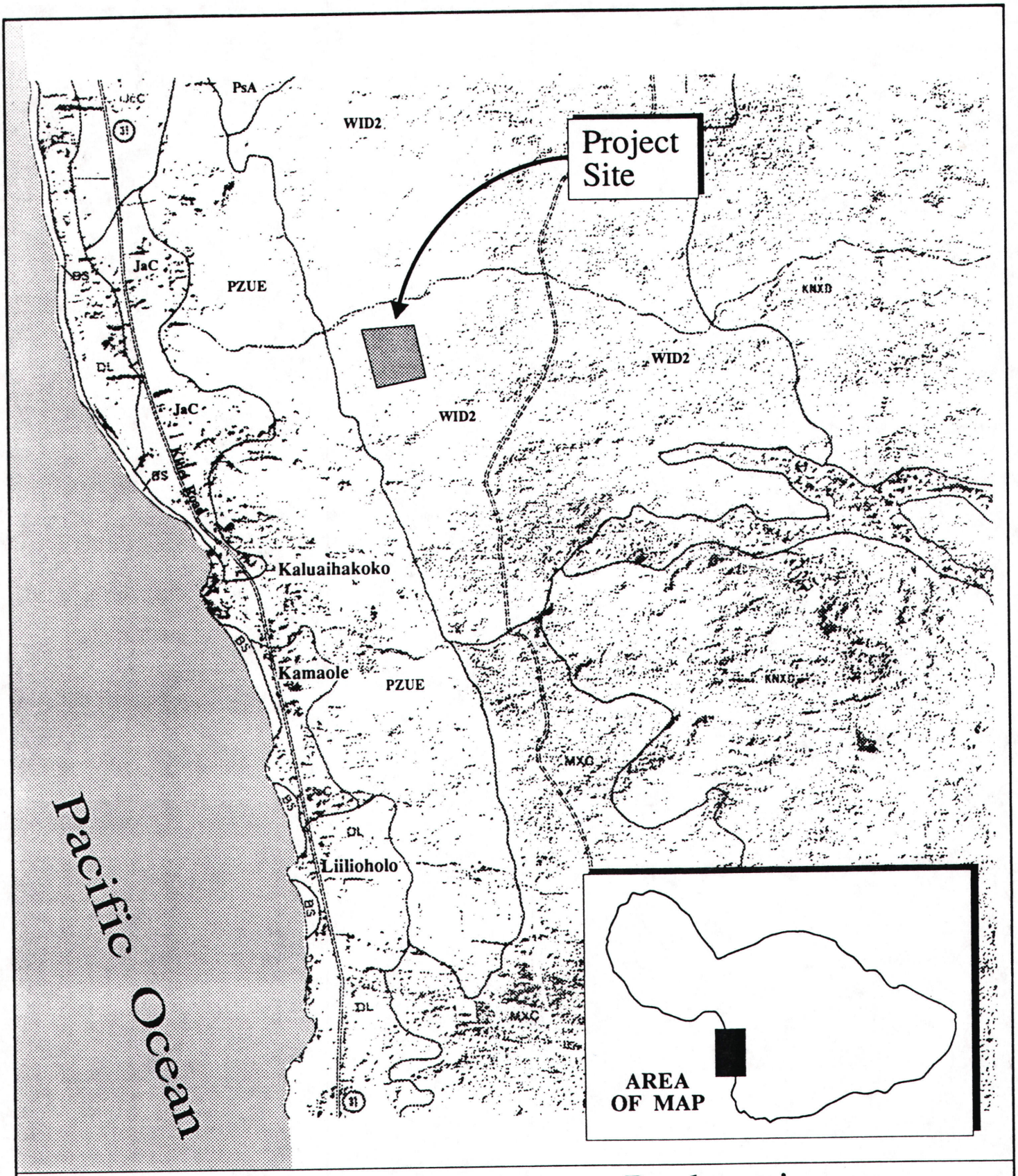


Figure 6 Kihei Wastewater Reclamation Facility Expansion

Soils Classification

0 1000 2000 4000 Feet

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Prepared for: County of Maui, Department of Public Works

5. Geology

The project site is situated near the southwestern rift zone of Haleakala and contains volcanic rocks and substrate of the Kula and Hana Volcanic Series. Lava flows of the Kula Series consist mostly of basaltic andesite, andesite, basalt, and picritic basalt. This series is at least 2,500 feet thick near the summit of Haleakala and 50 to 200 feet thick near the coast (Environment Impact Study Corp. and Muroda and Associates, Inc., 1982). The Hana Series overlies the Kula Series in and around the southwest rift zone. The lavas of the Hana Series consist primarily of olivine and picritic basalt, basaltic andesite, and andesite. In general, lava flows of the Hana Series are 100 to 200 feet thick except in canyons, where they are at least 1,000 feet thick.

Calcareous dune sands and alluvium deposits compose most of the surface area along the shore between Kihei and Makena. The dunes probably were formed when sea level stood at about 40 feet above the present level.

6. Hydrology

In the coastal area between Kihei and Makena, recharge to ground water is too small to sustain any fresh basal water bodies. Well data shows that the basal lens a mile inland from the coast between Kihei and Makena is brackish (500-600 parts per million of chloride), very thin (1-3 feet), and chloride-sensitive to pumping. The chances of developing fresh basal water sources between Kihei and Makena are slim for distances less than 2 miles inland from shore (less than 1200 feet elevation). High level, dike-confined ground water is not known to occur and probably does not, for lack of heavy rainfall

(Environment Impact Study Corp. and Muroda and Associates, Inc., 1982).

7. *Flora and Fauna*

Vegetation in the vicinity of the project site is typical of the Kihei area. This includes kiawe trees, common grasses and weeds. There are no known rare, threatened or endangered plant species in the vicinity of the project site.

Avifauna and mammals common to the project site and surrounding areas are also typical of species found in the urbanized Kihei area. Exotic species of birds commonly found in this area include the Northern Cardinal, House Finch and Gray and Black Francolin. Feral mammals typically found in the area include cats, rats, mice and mongoose. There are no known endangered or threatened wildlife species in the vicinity of the site.

8. *Archaeological Resources*

The project site has been fully cleared and graded to accommodate subsurface and above-ground improvements for the Kihei WRF. As such, surface archaeological resources will not be encountered at the project site.

9. *Air Quality*

The Kihei-Makena region is not exposed to adverse air quality conditions. Available ambient air quality data for the Kihei region indicates that particulate matter concentrations and sulfur dioxide concentrations meet Federal and State air quality standards. There are no fixed sources of emission in the region although sugar cane harvesting activities to the north may affect levels of carbon

monoxide and suspended particulate matter. These conditions are intermittent and of temporary duration. Motor vehicle and construction activities are the primary source of indirect emissions in the region.

There have been intermittent complaints regarding odor from the Kihei WRF. Much of the objectionable odor occurs in the evening hours when on-shore sea breezes subside. The off-shore land breezes which occur during the evenings then bring plant odors downslope into residential areas.

Odor complaints primarily stem from hydrogen sulfide emissions. The primary source of objectionable odor is the headworks area of the Kihei WRF (Brown and Caldwell, March, 1992). This is the area where the Kihei WRF first receives influent wastewater from Kihei Wastewater Pump Station No. 6. However, there have been a number of ongoing actions which have aided in the control of odors. Since April 1991, chlorine has been injected near the treatment plant entrance into the facility's force mains. Aeration has also been stopped at the headworks portion of the facility since April 1991. Since December 1991, sodium hydroxide (caustic) has also been injected into the facility's influent force mains. A dedicated chlorination system for odor control has been operating at the facility since April 1992.

10. Noise Characteristics

There are no fixed noise generators in the vicinity of the project site. Background noise in this locale can be attributed to traffic traveling along Piilani Highway.

B. COMMUNITY SETTING

1. Land Use and Community Character

From a regional standpoint, the subject parcel is part of the Kihei-Makena Community Plan region which stretches from Maalaea to La Perouse Bay. The region includes a diverse range of physical and socio-economic environments. With its dry and mild climate and proximity to recreation-oriented shoreline resources, the visitor-based economy has grown steadily over the past few years. The town of Kihei serves as the commercial and residential center of the region with the master-planned communities of Wailea and Makena serving as the focal point for visitor activities.

The project site is located adjacent to the Silversword Golf Course mauka of Piilani Highway and the residential and commercial uses of Kihei.

2. Population

The population of the County of Maui has exhibited relatively strong growth over the past decade, with the 1990 population estimated to be 100,374, a 41.7 percent increase over the 1980 population of 70,847. Growth in the County is expected to continue, with resident population projections to the year 2000 and 2010, estimated to be 123,900 and 145,200, respectively (DBED, 1990).

Just as the County's population has grown, the resident population of the region surrounding the project site has increased dramatically in the last two decades. Population gains were especially pronounced in the 1970s as the rapidly developing visitor industry attracted many new residents. The current resident population of the Kihei-Makena region is estimated at 15,365. A projection of the

resident population for the years 2000 and 2010 are 19,885 and 24,514, respectively (Community Resources, Inc., 1992).

3. ***Economy***

The economy of Maui is heavily dependent upon the visitor industry. In 1989, for example, total visitor expenditures equalled $2.3 billion. The dependency on the visitor industry is especially evident in Kihei-Makena, which is one of the State's major resort destination areas. The openings of the Four Seasons Hotel, the Grand Hyatt and Kea Lani Hotel will boost the region's significance as a resort destination.

Support for the visitor industry is found in Kihei, where numerous retail commercial centers are found. New commercial centers in Kihei, such as Azeka's and the Longs Drugs complexes, will lend further support to the regional economy.

4. ***Police and Fire Protection***

The County of Maui's Police Department is headquartered at its Wailuku Station. The Department consists of several patrol, investigative and administrative divisions. The Department's Kihei Patrol covers the Kihei-Makena region.

Fire prevention, suppression and protection services are offered by the County's Department of Fire Control. The Kihei Station, which services the Kihei-Makena region is located on South Kihei Road, approximately 0.6 mile from the project site.

5. Medical Facilities

Maui Memorial Hospital, the only major medical facility on the island, services the Kihei-Makena region. Acute, general and emergency care services are provided by the 145-bed facility. Medical/dental offices are located in the Kihei area to serve the region's residents.

6. Recreational Facilities

Diverse recreational opportunities are available in the Kihei-Makena region. Recreational facilities in close proximity to the project site include the Silversword Golf Course, Kalama Park, Kamaole Beach Park, and numerous other beach parks along the Kihei coastline. Shoreline recreation includes swimming, fishing, picnicking and snorkeling.

The Wailea-Makena resort areas to the south of the project site offers additional opportunities for golf, tennis and ocean-related activities.

7. Schools

The State Department of Education operates two schools in the Kihei area. Kihei Elementary School covers grades K to 6, while Lokelani Intermediate School includes grades 7 and 8. Public school students in grades 9 through 12 attend H.P. Baldwin High School in Wailuku.

C. INFRASTRUCTURE

1. Roadway System

Piilani Highway and South Kihei Road are the two major routes serving the Kihei region.

An existing access road leads to the project site from its intersection with Piilani Highway. Welakahao Road also intersects with Piilani Highway in this vicinity, and provides a direct connection with South Kihei Road.

2. ***Water***

The Kihei-Makena region is served by the Central Maui Water System. Source wells located in upper Waiehu provide water for the region. The distribution system in the vicinity of the project sites include a series of 6-inch, 8-inch and 12-inch waterlines.

3. ***Drainage***

There are no drainage improvements within the project site. Surface runoff from the site sheet flows largely to Piilani Highway. There are one 24-inch and three 60-inch storm drain pipes which cross Piilani Highway. Runoff is conveyed through drainlines through the Waimahaihai Subdivision to South Kihei Road and the ocean.

4. ***Electrical System***

Electrical service to the sites will be provided by Maui Electric Company.

Chapter IV

Potential Impacts and Mitigation Measures

IV. POTENTIAL IMPACTS AND MITIGATION MEASURES

A. IMPACTS TO THE PHYSICAL ENVIRONMENT

1. Topography/Landform

Excavation and filling will be required for construction of the aeration basin and blower building, the chlorine storage and handling facility, effluent filters, caustic storage and compressor building.

In general, however, finished contours will follow existing grades to minimize earthwork cost and maintain existing drainage patterns which tie into the immediate surrounding lands.

While terrain within the site will be locally modified to meet design requirements, overall site development will not disturb the smooth and uniform east to west slopes characteristic of the South Maui foothills.

2. Drainage Control

The proposed project involves several improvements which add impermeable surface within an existing 23.9-acre wastewater reclamation facility site. A new blower building of approximately 1,800 square feet is the largest improvement in terms of land area. Other smaller improvements such as the effluent filters structure would occupy approximately an additional 1,600 square feet. New caustic storage, compressor, chlorine, and disinfection structures each would not occupy more than 1,500 square feet. The construction of the new aeration basin would result in approximately 11,900 square feet of existing "hard" surface being removed and replaced with an open treatment process tank which would accept and contain rainfall.

It is anticipated that runoff from the project site will cause no adverse impacts to adjacent and downstream properties.

3. *Flora and Fauna*

The proposed project would take place entirely within the boundaries of the existing Kihei WRF site. The site was fully cleared, graded and grubbed at the time of the original facility's construction in 1975. There are no known rare, endangered or threatened species of flora within the project site. The removal of any existing vegetation is not considered an adverse impact to this component of the environment.

Similarly, there are no known rare, endangered or threatened species of avifauna and wildlife in the project site. Construction of improvements within the existing site is not anticipated to adversely impact the area's fauna and avifauna population.

4. *Air Quality and Noise*

Air quality and noise parameters in the immediate vicinity of the project are anticipated to be affected by short-term construction activities. Earthwork operations, for example, will result in fugitive dust being generated. Similarly, noise will be generated from construction equipment. However, earthwork and construction activities involve a relatively small area within the existing Kihei Wastewater Reclamation Facility site. The site is located adjacent to a golf course and Research and Technology Park to the north, vacant lands to the east, a construction baseyard to the south and approximately 700 feet away from a future Project District to the west. Dust and noise impacts generated from construction activities are not considered adverse. On a long term basis, the project will not generate adverse noise conditions.

Air quality is also not anticipated to be adversely affected by the project. Regarding odor concerns, the proposed project is anticipated to further reduce odors from the facility. Permanent caustic and chlorine feed systems will be installed to aid in the control of hydrogen sulfide levels which would reduce odors. Chlorine will continue to be injected at the force mains near entrance into the Kihei WRF. Caustic will also be injected into the force mains at the Kihei WRF to raise the pH level of the influent sewage.

The proposed project would include enclosure of the headworks to confine odors. An activated carbon adsorption system will serve as an additional means of odor control for those instances when liquid-phase controls are not effective.

The headworks will be ventilated by a dispersion stack, which is approximately 15-inches in diameter and 40 feet high. This stack will help disperse the discharge into the atmosphere. Finally, a vegetation barrier is also being considered at the makai Kihei WRF boundary line to help achieve vertical dispersion of residual odors.

5. Scenic and Open Space Resources

The proposed project will be contained within the existing facility site. Improvements pertaining to the aeration basin and its appurtenant blower building involve improvements at and below grade. Similarly, other new structures such as the chlorine storage and handling facility, effluent filters, caustic storage and compressor building are single story structures. The tallest structure is the 40-foot dispersion stack.

These facilities will not adversely impact the scenic and visual character of the surrounding lands. The proposed project is approximately 500 feet mauka of Piilani Highway and approximately 3,000 feet mauka of South Kihei Road. The proposed single-story improvements at or below grade will not be visible from either of these primary arterials. At 15 inches in diameter, the proposed dispersion stack will not be a significant view object. The project site is located mauka of existing urbanized areas and does not encroach into scenic coastal view corridors.

6. ***Archaeological Resources***

The site has been in its present use for a number of years and the surface character has been altered during original construction of the wastewater reclamation facility and laying of transmission lines. Accordingly, the proposed project is not anticipated to have adverse impacts to archaeological resources.

7. ***Water Quality***

There is presently substantial conjecture that nutrients from land-based sources, including treated effluent pumped into injection wells, may be causing algal blooms in Maui's nearshore waters. However, there are no data which identifies specific causal factors. Although treated effluent may be a potential contributor to increased algal abundance, there are also other nonpoint possibilities from agricultural and urban activities, as well as channelized stream discharge to be investigated.

The Kihei WRF has 3 existing effluent injection wells, all of which are approximately 300 feet deep. Steel casings extend throughout their entire depth. The upper 200 feet is 18- to 20-inch diameter concrete

The Kihei-Makena region has significant potential for water reuse. Potential users of reclaimed water for irrigation purposes include the Wailea Resort golf courses, the Makena Resort golf courses, the golf courses at the proposed Wailea 670 project, and Kalama and Kama'ole Beach Parks. The peak summer flow required to service the foregoing courses (including the Silversword course) and parks would be 9.1 MGD which exceeds the proposed 8.0 MGD design flow capacity of the Kihei WRF (Brown and Caldwell, April 1992).

Since the potential of implementing water reuse projects in the Kihei-Makena region is quite favorable, there will likely be decreased long-term use or need for injection wells, except during emergency conditions.

In the absence of scientific analyses linking treated effluent from injection wells to algal blooms, the County is considering embarking on a study which may aid in the investigation of any such link. This study will supplement and augment other studies being carried out independently and can be viewed as a long-term mitigation measure to identify and define possible causes of the algal blooms. Through the introduction of tracer dyes into injection wells, it may be possible to detect where such effluent is entering the ocean, and the degree of dilution of effluent with seawater. With such testing, it may be possible to effectively manage the role which injection wells play in the wastewater reclamation system.

B. IMPACTS TO COMMUNITY SETTING

1. Population and Local Economy

The proposed improvements will increase the plant's treatment design capacity from 6.0 MGD to 8.0 MGD. The increase in

treatment capacity will provide for wastewater treatment needs in the Kihei-Wailea region.

In this regard, the proposed improvements will help to preserve the long-term economic vitality of the region by ensuring the integrity of the wastewater reclamation system. Additionally, improved odor control measures and exploration of alternatives for reducing or eliminating primary use of injection wells will promote the public health and welfare of the residents of Kihei-Wailea.

2. ***Public Services***

The proposed improvements will require no more than three additional persons to handle operations and maintenance. Thus, the employment-related impacts of the project upon public service needs, such as police and fire protection, medical facilities, recreational facilities and schools are considered negligible.

Presently, sludge is aerobically digested and dewatered to produce 13% cake solid material. With the increase in treatment design capacity, the dry solids could increase by about 2,900 pounds per day. The cake solids will be disposed in accordance with all applicable federal regulations.

3. ***Impacts to Wastewater Reclamation System***

The proposed project represents an upgrading of the Kihei Wastewater Reclamation System by providing additional treatment capacity and providing improvements which enhance public health and welfare. Specifically, the proposed project allows greater assurance to other proposed developments in the Kihei-Wailea area that sewer capacity allocation will be available. Odor improvements

are also proposed along with an increased emphasis on water reuse. The proposed project also would result in a decreased likelihood that overcapacity and resultant sewage spills would occur. Over the long-term, the proposed improvements will support the economic and social vitality of the Kihei-Wailea region.

4. *Impacts to Other Infrastructure Systems*

a. *Roadways*

Access to the site will continue to be via unnamed access road which intersects with Piilani Highway.

With no more than three additional employees assigned to the Kihei WRF, the proposed project's impacts upon the public roadway system is expected to be negligible.

b. *Water*

Additional potable water utilized by no more than three employees is expected to have a negligible impact on water supply.

However, a significant benefit of the proposed project deals with its water reuse aspects. To the extent that reclaimed water may be used for purposes such as golf course and park irrigation, it conserves potable water supply for higher uses such as human consumption. With the increasing cost and difficulty associated with development of new potable water supplies, the public benefits are anticipated to be substantial.

Chapter V

Relationship to Land Use Plans, Policies and Controls

V. RELATIONSHIP TO LAND USE PLANS, POLICIES AND CONTROLS

A. STATE LAND USE DISTRICTS

Chapter 205, Hawaii Revised Statutes, relating to the Land Use Commission, establishes the four major land use districts in which all lands in the State are placed "Urban", "Rural", "Agricultural", and "Conservation". The subject property is located in the "Agricultural District". (See Figure 7.)

Wastewater reclamation facilities are not a permitted use within the "Agricultural District". A Special Use Permit was obtained by the County Department of Public Works from the Land Use Commission on August 30, 1973, in accordance with Section 15-15-95 of the Hawaii Land Use Commission Rules. The LUC Rules provide that certain "unusual and reasonable" uses may be permitted within the "Agricultural District".

Since the proposed project does not extend beyond the existing boundary of the Kihei WRF, it falls within the purview of the existing Special Use Permit.

B. GENERAL PLAN OF THE COUNTY OF MAUI

The General Plan of the County of Maui (1990 Update) provides long-term goals, objectives and policies directed toward the betterment of living conditions in the County. Addressed are social, environmental and economic issues which influence both the quantity and quality of growth in Maui County.

Implementation of the General Plan would be facilitated by the proposed wastewater reclamation plant improvements. The following General Plan objective and policy are addressed by this project:

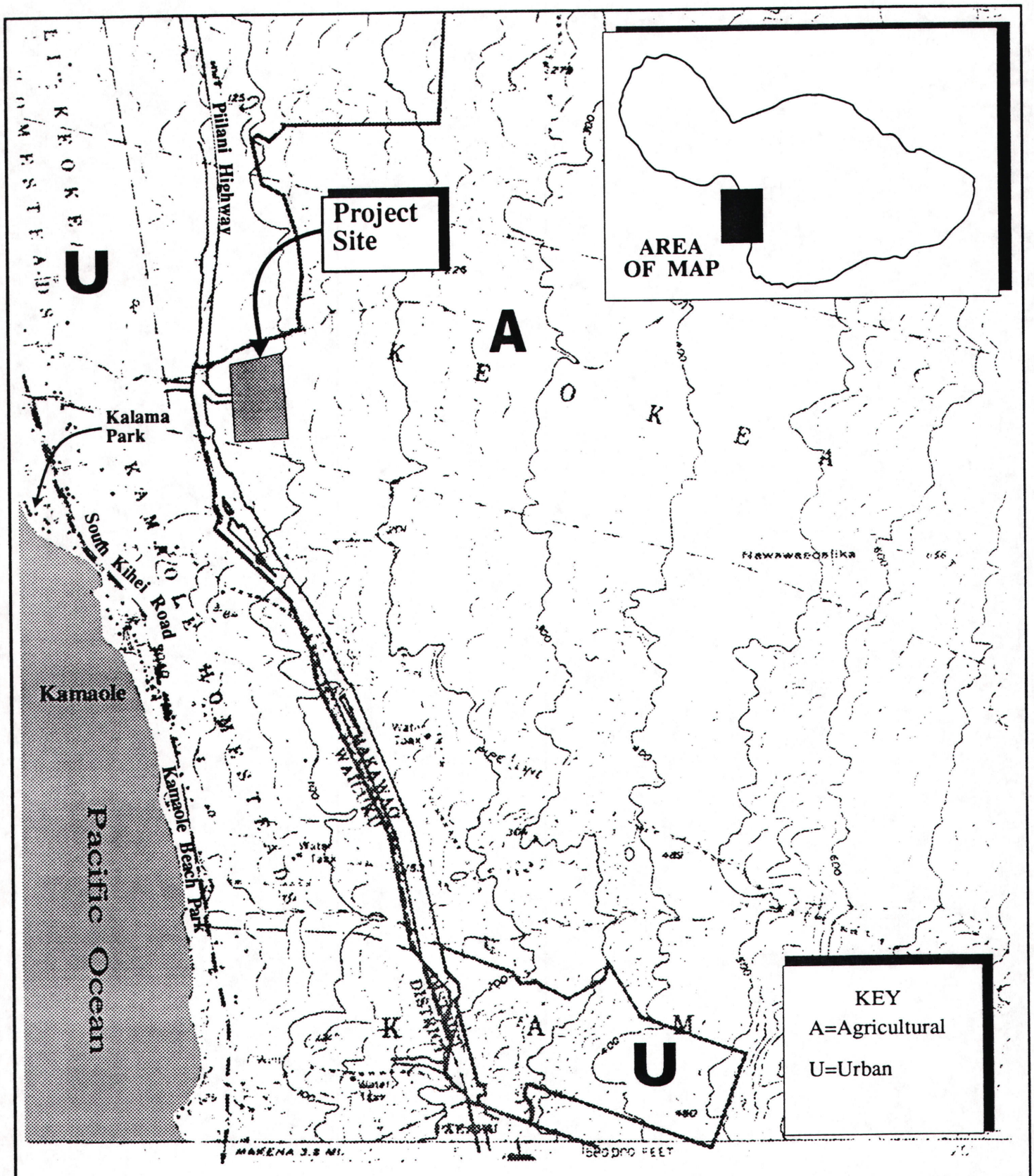


Figure 7 Kihei Wastewater Reclamation Facility Expansion

State Land Use Classification

1000 0 2000 4000 Feet

Michael T. Munekiyo Consulting, Inc.

Prepared for: County of Maui, Department of Public Works

Objective:

To provide efficient, safe and environmentally sound systems for the disposal and reuse of liquid and solid wastes.

Policy:

Establish programs for the development of waste disposal systems which anticipate planned growth.

C. KIHEI-MAKENA COMMUNITY PLAN

Nine (9) community plan regions have been established in Maui County. Each region's growth and development is guided by a Community Plan, which contain objectives and policies drafted in accordance with the County General Plan. The purpose of the Community Plan is to outline a relatively detailed agenda for carrying out these objectives.

The proposed project falls within the jurisdiction of the Kihei-Makena Community Plan. The proposed project would facilitate implementation of the Kihei-Makena Community Plan by addressing the objective to "coordinate improvements to existing sewage transmission lines and the central treatment plant to meet the needs of future population growth".

Maps are included within each Community Plan in order to capture spatially the intent of the plan. The project site is designated Public/Quasi-Public by the Kihei-Makena Community Plan Land Use map. (See Figure 8.)

D. COASTAL ZONE MANAGEMENT (CZM) PROGRAM

The Coastal Zone Management Program (HRS, Chapter 205A) is a comprehensive statement describing the objectives and policies for regulating public and private uses in the coastal zone management area. The CZM area is defined as "the waters from the shoreline to the seaward

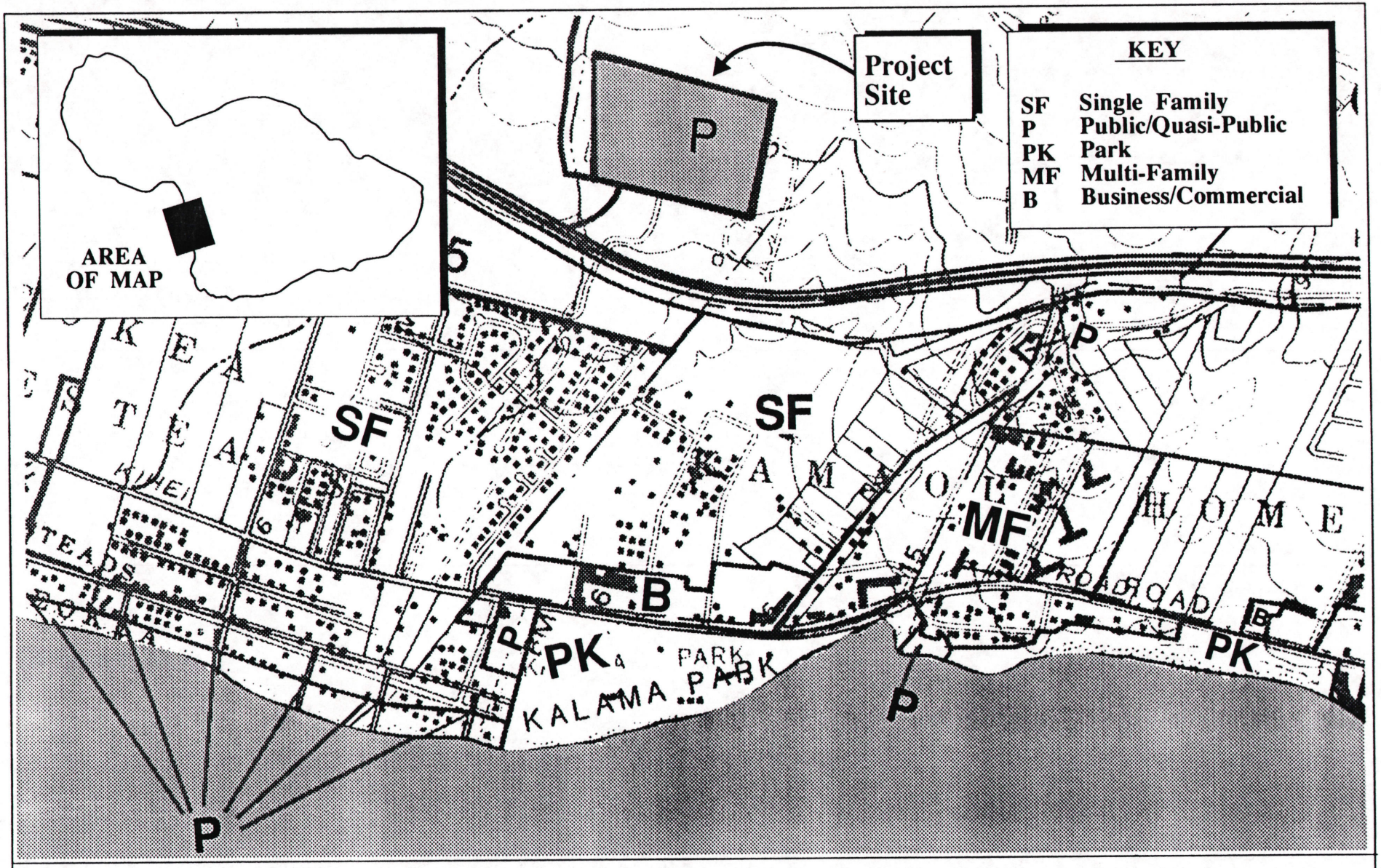


Figure 8 Kihei Wastewater Reclamation Facility Expansion

Community Plan Land Use Designation

0 200 400 800 Feet

Michael T. Munekiyo Consulting, Inc.

Prepared for: County of Maui, Department of Public Works

limit of the state's jurisdiction and all land areas excluding those lands designated as state forest reserves" (HRS Supp., Section 205A-1). The Hawaii CZM program is approved by the Federal government pursuant to Public Law No. 92-583.

The objectives of the Hawaii CZM program are as follows:

A. Provide coastal recreational opportunities accessible to the public;

B. Protect, preserve, and where desirable, restore those natural and manmade historic and prehistoric resources in the coastal zone management area that are significant in Hawaiian and American history and culture;

C. Protect, preserve, and where desirable, restore or improve the quality of coastal scenic and open space resources;

D. Protect valuable coastal ecosystems from disruption and minimize adverse impacts on all coastal ecosystems;

E. Provide public or private facilities and improvements important to the state's economy in suitable locations;

F. Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, and subsidence; and

G. Improve the development review process, communication, and public participation in the management of coastal resources and hazards.

The proposed project is in keeping with the foregoing objectives.

The County of Maui's Special Management Area (SMA) permit procedures have been established within the framework of the CZM program. The subject parcel is not within the County SMA boundaries.

Chapter VI

Findings and Conclusion

VI. FINDINGS AND CONCLUSION

The proposed project would increase the Kihei WRF's design capacity from 6.0 MGD to 8.0 MGD. Aging and outdated equipment is being replaced and odor control improvements are being proposed. Facilities for reuse of high quality effluent are also being developed.

The proposed project will involve earthwork, pipeline, mechanical, structural, and building construction activities. In the short-term, these activities may create temporary nuisances normally associated with construction activities. However, earthwork and construction activities involve a relatively small area within the existing Kihei WRF site. Impacts generated from construction activities are not considered adverse.

From a long-term perspective, the proposed project is not anticipated to result in adverse environmental impacts. There are no known surface archaeological features or rare/threatened species of flora and fauna at the project site.

Odor control improvements include the installation of permanent caustic and chlorine feed systems, enclosure of the headworks, and construction of a new 40 foot high dispersion stack which would be 15 inches in diameter. A vegetation barrier is being considered to aid in the vertical dispersion of residual odors. A carbon adsorption system is also planned for supplemental odor control. Implementation of these improvements would significantly reduce odor impacts upon the neighboring community.

Injection well capacity will be evaluated to determine whether additional injection wells are required to service the increase in plant capacity. Although additional injection wells may be required, the primary disposal method at the Kihei WRF is anticipated to be water reuse. The emphasis on water reuse is considered a long-

term mitigation measure and will likely result in decreased long-term use or need for injection wells.

In the absence of scientific cause and effect analyses linking treated effluent from injection wells to algal blooms, the County is considering embarking on a study which may aid in the investigation of any such link. This study will supplement and augment other studies being carried out independently and may be viewed as a long-term mitigation measure to identify and define a possible cause.

The proposed improvements will result in no more than three additional employees assigned to the Kihei WRF. In this regard, the project is not considered significant in terms of its impacts to public services and other infrastructure systems.

In light of the foregoing findings, it is concluded that the proposed action will not result in any significant impacts.

Chapter VII

Agencies Contacted in the Preparation of the Environmental Assessment and Responses Received

VII. AGENCIES CONTACTED IN THE PREPARATION OF THE ENVIRONMENTAL ASSESSMENT AND RESPONSES RECEIVED

The following agencies were contacted during the preparation of the Environmental Assessment:

1. U.S. Army
   Corps of Engineers
   Pacific Ocean Division
   Building 230
   Fort Shafter, HI 96858

2. U.S. Department of the Interior
   Fish and Wildlife Service
   Pacific Division
   P. O. Box 50167
   Honolulu, HI 96850

3. Dr. John Lewin
   Department of Health
   1250 Punchbowl
   Honolulu, HI 96813

4. Mr. David Nakagawa
   Chief Sanitarian
   Department of Health
   54 High Street
   Wailuku, HI 96793

5. Mr. William Paty
   Department of Land and Natural Resources
   1151 Punchbowl St.
   Honolulu, HI 96813

6. Mr. Brian Miskae
   Department of Planning
   250 S. High Street
   Wailuku, HI 96793

7. Mr. Michael J. Banfield
Executive Vice-President
Haleakala Ranch
529 Kealaloa Avenue
Makawao, HI 96768

8. Mr. Gene Thompson
Kihei Community Association
P. O. Box 662
Kihei, HI 96753

9. Mr. Ronald Gammie
Maalaea Community Association
RR1 Box 388, #301
Wailuku, HI 96793

10. Ms. Tanya Every
Wailea Community Association
3750 Wailea Ala Nui, Suite F21
Wailea, HI 96753

APR 30 1992

(3)

DEPARTMENT OF THE ARMY

U. S. ARMY ENGINEER DISTRICT, HONOLULU
BUILDING 230
FT. SHAFTER, HAWAII 96858-5440

April 23, 1992

'92 APR 24 21:27

REPLY TO
ATTENTION OF:

Planning Division

Mr. George N. Kaya, Director
County of Maui Department of Public Works
200 South High Street
Wailuku, Maui, Hawaii 96793

DEPT OF PUBLIC WORKS

Dear Mr. Kaya:

Thank you for the opportunity to review and comment on the environmental assessment preparation notice for proposed expansion of the Kihei Wastewater Reclamation Facility, Phase II, at Kihei, Maui (TMK 2-2-24: 10, por. 11). The following comments are provided pursuant to Corps of Engineers authorities to disseminate flood hazard information under the Flood Control Act ~~of 1960~~ and to issue Department of the Army (DA) permits under the Clean Water Act; the Rivers and Harbors Act of 1899; and the Marine Protection, Research and Sanctuaries Act.

Return to 4/25
By

a. Provided that no fill is placed in the adjacent stream, a DA permit is not required for the proposed project.

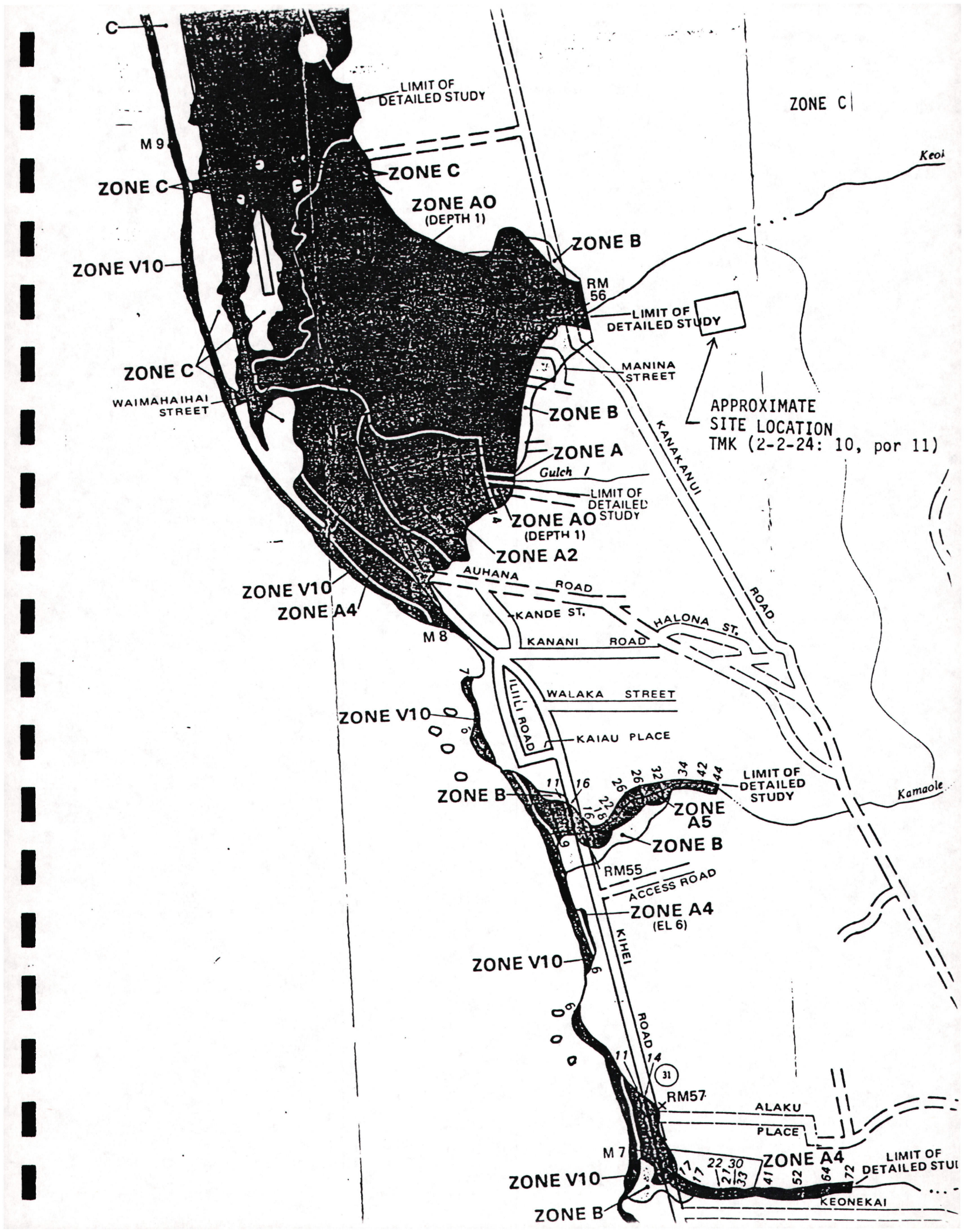
b. According to the Federal Emergency Management Agency's Flood Insurance Rate Map, Panel 150003-0265-C, dated September 6, 1989 (copy enclosed), the project site is in Zone C (areas of minimal flooding).

Sincerely,

Kisuk Cheung, P.E.
Director of Engineering

Enclosure

RECEIVED
'92 APR 27 11 8:33


C
LIMIT OF DETAILED STUDY
ZONE C
M 9
ZONE C
ZONE C
ZONE AO (DEPTH 1)
ZONE B
ZONE V10
RM 56
LIMIT OF DETAILED STUDY
ZONE C
MANINA STREET
WAIMAHAIHAI STREET
ZONE B
APPROXIMATE SITE LOCATION TMK (2-2-24: 10, por 11)
ZONE A
Gulch 1
KANAKANUI ROAD
LIMIT OF DETAILED STUDY
ZONE AO (DEPTH 1)
ZONE A2
ZONE V10
ZONE A4
AUHANA ROAD
KANDE ST.
HALONA ST.
M 8
KANANI ROAD
WALAKA STREET
ILILI ROAD
ZONE V10
KAIAU PLACE
ZONE B
LIMIT OF DETAILED STUDY
Kamaole
ZONE A5
ZONE B
RM55
ACCESS ROAD
ZONE A4 (EL 6)
KIHEI ROAD
ZONE V10
RM57
ALAKU PLACE
M 7
ZONE A4
LIMIT OF DETAILED STUDY
ZONE V10
KEONEKAI
ZONE B

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

MAUI COUNTY, HAWAII

PANEL 265 OF 400
(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER
150003 0265 C

MAP REVISED:
SEPTEMBER 6, 1989

Federal Emergency Management Agency

Gulch

S PANEL 0270

KEY TO MAP

500-Year Flood Boundary	
100-Year Flood Boundary	ZONE B
Zone Designations	
100-Year Flood Boundary	ZONE B
500-Year Flood Boundary	
Base Flood Elevation Line With Elevation In Feet**	513
Base Flood Elevation in Feet Where Uniform Within Zone**	(EL 987)
Elevation Reference Mark	RM7×
Zone D Boundary	
River Mile	•M1.5

**Referenced to the National Geodetic Vertical Datum of 1929

EXPLANATION OF ZONE DESIGNATIONS

ZONE	EXPLANATION
A	Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
A0	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundation are shown, but no flood hazard factors are determined.
AH	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; base flood elevations are shown, but no flood hazard factors are determined.
A1-A30	Areas of 100-year flood; base flood elevations and flood hazard factors determined.
A99	Areas of 100-year flood to be protected by flood protection system under construction; base flood elevations and flood hazard factors not determined.
B	Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood. (Medium shading)
C	Areas of minimal flooding. (No shading)
D	Areas of undetermined, but possible, flood hazards.
V	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined.
V1-V30	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors determined.

NOTES TO USER

This map is for use in administering the National Flood Insurance Program; it does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size, or all planimetric features outside Special Flood Hazard Areas.

Areas of special flood hazard (100-year flood) include Zones A, A1-30, AE, AH, AO, A99, V, V1-30 AND VE.

Certain areas not in the Special Flood Hazard Areas (zones A and V) may be protected by flood control structures.

Coastal base flood elevations apply only landward of the shoreline shown on this map.

For adjoining map panels, see separately printed Index to Map Panels.

INITIAL IDENTIFICATION:

DECEMBER 6, 1977

FLOOD HAZARD BOUNDARY MAP REVISIONS:

ENCLOSURE

JOHN WAIHEE
GOVERNOR OF HAWAII

RECEIVED
1992 MAY -5 PM 2:02
WASTEWATER
RECLAMATION DIVISION
COUNTY OF MAUI

STATE OF HAWAII
DEPARTMENT OF HEALTH
MAUI DISTRICT HEALTH OFFICE
54 HIGH STREET
WAILUKU, MAUI, HAWAII 96793

'92 MAY -1 P3:37
PUBLIC WORKS

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

PAUL E. HOFFMAN, M.D., M.P.H.
DISTRICT HEALTH SERVICES ADMINISTRATOR (M.D.)

DEPT OF PUBLIC WORKS
DIRECTOR
DEP. DIR.
PERS.
STAFF OFF.
LLOA
WW RECL.
SOLID W.
ENGR.
HWYS.
SECTY.
Return to:
By _____ Date 5/4

May 1, 1992

Mr. George N. Kaya
Director
Department of Public Works
County of Maui
200 S. High Street
Wailuku, Hawaii 96793

Dear Mr. Kaya:

Subject: Proposed Expansion of Kihei Wastewater Reclamation Facility, Phase II

We have reviewed the document on the subject project submitted by your office. We concur with the plans of expanding the design capacity from 6.0 million gallons per day (MGD) to 8.0 MGD for the wastewater facilities in accordance with all applicable local standards and regulations for wastewater service.

All wastewater plans must conform to applicable provisions of the Department of Health's Administrative Rules Chapter 11-62, "Wastewater Systems." However, we do reserve the right to review the detailed wastewater plans for conformance to applicable rules.

Should you have any questions, please contact Ms. Lori Kajiwara of the Wastewater Branch at 586-4290.

Sincerely,

David H. Nakagawa

DAVID H. NAKAGAWA
Chief Sanitarian

Info | Action | See me | Comment | File | Return to | Copy

References

REFERENCES

Austin, Tsutsumi & Associates, Maui Long-Range Highway Planning Study, Islandwide Plan, prepared for the State of Hawaii Department of Transportation and County of Maui Departments of Planning and Public Works, May 1991.

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M A P S
SP73-155

2 2 02

ZONE 3 Sec. 8 | Sec. 5 PLAT 01 | Sec. 3

Haleakala Ranch Co. 1580.0 acs.

Maui Pineapple Co. Ltd. 1116.2 acs.

Gr. 3313

WAIAKOA MAKAI HMSTD

WAIAKOA PLAT HMSTD. 15

Grant 9325 : 4

Kaonoulu Ranch Co., Ltd. 5074.072 Acs.

Gr. 9325:5

Haleakala Ranch Co. 745.956 Acs.

Grant 9325 : 1

Grant 9325 : 2

Hawaiian Homes Lands (Kaonoulu Ranch Co., Ltd.) Par. H.H.L. G.L. No. 133

5985.554 Acs.

Pauu O Kali

WAIOHULI ZONE - KEOKEA HMSTD

KEOKEA BEACH SECTION

KANANI RD.

KAMAOLE HMSTD

KEONEKAI ROAD

Gr. 3-9-04

Harold S. Kuchi, Donald H. Takenaga (Est.) & wife Gladys Ac. 5.08 Ac.

(Adolph J. Mendonca, John D. Umehara & James W. Gentry - J/T. Als

Gr. 3448-B, G | Gr. 3449 | Gr. 3367 | Gr. 3450 | Gr. 3371 | Gr. 3366 | Gr. 3369 | Gr. 3529 | Gr. 3448-B | Gr. 3365 | Gr. 2227 | Gr. 2072 | Gr. 2071 | Gr. 6106

Haleakala Ranch Co., M/e. Mortensen Gr. 3448-B Edgar Gr. 3448-B

Gr. 2473

Haleakala Ranch Co. (2.0 ac.)

Charles M. Thompson, Isabel H.T. Ramsey, Sherman N. Thompson, Pikaki T. Seffers, Charles E. Thompson-Curt., Edward K. Thompson Est. w/f Lucine A. - 7/16 - 9/16, Matilda Orton - 1/16, Lillian E. Thompson - 2/16

Frank Jacintho & w/f Lucy - J/T

Gr. 3365:1 17.76 Ac.

53.43 acs.

Gr. 2532:1

"KAUI" 8079.37 N, 2638.45 E, Puu To. 4

Grant 2831

Patrick T.L. Mau & w/f Peggy F. T/E (5.50 Ac.), Elizabeth M. Wikoli (13.40 Ac.)

Ah Fat Zane & w/f Julia - J/T

Gr. 3365:2 17.8 acs. 3448-B 3 (11.85 acs.)

Gr. 2533:3

18.90 acs.

(5.85 acs.)

Gr. 3448-B, Lillian E Thompson

Mrs. Elizabeth Wikoli

(For owners see below) 17.50 acs.

(For owners see below) 33.56 acs. Gr. 3171

John V. Bailey

Eg. 2.1 Ac. Gr. 3160

Gordean Bailey

Gordean Lee 4.14 Ac.

Frank P. Fayan, Jr. 4.07 Ac.

Mary K. Farm

Gregory A. Lee 4.19 Ac.

Richard S. Nashiwa & w/f Tamae N. T/E

11.77 Ac.

61.50 acs.

Dropped Par. 12, 11.

PLAT 05 | PLAT 04 | PLAT 03 | PLAT 02 | PLAT 01

HALEAKALA HMSTD

WAIOHULI - KEOKEA HMSTD

KULA ROAD 18 & 12

GOVT. MAIN ROAD

PLAT 01 OLD KULA RD.

State of Hawaii

Hawaiian Telephone Co.

Eq. of FAP No. BR-037-1(3)

Gr. 6788:6

L.C.Aw. 6598:4 | L.C.Aw. 6598:1 | L.C.Aw. 6598:3 | L.C.Aw. 6429:2 | L.C.Aw. 5879:5 | L.C.Aw. 6598:4 | L.C.Aw. Grs. 8-4 | L.C.Aw. 6598:2

Haleakala Ranch Co., Mic. (Comp.) 32.2 Ac.

Lucy K. Young (Decd.) (10.58 ac.)

Por. L.C.Aw. 6598:4

(See Below) 24 Theodore R. James -1/3, Edward Raczkowski Est. - 2/3

25 UNLOCATED IN KOHEO 1 & 2, L.C.Aw. 5892 Ap. 1263, George Kainapau & Wf. Ruth - T/E, 8.08 Ac.

26 State of Hawaii 1.30 Ac.

27 State of Hawaii 1.90 Ac.

28 State of Hawaii 0.44 Ac.

29 State of Hawaii 1.60 Ac.

30 State of Hawaii 1.50 Ac.

31 State of Hawaii 1.86 Ac.

32 State of Hawaii 8.24 Ac.

33 State of Hawaii 9.06 Ac.

PARCELS 5 & 10

Lillian E. Thompson - 4/64

Edward K. Thompson Est. & Wf. Lucine A. - T/E - 7/64

Matilda Orton - 7/64

Charles M. Thompson, Isabel H.T. Ramsey, Sherman N. Thompson, Pikaki T. Seffers, Charles E. Thompson-Curtis - 1/32

INSET Scale 1" = 500'

ADVANCE SHEET SUBJECT TO CHANGE

SECOND DIVISION		
ZONE	SEC.	PLAT
2	2	02
CONTAINING		PARCELS
SCALE = AS NOTED		

PRINTED AUG. 7 1973

7363

Por. of KULA, MAKAWAO, MAUI.

True North 1" = 2000'

True North 1" = 500'

Dwg. No. N.A. E.D.C.
By
Source: Tax Maps Bureau

JUN 19 1939 | JAN 8 1 1939 | FEB 15 | SEP 6 | NOV 1945 | OCT 26 1946 | NOV 4 1946 | AUG 7 '48 | OCT 6 '48 | DEC 24 '48 | DEC 21 '49 | APR 12 1950 | DEC 13 1968 | MAR 31 1969 | MAY 21 1970 | APR 17 | MAY 16 1973 | JUL 18 1973

3 9 02

ZONE 2 SEC. 2

WAIOHULI-KEOKEA BEACH HOMESTEADS, WAILUKU, MAUI

INSET "A"

Parcel 94 Cecilia Awo
93 Judith Akina
92 Agnes Akina
91 Charles A. Akina

106 107 & 108 Barbara Jean Akaka, Maryann A. Duai, Cecelia S. Akina, Dower

Note: Parcels 88, 89, 90, 95, 96 & 97 owned by: cana consultants, Inc.

Dropped Parcels - 1, 3, 4, 5, 6, 7, 8, 11, 12, 13, 15, 17, 19, 20, 22, 23, 25, 27, 29, 31, 33, 35, 37 to 58 incl., 60 to 75 incl., 77, 78, 79, 81, 86, 114, 120 to 124, incl. 2, 59, 111.

SECOND DIVISION		
ZONE	SEC.	PLAT
3	9	02

CONTAINING PARCELS

SCALE: 1 in. = 300 ft.

ADVANCE SHEET SUBJECT TO CHANGE

PRINTED AUG 7 1973

7364

DWG. NO: 1917 I.K.H. Feb. 1934
BY:
Source: Tax Maps Bureau Survey Department

KANAKANUI ROAD

ZONE 2 SEC. 2

PLAT 32

GR. 5534 P.&R.

"KALAMA ANAPA PARK ESTATES"

PLACE

PLAT 30

PLAT 27

PLAT 31

PLAT 17

PLAT 12

PLAT 05

KEALA PL. ALALOA RD.

ALALOA ROAD

PEKE PL.

KALAMA E. P. PLAT

KEALA PLACE

ALAHELE PLACE

HALELANI STREET

KAPUNA GRANT

AUHANA ROAD

KIHEI ROAD

KIHEI FARM SUBDIVISION.

KALAMA PARK

GRANT 3448 Bk 9

TRUE NORTH
Scale: 1 in. = 100 ft.

Yoshiji Suda & wf Hatsuko - J/T (1.525 Acs.)

Kazuo Takanishi & wf Misae T. - T/E 65,924 sf

Kazuo Nishida & wf Dorothy Y. T. - J/T 2.12 Acs.

Rebecca M. Aking (Oliver N. C. Choy & wf Beatrice C. Nie) A/S (Stanley S. Nagamine) le.

Frank Wietecha & wf Mildred J/T 2.967 Acs. 1.457 Acs.

Betty H. Alvey - 1/2 Fujio Hattori - 1/2 1.0 Ac.

Pacific Warehouse, Inc. 3.00 Acs.

2.949 Acs. (1.00 Ac.)

Yoshiji Suda, et al (0.424 Ac.)

Chiyoko Suda & Yoshiji Suda - J/T 0.538 Ac.

Margaret S. Y. Ching (1.00 Ac.) 2.0 Acs.

Clement K. Magda & Helen S. - T/E 0.601 ac.

Robert A. Burns & wf Florence N. - T/E (Walter C. Witte) A/S 0.399 ac.

Jose Balmores & wf Sofia N. - T/E 11,780 ± sf

Anna M. Cabacungan 11,780 ± sf

Paradise Parklani, Inc. 10,000 ± sf

Douglas K. Kawana 10,000 ± sf

Masamori Shimooka 10,000 ± sf

Shella Tubin 11,780 ± sf

Lawrence W. S. Ching - Trustee (Lawrence N. C. Ing) A/S (Kevin S. Hsu & wf Hwa Yu - T/E) Sub-A/S

Ali'i Kalama Hui 1.00 Ac.

Edward C. Sakugawa & wf Jane F. - J/T 4.04 Acs. (1.00 Ac.) (1.00 Ac.) (1.00 Ac.) (1.04 Acs.)

Edward C. Sakugawa & wf Jane F. - J/T 1.00 Ac.

Takeo Noda 1.0 Ac.

Hisashi Hashimoto & wf Shizuo - T/E 1.50 Acs.

Wilbert K. Y. Yee, Warren Y. J. Yee, William K. Heong - T/C 1.856 Acs. (28,500 sf or 0.656 Ac.)

Union Oil Company of California 15,000 sf (43,500 sf or 1.00 Ac.)

Kirchmeyer Development Corp. 1.5519 Acs.

Dropped par.: 20, 23, 26, 27, 30, 31, 10, 11,

SECOND DIVISION		
ZONE	SEC.	PLAT
3	9	03

CONTAINING 11 PARCELS

SCALE: 1 in. = 100 ft.

PRINTED AUG 7 1973

7365

DWG. NO: 1908
BY: L.K.H. FEB. 1934
SOURCE: TAX MAPS BUREAU & SURVEY DEPARTMENT

CORRECTED
SEP 9 1968
DEC 11 1968
FEB 6 1969
MAR 3 1969
JUN 26 1969
DEC 10 1969
FEB 20 1970
MAY 1 1970
OCT 29 1936
OCT 1939
APR 25 1940
JUL 7 1945
MAR 21 1947
MAY 9 1947
AUG 12 1947
APR 25 1972
AUG 9 1972
OCT 2 1972
DEC 1 1972
JAN 3 1973
1950
1951
1951
1957
1960
1961
1962
1963
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1990
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1992
1993
1994
1995
1996
1997
1998
1999

PLAT 30

KALAMA SUBD
F. P. 1212
PLAT 31

ALAHELE PLACE 826.5

ALALOA ROAD

KANAKANUI

ZONE 2

SEC. 2

TRUE NORTH
Scale: 1" = 100 Ft.

804.61 | 234.04 | 124.55 | 12.00 | 85.00 | 96.80 | 439.00 | 137.0 | 130.00 | 164.10

Jiro Tobe & wf Chiyeko - T/E
(Alfred A. Levin) A/S

5597

Alexander B. Akina & wf. Lily C. - T/E

386.40 | 343.88

1.886 Acs. GR.

14.0 Acs.

35 | 34

GR.

Mahala Associates

135.00 | 241.24 | 168.77 | 348.63 | 30.56 | 51.68 | 272.21 | 225.77 | 271.01 | 270.43

A | B | C | D | A

O. Sidney Longacre & wf Mary E. - J/T - 1/2
Robert A. Love & wf Alberta D. - J/T - 1/2
(Kenneth Kirchmeyer & wf. Patricia - T/E) 1/3

Chyoes W. Iwaleka & wf Thelma U. - T/E 3/5
Mamoru Yamasaki, E. Mikio Yoshinaga

28 61,140 sf

231.00 | 176.08 | 503.84 | 177.05 | 270.20 | [20,240 sf]

Toshiaki Murakami & wf. Cyrilla L. - T/E

67 40,899 sf

231.00 | 150.74 | 138.00

Angelo De Lima

Abel De Lima & wf Betty M. - T/E

41 14,320 sf

Easement "A" 12' wide for ingress & egress purposes

Joseph Akina

1.00 Ac.

27 20,501 sf

30

Godfrey A. Akina & wf. Rosemary - T/E - 1/2
Joseph Akina & Caroline M. A. Chai - J/T - 1/2

(32)

270.01 | 783.83 | 252.20 | 347.82 | 508.56 | 89.73.33 | 527.00

American Reflex

Leonard Berkitz - Trustee

H | I | J | 132.52 | 117.00 | 140.00

(20) | (21)

Corporation President of the Church of Jesus Christ of Latter-Day Saints

3.14 Acs.

3.14 Acs.

3.15 Acs.

Reserved Parcels: 4, 6, 11, 13, 15, 16, 20, 21,

53 Clifford W. P. Fedaliza & wf. Florentina Y. - T/E

45 (Robert F. Valente & wf. Rosette - T/E) A/S

PLAT 03

3.285 Acs. (2.50 Acs.)

36 | 100.00

Chester K. Oinhorn & wf. Norma J. - T/E

Hisao Hijii & wf. Matsue - T/E

1.15 Acs.

6.450 Ac

23 | 24 | 25 | 26 | 100.00

3.14 Acs.

2.14 Acs.

55 98

272.20

AUHANA ROAD

Jiro Tobe & wf. Chiyeko - T/E

240.00 | 120.00 | 75.00 | 85.00 | 152.00 | 21,011 sf | 140.50 | 9,273 sf | 120.00 | 10,583 sf | 10,660 sf | 13,835 sf | 103.60

37 | 22 | 38 | 39 | 40

Easement in favor of Lots 16 & 17 (20' wide) [8405 sf]

399.12 | 245.00 | 148.00 | 117.00 | 338.00

31 | 32 | 33

George Egaki & wf. Betty S. - T/C - 3/4 (21)

Fukusaburo Isobe & wf. Sumi - T/E - 1/8
Fukusaburo Isobe - 1/8

GR.

Sam G. Lee & wf. Rose - T/E

Morgan Pacific Management Inc.

Flora De Lima

John C. Allen & wf Sherrill E. M.

Douglas A.

Vivian K. Bal

Frank Sommerfeld & wf Adele - T/E

Glenn L. Fulita & wf. Ona S. - T/E - 1/2
James W. Stinson - 1/2

Harold R. La Costa & wf. Carol - T/E

W. Ralph Merrill & wf. Florence N. - T/E
(Wolfgang G. Pfaeltzer & wf. Doreen T. - T/E) A/S
(Roy A. Elf & wf. Patricia M. - T/E) Sub - A/S

PLAT 05

KIHEI ROAD

KANOE STREET

KANANI ROAD

ILILI ROAD

8.78 Acs.

1222.17 | 122.68 | 282.10

2

PLAT 16

PLAT 18

54 Wayne R. Sandstrom & wf. Betty J. - J/T (Andrew Smith & wf. Dianne D. - J/T) A/S

55 (Wayne R. Sandstrom & wf. Betty J. - J/T) A/S (Andrew J. Smith & wf. Dianne D. - J/T) Sub-A/S

52 (Eddie Lund & Kiyoshi Kuroda - J/T) A/S

HALONA STREET

Joseph Donaghy & wf. Lucy

Hawaiian Telephone Co.

Trustees of Queen Emma Estate

Power Easement "A" 15' wide

Power Easement "B" 15' wide

Power Easement "C" 15' wide

PARCELS DROPPED: 36, 42, 44, 1)

NOTE: Parcels 45, 52, 55 to 59 incl. owned by Halona Corp. unless otherwise noted.

SUBJECT TO CHANGE

DEPARTMENT OF THE TAX COMMISSIONER
TAXATION MAPS BUREAU
STATE OF HAWAII
TAX MAP

SECOND		DIVISION
ZONE	SEC.	PLAT
3	9	17

CONTAINING PARCELS

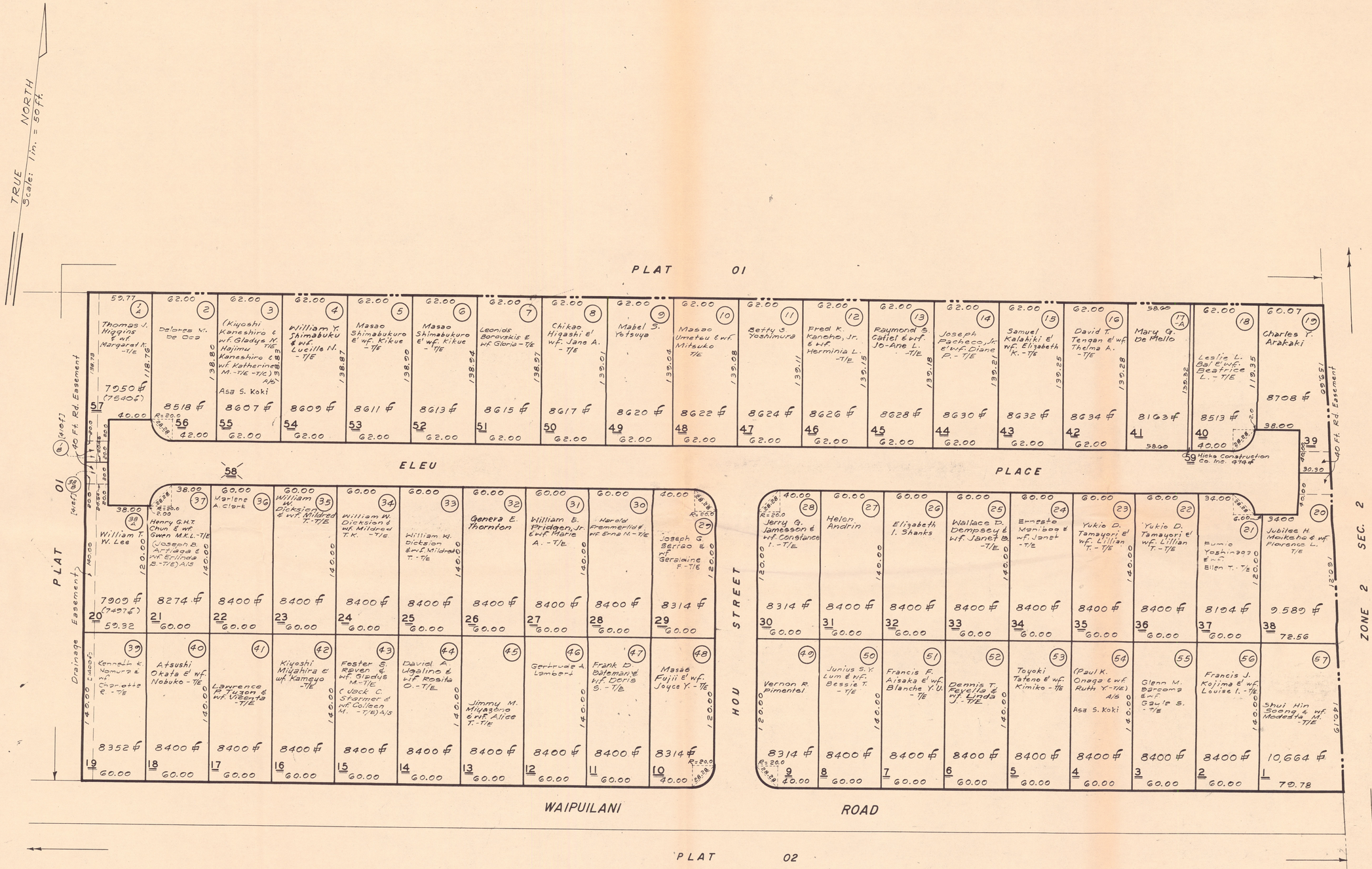
SCALE: 1 IN. = 100 FT.

Por. KAMAOLE HOMESTEADS, WAILUKU, MAUI (formerly por. of 3-9-04)

DWG. NO. 22
SOURCE: TMB
BY: JY/DT/ES
May 23, 1960

7367

AUG 7 1973



Dropped parcel: 58

Parcels: 56 owned by Credit Finance & Mortgage, Inc.

SUBJECT TO CHANGE

DEPARTMENT OF THE TAX COMMISSIONER
TAXATION MAPS BUREAU
STATE OF HAWAII
TAX MAP

SECOND		DIVISION
ZONE	SEC.	PLAT
3	9	21
CONTAINING		PARCELS
SCALE: 1 IN. = 50 FT.		

KIHEI ESTATE SUBDIVISION (Portion)
Por. GRANT 11837, WAIOHULI-KEOKEA, WAILUKU, MAUI, HAWAII

DWG. NO.: 727
SOURCE: Tax Maps Bureau
BY: H.N. & L.N. May 31, 1960

7368

AUG 7 1973

PLAT 01

(Brigido S. Bolibol) A/s — 71 — 207.33 — 70.87 — 70.18 — 29 — 14,391 ± f

28 — 15,593 ± f — 285.00

(Lionel A. Passafuma & wf. Marjorie J. -T/E) A/s — 70 — 170.00 — 40.00 — 40.00 — 30.49

Severino P. Tabin & wf. Loretta - T/E — 69 — 182.45 — 70.81 — 70.24 — 27 — 10,334 ± f — 40.00 — 40.00

26 — 10,695 ± f — 68

72

Philip H. Haake & wf. Virginia T. -T/E — 50 — 203.00 — 70.13 — 70.00 — 22 — 14,059 ± f

Joseph Rodrigues & wf. Harriet K. -T/E (Edward A. Neigman, James D. Neigman -T/C) ~A/s — 51 — 285.00 — 28.28 — R:20 — 50.00 — 23 — 15,664 ± f — 225.00

Gertrudis A. Guinzatao, Gregorio Aquino - J/T — 52 — 130.00 — 28.28 — R:20 — 50.00 — 24 — 10,414 ± f — 150.00

Tranquilino Tacla & wf. Florida - T/E — 53 — 152.11 — 70.00 — 25 — 10,634 ± f — 151.73

198.68 — 49 — 70.13 — 70.00 — 21 — 13,756 ± f

194.36 — 48 — 50.33 — R:20 — 65.00 — 20 — 13,190 ± f — 171.30

78.00 — 47 — 139.00 — 19 — 10,425 ± f — 78.00

75.00 — 46 — 139.00 — 18 — 10,425 ± f — 78.00

75.00 — 45 — 139.00 — 17 — 10,339 ± f — 55.00 — R:20 — 28.28

KONIA PLACE

R:20 — 28.28 — 118.00 — 16 — 10,339 ± f — 55.00

78.00 — 44 — 139.00 — 15 — 10,425 ± f — 78.00

David O. S. Choy & wf. Mary C. A. -T/E — 42 — 78.00 — 139.00 — 14 — 10,425 ± f — 78.00

William Chock See S. wf. Evelyn K. - T/E — 41 — 74.73 — 118.11 — 13 — 10,528 ± f — 86.05 — R:20 — 28.81

PLACE

PLAT 23

NAMAUU PLACE

TRUE NORTH Scale 1 in. = 660 ft.

To Wailuku

KIHEI ROAD

PLAT 01

R:20 — 28.28 — 2 — 140.37 — 70.13 — 70.00 — 4 — 11,064 ± f — 157.32

Kinuko Mihara — 3 — 73.00 — 140.00 — 5 — 10,220 ± f — 73.00

Joseph Espiritu & wf. Feliciana D. - T/E — 4 — 73.00 — 140.00 — 6 — 10,220 ± f — 73.00

Jaime Baloran & wf. Rosita B. - T/E — 5 — 73.00 — 140.00 — 7 — 10,220 ± f — 73.00

73.00 — 6 — 140.00 — 8 — 10,220 ± f — 73.00

73.00 — 7 — 140.00 — 9 — 10,220 ± f — 73.00

Benigno B. Molino & wf. Betty D. - T/E — 8 — 73.00 — 140.00 — 10 — 10,220 ± f — 73.00

Mariano T. Arquero & Leticia M. Arquero - J/T — 9 — 133.65 — 28.28 — R:20 — 45.85 — 12 — 10,663 ± f — 153.38

Kenneth J. Takamiya & wf. Toshiko D. - T/E — 10 — 70.00 — 70.00 — 11 — 10,723 ± f — 153.00

KAPUHAU PLACE

John H. Grote & wf. Thelma K.; Edith H. Grote - 1/4 — 1 — 70.13 — 70.00 — 3 — 10,861 ± f — 153.00

10,220 ± f — 5 — 73.00

10,220 ± f — 6 — 73.00

10,220 ± f — 7 — 73.00

10,220 ± f — 8 — 73.00

10,220 ± f — 9 — 73.00

10,220 ± f — 10 — 73.00

Shirley Perreira Akina — 6-B — 286.00 — 202.00 — 125 Acs.

Earl J. Nishiyama — 21 — 79.26 — 99.91 — 138.73 — 56 — 10,354 ± f — 70.28

Reynaldo F. De Leon & wf. Filomena V. - T/E — 22 — 72.50 — 138.49 — 55 — 10,042 ± f — 72.50

Jose C. Ilar & wf. Shirley L. - T/E — 23 — 72.50 — 138.58 — 54 — 10,045 ± f — 72.50

Norman D. Vares & wf. Alice G. - T/E — 24 — 72.50 — 138.57 — 53 — 10,048 ± f — 72.50

Pablo T. Cartez & wf. Escolastica - T/E — 25 — 72.50 — 138.61 — 52 — 10,051 ± f — 72.50

Moses K. Kauhaahaa, Jr. & wf. Liliu M. - T/E — 26 — 72.50 — 138.65 — 51 — 10,054 ± f — 72.50

Allen H. Tokunaga & wf. Tohr M. - T/E — 27 — 6-C — 73.18 — 138.69 — 50 — 10,103 ± f — 72.50

PLACE

ELEU PLACE

SUB'D.

2 — 285.00 — 144.00 — 141.00 — 20 — Clarence A. Grogier & wf. Jarah R. - T/E — 1 — Alan Kanemitsu & wf. Sachiko - T/E — UNIT — 10,111 ± f — 72.35 — 72.00 — 50.24 — 72.00 — 40 — 10,152 ± f — 141.00 — 41 — 136.86

Philip H. Haake & wf. Virginia T. - T/E — 2 — Willard J. Holden & wf. Sachiko M. - T/E — 19 — WAIPUILANI — 10,117 ± f — 82.42 — 72.00 — 50.24 — 72.00 — 39 — 10,152 ± f — 141.00 — 42 — 123.17

ELEU

Edward A. Neigman & wf. Jennifer J. - T/E — 3 — 96.64 — 120.40 — 78.33 — 120.95 — Robert E. Todd & wf. Ann T. - T/E — 4 — 44.96 — 40.78 — 123.71 — Peter A. Neigman & wf. Carol D. - T/E — 5 — 88.45 — 106.87 — UNIT — 10,581 ± f — R:20.0 — 27.78 — 36 — 64.66 — 10,454 ± f — 37 — 66.00 — 10,526 ± f — R:20.0 — 38 — 60.00

To Makena

(POR.)

Andres Manegdeg & wf. Maxima - T/E — 17 — 83.96 — 77.66 — R:20 — 44 — 10,094 ± f — 96.87

Nathan Kamalii & wf. Jane L. - T/E — 16 — 71.50 — 140.00 — 45 — 10,010 ± f

Rudolfo Pasco & wf. Josephine K. - T/E — 15 — 71.50 — 140.00 — 46 — 10,010 ± f

George F. dela Rux & wf. Emogene R. - T/E — 14 — 71.50 — 140.00 — 47 — 10,010 ± f

Tetsuo Gushi — 13 — 71.50 — 140.00 — 48 — 10,010 ± f

Rudolph Miguel & wf. Betsy K. - T/E — 12 — 72.85 — 140.00 — 49 — 10,151 ± f

GRANT 11837

Arie Van Dort & wf. Edith E. - T/E — 18 — 106.80 — 92.50 — 43 — 10,030 ± f — 92.44

David Asuncion & wf. Bernarda P. - T/E — 7 — 71.50 — 140.00 — 34 — 10,010 ± f — 71.50

Herbert F. Santos & wf. Violet F. - T/E — 8 — 71.50 — 140.00 — 33 — 10,010 ± f — 71.50

Leinaala A. Teruya — 9 — 71.50 — 140.00 — I — 32 — 10,010 ± f — 71.50

Takumi Inamasu & wf. Lillian R. - T/E — 10 — 71.50 — 140.00 — 31 — 10,010 ± f — 71.50

Walter M. Kuluhiwa — 11 — 72.18 — 140.00 — 30 — 10,056 ± f — 71.50

Henry S. Pamat & wf. Carol Lee - T/E — 6 — 110.20 — 70.00 — 90.89 — 35 — 10,051 ± f — 92.77 — R:20 — 28.28

TRACT

PLAT 21

ESTATE

KIHEI

(POR.)

WAIPUILANI ROAD

PLAT 02

Note: Parcels 4, 8, 9, 15 thru 21, 27 thru 29 owned by Charles N. Thompson - 1/2, Pikaki T. Saffery - 1/2, Isabel N.T. Ramsey - 1/2, Sherman N. Thompson - 1/8, Beverly R. Thompson - 1/8 unless otherwise noted.

Parcels Dropped: 1,

Por. "KA HINANO ACRES SUB'D." F. P. 687 KULA, MAUI (form. por. 3-9-01-08)
Por. Gr. 9884 LOT 5, WAIOHULI - KEOKEA BEACH HMSTDS.

FOR REAL PROPERTY TAXATION PURPOSES
SUBJECT TO CHANGE

DEPARTMENT OF TAXATION
TAXATION MAPS BUREAU
STATE OF HAWAII
TAX MAP
SECOND TAXATION DIVISION

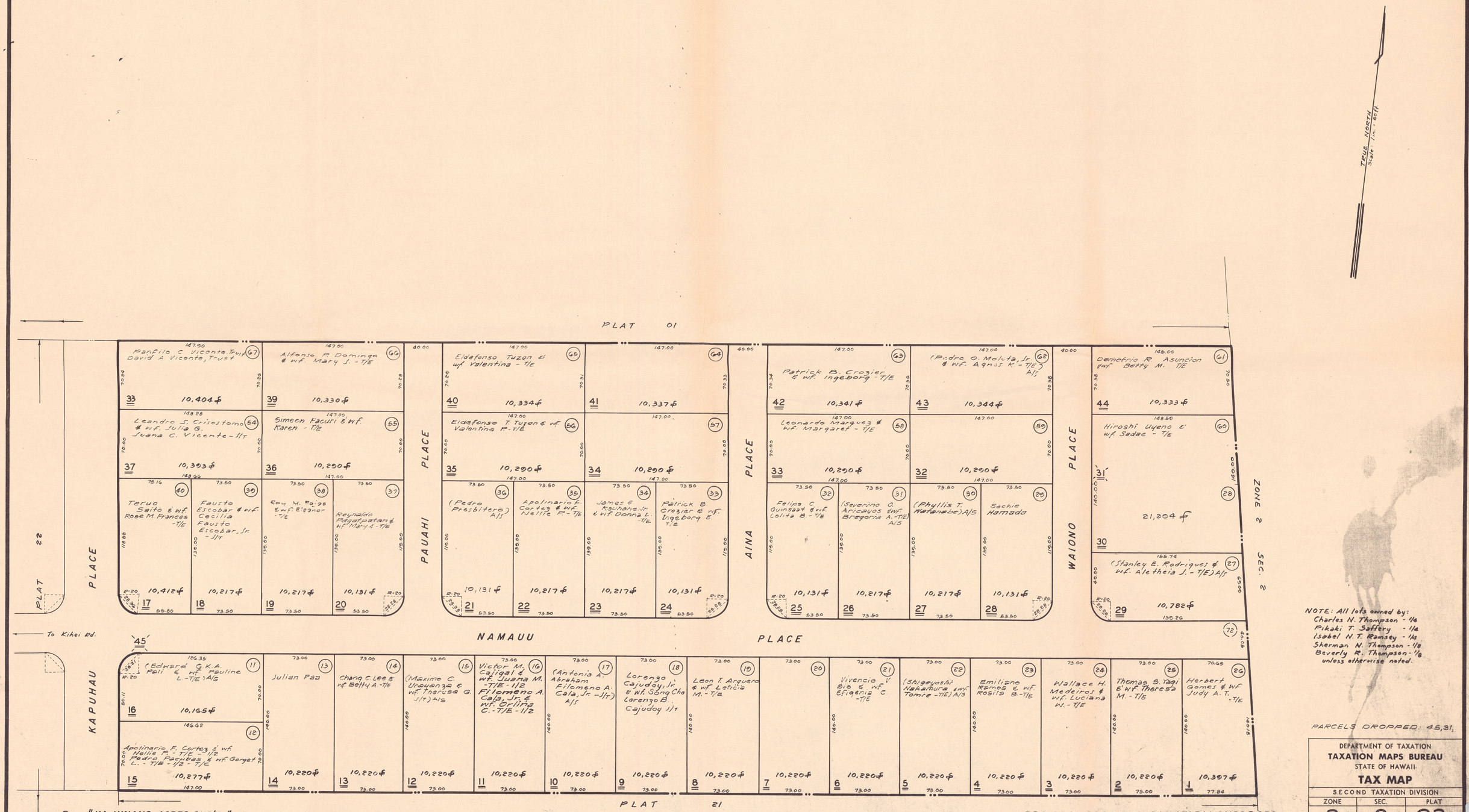
ZONE	SEC.	PLAT
3	9	22

SCALE: 1 IN. = 50 FT.

DWG. NO. 4766
SOURCE: File Plan 687
BY HM/MY DATE Oct. 24, 1960

AUG 7 1973

7869



NOTE: All lots owned by:
Charles N. Thompson - 1/4
Pikaki T. Saffery - 1/4
Isabel N. T. Ramsey - 1/4
Sherman N. Thompson - 1/8
Beverly R. Thompson - 1/8
unless otherwise noted.

PARCELS DROPPED: 45, 31,

DEPARTMENT OF TAXATION
TAXATION MAPS BUREAU
STATE OF HAWAII
TAX MAP
SECOND TAXATION DIVISION

ZONE	SEC.	PLAT
3	9	23

SCALE: 1 IN. = 50 FT.

Por. "KA HINANO ACRES SUB'D." F. P. 687 KULA, MAUI (form. por. 3-9-01-05)
Por. Gr. 9884 LOT 5, WAIOHULI - KEOKEA BEACH HMSTDS.

FOR REAL PROPERTY TAXATION PURPOSES
SUBJECT TO CHANGE

DWG. NO. 4767
SOURCE: File Plan 687
BY: HN/IRU
DATE: Oct. 24, 1960

7370

AUG 7 1973

UNLOCATED KULEANAI IN PAEAHU	
L. C. Aw. 2435	Ap. 1
L. C. Aw. 2435	Ap. 2
L. C. Aw. 5220	Ap. 1
L. C. Aw. 5220	Ap. 2
L. C. Aw. 5265-B	Ap. 1
L. C. Aw. 5281	Ap. 1
	Ap. 2
	Ap. 3
L. C. Aw. 5329	Ap. 1
	Ap. 2
L. C. Aw. 8370	Ap. 1
	Ap. 2
	Ap. 3
L. C. Aw. 7078	
UNLOCATED KULEANAI IN PALAUEA	
L. C. Aw. 2398	Ap. 1
L. C. Aw. 2352	Ap. 1
	Ap. 2
	Ap. 3
L. C. Aw. 2522	
L. C. Aw. 2525	Ap. 1
	Ap. 2
L. C. Aw. 2541	
L. C. Aw. 2565	
L. C. Aw. 2570	Ap. 1
	Ap. 3
L. C. Aw. 5200-B	
L. C. Aw. 5266	Ap. 1
L. C. Aw. 5365	Ap. 1
L. C. Aw. 5429	Ap. 4

15 David Kananui, Jr. et al. 1.00 Ac. L. C. Aw. 5369 Ap. 2 (unlocated)

26 Ulupalakua Ranch, Inc. et al. 0.13 Ac. L. C. Aw. 2415 Ap. 3 (unlocated)

50 (County of Maui) Park & Recreation Exec. Order 2410

TRUE NORTH
Scale: 1 in. = 1000 ft.

Ulupalakua Ranch, Inc. 69.0 Acs.

Ulupalakua

Ranch, 4933.857 Acs. (4808.342 Acs.)

Incorporated

Government Road

Parcel 1

Makena 700) Acs

700.00 Acs. Gross
30.00 Acs. Less Proposed Hwy.
670.00 Acs. Net Area

Makena Mall Site (1.000 & 0.225 Ac.)

Makena Bay

Kanaio

Kamaole Homesteads Sec. 3

Plat 10 · Plat 11 · Plat 12 · Plat 13 · Plat 14 · Plat 15 · Plat 16 · Plat 17 · Plat 18

Unit I, F. P. 1236 · Unit II, F. P. 1107 · Unit III, F. P. 1028

Maui Meadows Subd. Unit 1 File Plan

Mapu Place File Plan

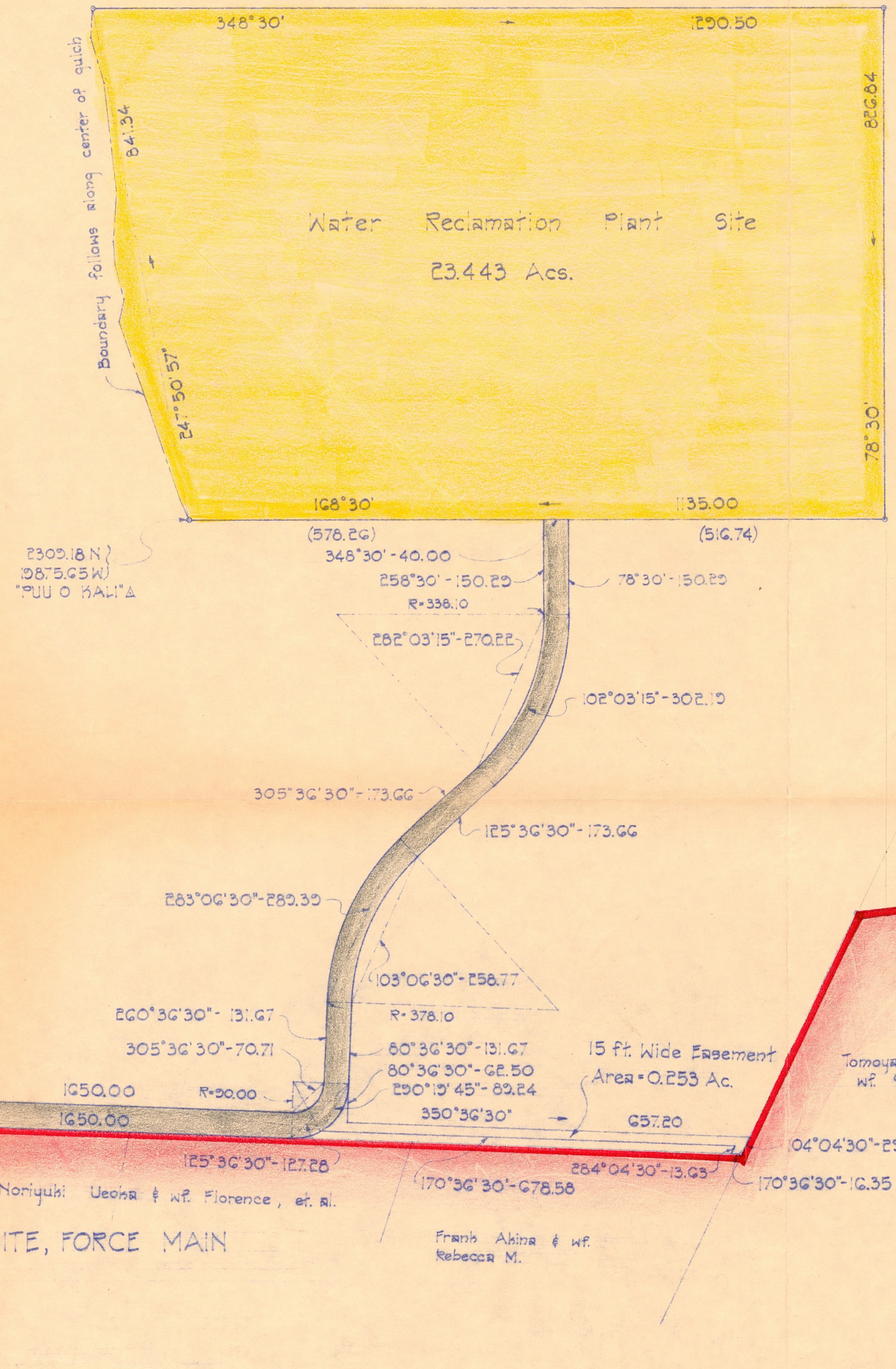
Kehala Drive · Kumulani Drive · Lauhou Place · Lauhou Pl. · Kulalua Pl. · Kuhaulua Pl. · Kuhaili Pl. · Kuhaili Place · Kuhaili Street · Kuhaili Pl. · Kuhaili Drive · Kuhaili Pl. · Kuhaili Place

SP73-155 DEPT. OF PUBLIC WORKS, MAUI

TRUE NORTH
Scale: 1 in. = 200 ft.

Portion of Grant 9325:1

Haleakala Ranch Co.
(Owner)



WATER RECLAMATION PLANT SITE, FORCE MAIN EASEMENT, AND 40 FT. ROAD.

Being a portion of Grant 9325:1.

WAIOHULI-KEOKEA, KIHEI, MAUI, HAWAII

Owner: Haleakala Ranch Co.

Scale: 1 in. = 200 ft.
Date: May 21, 1973

Prepared by: Norman Saito
Engineering Consultants, Inc.
Wailuku, Maui, Hawaii

Registered Professional
Land Surveyor No. 803-S

Tax Map Key: 2-2-02:14

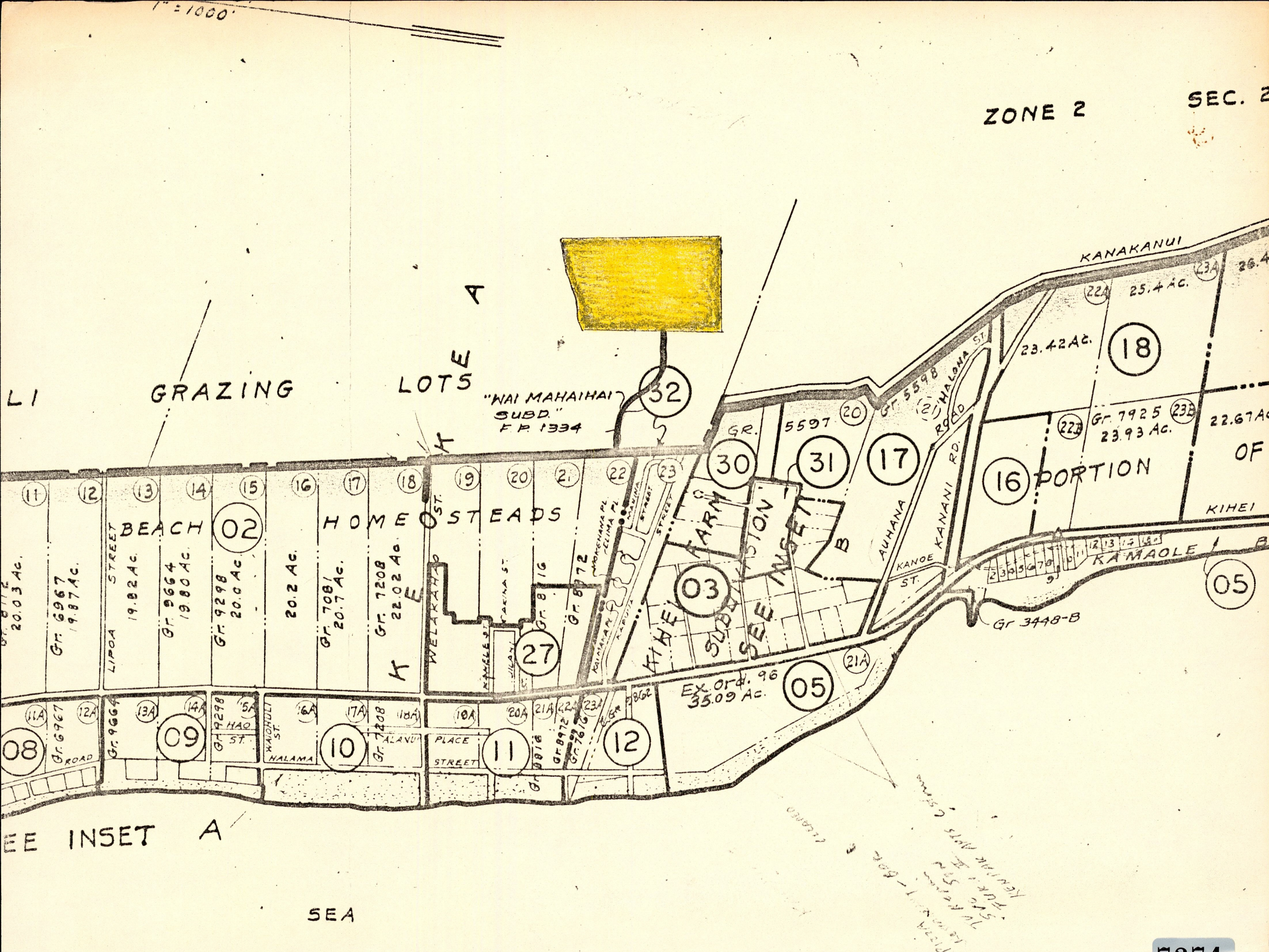
15"x21" C-8

7372

SEP 13-1973 DEPT. OF PUBLIC WORKS, MAUI

RECEIVED
JUN 1 1973
DEPT. OF PLANNING
COUNTY OF MAUI

7373


1" = 1000'
ZONE 2
SEC. 2
LI GRAZING LOTS
"WAI MAHAIHAI SUBD." F.P. 1334
BEACH HOMESTEADS
KANAKANUI
KIHEI
KAMAOLE
PORTION OF
KIHEI FARM SUBDIVISION
SEE INSET B
Ex. Ord. 96 35.09 Ac.
Gr. 3448-B
Gr. 7925 23.93 Ac.
23.42 Ac.
25.4 Ac.
22.67 Ac.
Gr. 5597
Gr. 5598
Gr. 6967 19.87 Ac.
Gr. 9664 19.80 Ac.
Gr. 9298 20.0 Ac.
20.2 Ac.
Gr. 7081 20.7 Ac.
Gr. 7208 22.02 Ac.
Gr. 8816
Gr. 8972
Gr. 9862
LIPOA STREET
WELAKAHAO ST.
KAKINA ST.
KAHELE ST.
JILANI
KAIMAKAPI
KAPUTA
MAHINA STREET
MOKEHANA PL.
ELIMA PL.
AUHANA
KANOE ST.
KANANI RD.
HALOMA ST.
ROAD
HAO ST.
WAIOHULI ST.
HALAMA
ALANUI PLACE STREET
EE INSET A
SEA
02
03
05
08
09
10
11
12
16
17
18
27
30
31
32

7374

RECEIVED
OCT 20 1939

True North
1" = 1000'

ZONE 2 SEC. 24

ZONE 3 SEC. 8

ZONE 2 SEC. 24

ZONE 2 SEC. 1A

MAKAWAO

KULUNIU

WAIOHULI

KEOKEA

GRAZING LOTS

"WAI MAHAINAI" SUBD. F.P. 1934

KAMAOLE

PAEAHU

HOMESTEADS

KAMAOLE BEACH LOTS

PORTION OF KAMAOLE HOMESTEADS

KIHEI SUBDIVISION

KIHEI FARM LOTS

KAMAOLE BEACH PARK

KIHEI ROAD

KANAKANUI ROAD

KEONEKAI ROAD

KENOLIO ROAD

KAHANA ROAD

KAUHAHA STREET

KAHANI PLACE

KAILOA PLACE

KAMAOLE PLACE

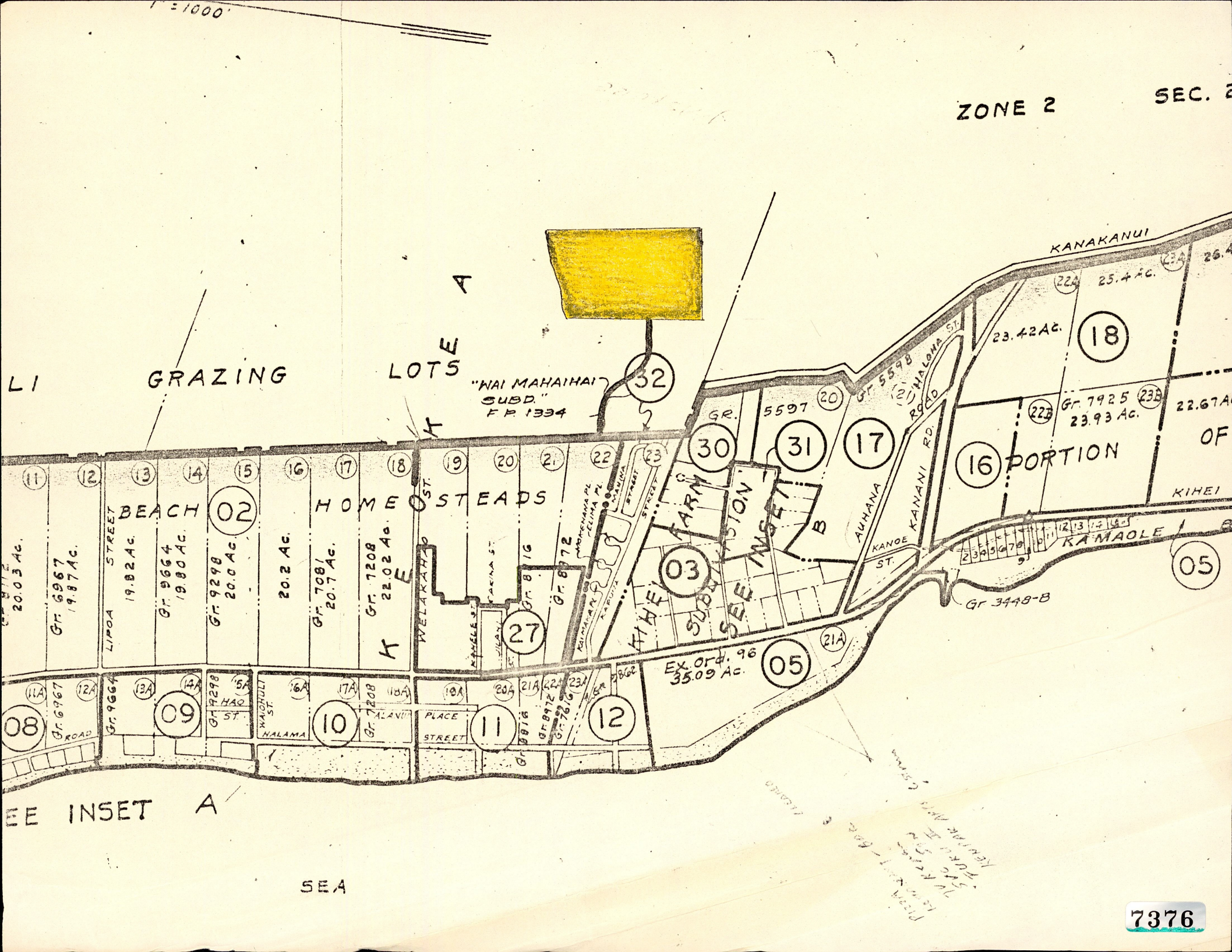
KAMAOLE STREET

KAMAOLE ROAD

KAMAOLE PARK ROAD

KAMAOLE PARK ROAD

KAMAOLE PARK



1" = 1000'
ZONE 2
SEC. 2
LI GRAZING LOTS
"WAI MAHAIHAI SUBD." F.P. 1334
BEACH HOMESTEADS
KEEK
KANAKANUI
KIHEI
KAMAOLE
PORTION OF
KIHEI FARM SUBDIVISION
SEE INSET B
AUHANA
KANANI RD.
KANOE ST.
HALOMA ST.
WELAKAHAO ST.
LIPOA STREET
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23.42 Ac.
25.4 Ac.
22.67 Ac.
Ex. Ord. 96 35.09 Ac.
Gr. 3448-B
EE INSET A
SEA

7376

SP73-155 DEPT. OF PUBLIC WORKS, MAUI

7377

7878

6-W

8-W

M-9

M-W

SPRINGFIELD DEPT OF PUBLIC WORKS MAP