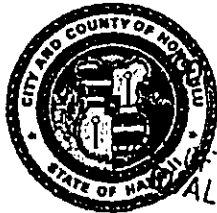


DEPARTMENT OF LAND UTILIZATION
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET
HONOLULU, HAWAII 96813 • (808) 523-4432

FRANK F. FASI
MAYOR



RECEIVED
SEP 14 AM 11:31

DONALD A. CLEGG
DIRECTOR

LORETTA K.C. CHEE
DEPUTY DIRECTOR

90/SMA-63(THE)

September 12, 1990


**SPECIAL MANAGEMENT AREA ORDINANCE
CHAPTER 33, ROH
Environmental Assessment/Determination
Negative Declaration**

Recorded Owner : F.T. Opperman, E. Reinhart, W. Horack
Applicant : (same)
Agent : Stanley Yim and Associates, Inc.
Location : Waialua, Oahu
Tax Map Key : 6-07-07:37
Request : Subdivision of subject parcel into 16
residential lots and one roadway lot
Determination : Environmental Impact Statement (EIS)
Not Required

Attached and incorporated by reference is the environmental assessment prepared by the applicant for the project.

On the basis of the environmental assessment, we have determined that an Environmental Impact Statement is not required.

APPROVED


DONALD A. CLEGG
Director of Land Utilization
City and County of Honolulu
State of Hawaii

DAC:the

.all

1990-09-23-0A-~~FEB~~ **FILE COPY**

1990 JUN 28 11 3 20

OCT 05 1990

ENVIRONMENTAL ASSESSMENT

Special Management Area Use Permit

for the

COPRA VILLAGE SUBDIVISION

at

Waialua, ^{*}Oahu, Hawaii

TMK: 6-07-07-37

June 1990

Prepared By:
STANLEY YIM & ASSOCIATES, INC
770 Kapiolani Blvd, Suite 703
Honolulu, Hawaii 96813

OFFICE OF ENVIRONMENTAL
QUALITY CONTROL
465 S. King Street, #104
Honolulu, HI 96813

I. GENERAL INFORMATION

- A. APPLICANT: F.T. Opperman, E. Reinhart, W. Horack
700 Bishop Street, Suite 1000
Amfac Building (Phone: 523-2431)
Honolulu, Hawaii 96813
- B. RECORDED FEE OWNER: (same)
- C. AGENT: Stanley Yim & Associates, Inc.
770 Kapiolani Boulevard, Suite 703
Honolulu, Hawaii 96813
Telephone: 537-3790 Fax: 537-4264
- D. TAX MAP KEY: 6-07-07-37
- E. LOT AREA: 2.854 Acres
- F. AGENCIES CONSULTED IN MAKING ASSESSMENT:
Department of Health, State
Department of Public Works, City
Department of Transportation Services, City
Board of Water Supply, City
Department of Land Utilization, City

II. DESCRIPTION OF PROPOSED ACTION

- A. **GENERAL:** Subdivision of subject parcel into 16 residential lots and one roadway lot. The new residential lots vary in area with the largest being 8065 sq ft and the smallest being 6033 sq ft, more or less. The new road is 32 ft wide and about 300 ft long and connects to the existing Waiialua Beach Road. A preliminary site plan showing the new lot layout, the new lot areas, and the location map, is attached as *Exhibit AA*.

The subject parcel is situated entirely within the SMA area, see *Exhibit BB*, attached.

This proposed subdivision will need a Special Management Area use permit as well as subdivision approval. The various agency approvals will also be obtained at the time the construction plans are routed for agency reviews.

- B. **TECHNICAL:** The new lots in the subdivision will comply with R5 zoning requirements in terms of minimum lot area, width, etc. The original property is zoned R5.

The subject property does not front along the shoreline and therefore, no certification of shoreline is needed. A print showing the existing features of the lot and the ground elevations is attached as *Exhibit CC*. There are 13 wood frame dwellings randomly located on the existing site. These wood frame structures are old and in various stages of disrepair. They will be demolished and removed upon commencement of the sitework for the new subdivision.

The existing site is located between Waialua Beach Road and Kiapoko Street. The ground along both roads is generally higher than the site itself especially at the north-northwest part of the site. Due to this condition, the grading for the project will include some filling of the depressed areas. It is anticipated that the fills will be between 12 to 18 inches thick for most of the areas but not greater than 24 inches. The project's grading plan showing the existing and the proposed finished elevations is attached as *Exhibit DD*. This same exhibit also shows the ultimate runoff pattern with runoff areas and flows computed.

Drainage will be by way of a new underground pipe system that will connect to an existing drain inlet behind the existing lots fronting Kahaone Place. The runoff from the site will be conveyed in this new system to the existing drain system and eventually to the ocean. Further information and related computations pertaining to the drainage and erosion control for the proposed subdivision is contained in the Drainage and Erosion Control Reports, attached as *Exhibits EE & GG*, respectively.

Water service for 12 of the 16 new lots will be by way of a watermain to be installed in the new road. The new water system will include a fire hydrant to provide fire protection for the new lots. The water service for the other 4 lots will be off of the existing main located in Waialua Beach Road. Since there are already 13 existing houses on the site and each has its own water meter, only 3 new water meters will be needed. The 13 existing meters will be relocated and reused to serve the new lots.

Sewer service will be a septic tank and seepage pit for each of the 16 lots. The septic tank and seepage pit layout, along with the computations for the system for each of the lots is shown on *Exhibit HH*, attached. A print of the layout has been reviewed by the State Health Department and they have already approved its concept. The Health Department will review each of the lots again when the building permits for the individual houses are processed. The soil percolation test results, upon which the computations are based, is attached as *Exhibit II*.

Electric and telephone services for the new lots will be furnished by Hawaiian Electric Company and Hawaiian Telephone Company, respectively. These systems will be off of the existing overhead systems located in Waialua Beach Road. The new electric and telephone services will be taken underground at the source of service and remain underground for the new subdivision with the exception of the 4 lots fronting directly onto Waialua Beach Road. These lots will have their electrical and telephone services overhead since they will be connecting directly to the existing overhead services in Waialua Beach Road. A complete overhead system for the subdivision is presently being considered. While the present rules may require that the electrical and telephone systems be underground for new subdivisions, there exists a possibility that, because the surrounding neighborhoods all have overhead systems, a variance may be possible allowing the new systems to remain overhead.

- C. **ECONOMIC AND SOCIAL CHARACTERISTICS:** The proposed subdivision is anticipated to cost about \$550,000, more or less, based on an efficiency factor of 70% and a unit cost of about \$5.25 per square foot for the improvements.

Infrastructure work can possibly commence sometime late this year or early next year pending approvals and weather conditions.

- D. **ENVIRONMENTAL CHARACTERISTICS:** The soils on the site, erosion hazards, and erosion control measures for the proposed subdivision are described in *Exhibit GG* (Erosion Control Report).

The site's topography is relatively flat with no severe slopes. It is depressed relative to the adjacent roadways on both sides and therefore, will need some filling. The site is more or less, triangular in shape with a perpetual roadway easement bounding it along the east boundaries.

The project's surface runoff, drainage, etc. based on before and after conditions are analyzed in *Exhibit EE* (Drainage Report). The site is located in the AE and VE zones of the Special Flood Hazard Areas as designated on Panel 20 of the Flood Insurance Rate Map for the City and County of Honolulu (Panel Number 150001- 0020 B) dated September 4, 1987. The applicable portion of Panel 20 is shown as *Exhibit FF*. The AE zones for the parcel are located closer towards Waialua Beach Road and have base flood elevations ranging from 8 to 10 feet. The VE zones, located further to the north on the site and closer towards Kiapoko Street have base flood elevations ranging from 10 to 12 feet. The finish floor elevations for the new houses will have to be higher than the base flood elevations noted for the respective zones. An enlarged drawing showing the base flood elevation lines as it applies to the site is shown as *Exhibit FI*.

III. AFFECTED ENVIRONMENT

- A. The existing site already has 13 wood frame dwellings that house families of various sizes. Unimproved dirt roads and driveways presently provide the accesses to these houses. Most of these houses are old and in various stages of disrepair. The existing houses will eventually be demolished and removed upon commencement of site work construction for the proposed subdivision.

The site, being triangular in shape, is surrounded on two sides by roadways. Across the roads are existing residential lots that were created many years ago. These lots are accessed by improved roadways and have overhead electric and telephone facilities as well as underground drain and water systems. As for sewers, most of these homes are still using cesspools that were installed at the time the houses were built. A perpetual roadway easement with an unimproved dirt road borders the third side of the site and an existing sugar cane field is located across this roadway easement.

- B. The site is within walking distance to an existing beach. There are no parks located near to the site.

The site is already occupied by the 13 old houses, and the surrounding areas are already built up and have residential homes that have been there for many years. As a result, most of the native flora in the area has since been destroyed. Vegetation on the site consists of Opiuma, Plumeria, Banyan, Rubber, Monkeypod, Lime, Northern Pine, Mango, Kiawe, Palm, Coconut and some Ironwood trees as well as Oleander, Panax, and Hibiscus hedges and other miscellaneous scrub growth. The flora is almost entirely introduced with the only native species being the coconut trees. No rare or endangered plant species were noticed at the site.

Terrestrial fauna known to exist on the site and in the adjacent cane field are the mongoose, rats, and field mice, all introduced species. Introduced birds are the Spotted Dove, Cardinal, Sparrows, and Mynah. No rare or endangered fauna species were found at the site.

- C. No historic, cultural, and/or archaeological resources were noted that applied to the site.
- D. There are no coastal views from any viewpoint on the site because there exists a major subdivision between the site and the ocean which blocks any views that may exist.
- E. The quality of the receiving waters offshore is AA (near to Kaiaka Bay). This factor is considered in the Erosion Control calculations for the project. See *Exhibit GG*, attached. The effect of the runoff from this project on the receiving waters is negligible as suggested by the severity rating of 267 versus the 50,000 index.

The subdivision is also located below the UIC line and in the "pass" zone which allows the use of individual wastewater systems for each of the lots. This location and the use of individual wastewater systems has been discussed with the State Department of Health and confirmed by them on May 25, 1990.

IV. PROJECT IMPACTS

- A. The short term, or construction related impacts will be temporary and localized. The long term impact is the use of the parcel for a subdivision will close the options for future use for this land. However, the site is already being occupied by thirteen old run-down wood frame dwellings and the subdivision will upgrade the infrastructure on the site as well as provide for sixteen new homes. Considering the shortage of housing on Oahu, these tangible benefits are deemed to be a betterment for the surrounding area and therefore outweigh the short term impacts and closure of the land to future uses.

V. MITIGATION MEASURES

- A. The following describe mitigation measures pertaining to impacts associated with the construction of the project. No long term impacts are anticipated and, therefore, no mitigation measures for long term impacts are discussed.
 - 1. Noise - An increase in noise level will be experienced during construction. Sources of noise will be equipment needed for construction activities, including heavy vehicles for excavation and removal of spoil material, import construction materials, and other power equipment.

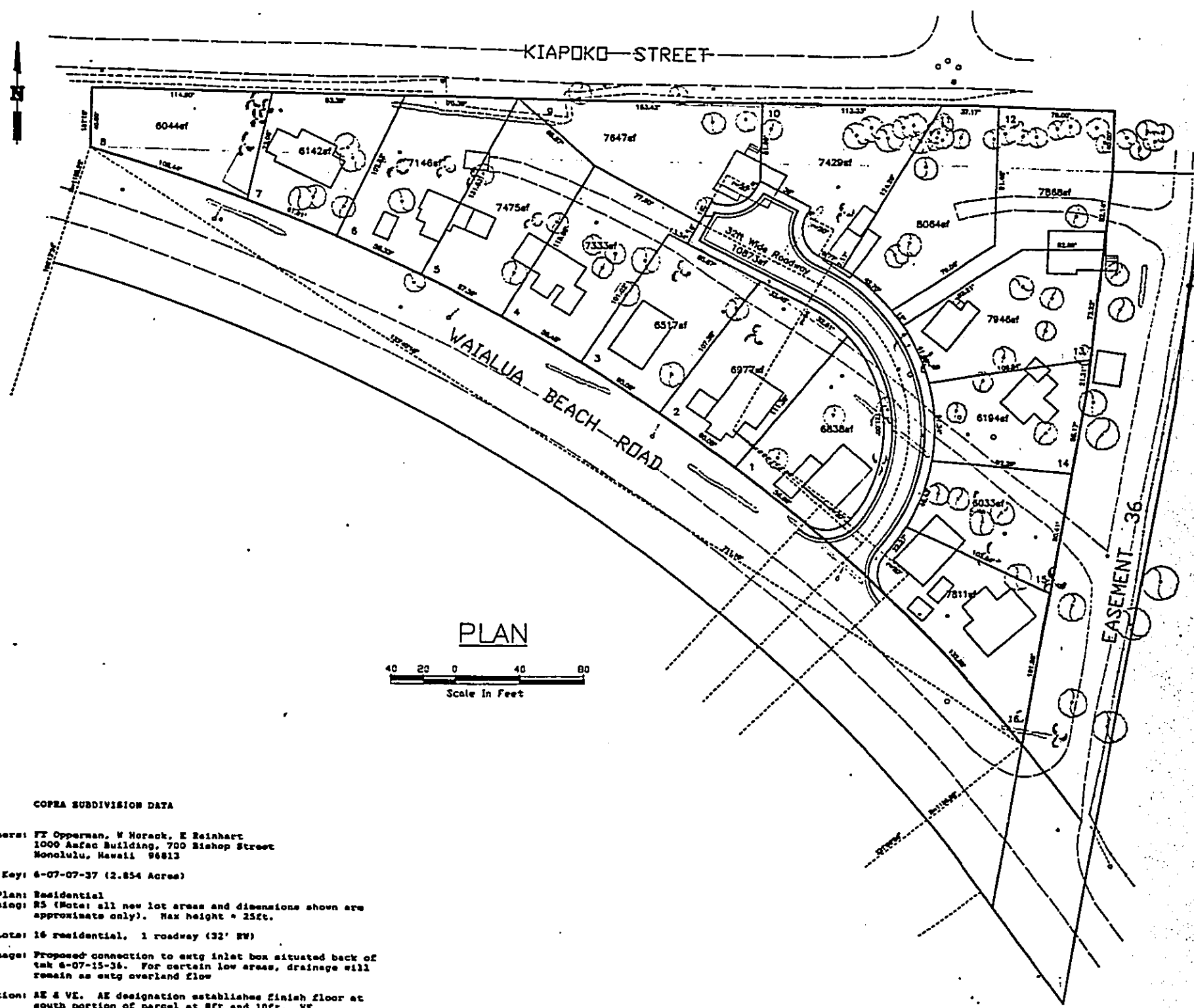
To mitigate any adverse impacts, the contractor shall be responsible for properly maintaining all construction equipment to minimize noise during construction operations. If noise levels are expected to exceed allowable noise levels specified under Title 11, Administrative Rules,

Department of Health, Chapter 43, the contractor will be required to obtain a noise permit. Any heavy vehicle required for construction work must comply with Title 11, Administrative Rules, Department of Health, Chapter 42, Vehicular Noise Control for Hawaii.

2. **Air Quality** - Ambient air quality is expected to be temporarily impacted due to dust generated during construction activities. In keeping with the State Health Department regulations, and County ordinances, the contractor will be required to take measures to minimize airborne pollutants. These measures are defined in the approved erosion control plans. Use of such measures will reduce the potential for adverse air quality impacts during site work.

Emissions from construction equipment could also affect ambient air quality. However, with the proper equipment and maintenance by the contractor, the adverse impacts of emissions from equipment can be minimized.

3. **Water Quality** - Construction of the proposed subdivision should not adversely affect the water quality of the area. Appropriate erosion control measures could be implemented during site work, in accordance with State and County erosion control standards, to minimize adverse water quality impacts.
4. **Erosion Control** - Sedimentation and erosion control potential will increase during the short term grading and construction phases of the work. The measures in the approved Erosion Control Report shall be implemented as needed to mitigate adverse impacts caused by sedimentation and/or erosion.
5. **Traffic** - During construction, trucks, heavy equipment, and other construction related vehicles will use existing roads to haul away and import material. Local traffic along construction accessways may occasionally encounter minor delays. Such delays will, however, be of short duration. The contractor shall be responsible for providing the necessary traffic controls and precautions to maintain traffic safety on roadways bordering and near to the construction site.
6. **Flora and Fauna** - There are no known rare or endangered species of flora or fauna in or around the site.
7. **Economic** - The short term impact from the construction include the provision of jobs to local construction personnel. Local material suppliers and retail businesses may also benefit through a multiplier effect from the increased construction activity.
8. **Public Health and Safety** - Necessary measures to assure public health and safety will be provided through all phases of construction by the contractor. During non working hours, the construction areas will be secured by adequate safety signs and other safety devices as required by the State and City regulations.



PLAN



COPRA SUBDIVISION DATA

Owners: FT Opperman, W Horack, E Reinhart
 1000 Amfac Building, 700 Bishop Street
 Honolulu, Hawaii 96813

Tax Map Key: 6-07-07-37 (2.854 Acres)

Development Plan: Residential
Zoning: R5 (Note: all new lot areas and dimensions shown are approximate only). Max height = 25ft.

Proposed # of Lots: 16 residential, 1 roadway (32' RW)

Drainage: Proposed connection to outg inlet box situated back of lot 6-07-15-36. For certain low areas, drainage will remain as outg overland flow

Flood Designation: AE & VE. AE designation establishes finish floor at south portion of parcel at 8ft and 10ft. VE designation sets finish floor elevations for remainder of parcel at 10ft and 12ft minimum. Ref: Panel 20 of 135 (Community-Panel No. 130001-0020-B) revised 4Sep87

Sewers: No county sewer system available. IWS will be used for each of the lots.

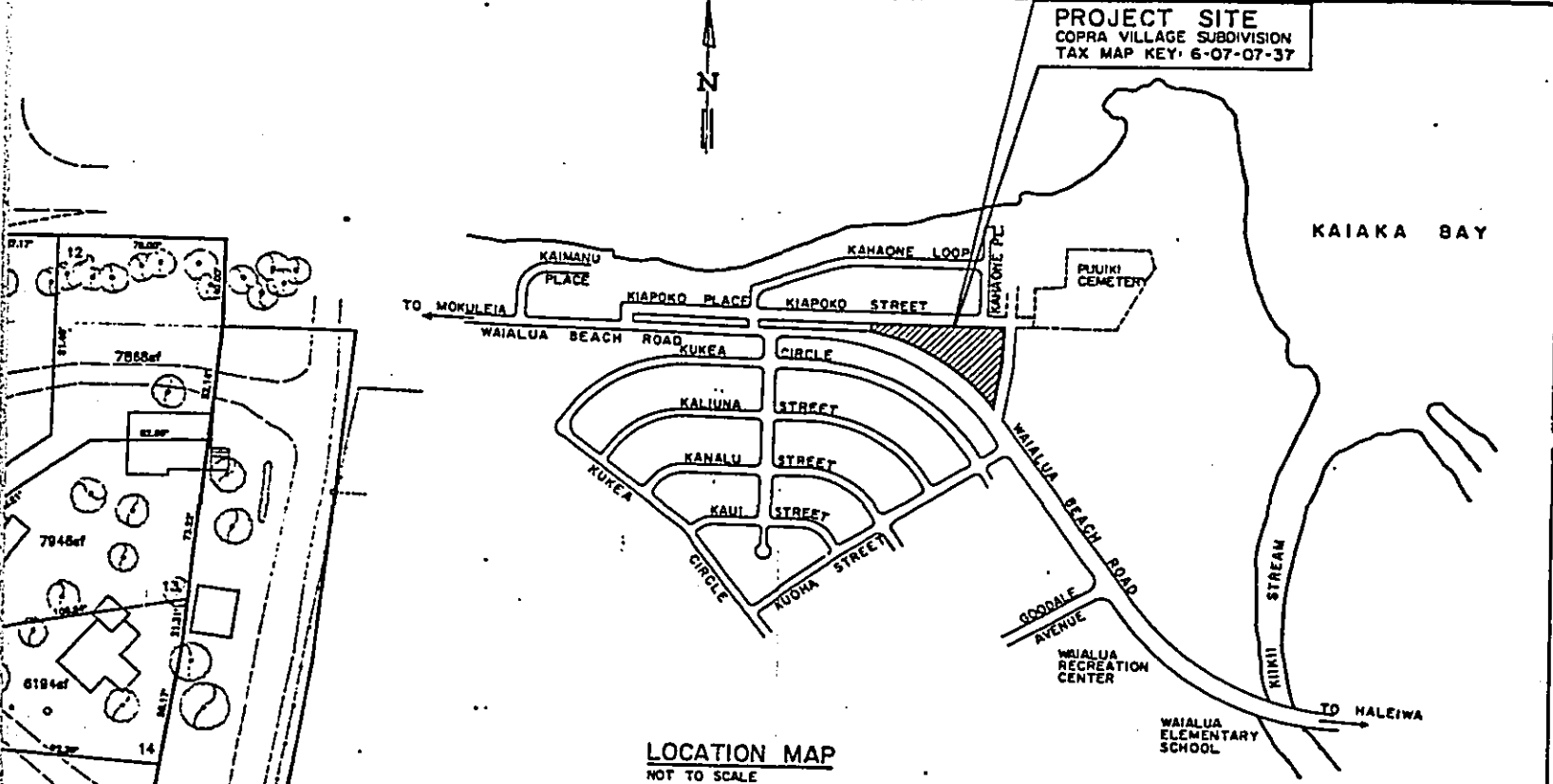
Water: Connection to existing county water supply located in Waialua Beach Road (12" watermain). There are already 13 existing water meters. Application for three more water meters will be necessary.

SMA: Project subject to SMA. SMA Application to be filed concurrently with application for subdivision.

Parts Dedication: To be based on 350sf x 16lots x FNV of land(1/2).

Road Dedication: New 32ft wide roadway will be dedicated to the City & County of Honolulu.

PROJECT SITE
 COPRA VILLAGE SUBDIVISION
 TAX MAP KEY: 6-07-07-37



LOCATION MAP
 NOT TO SCALE

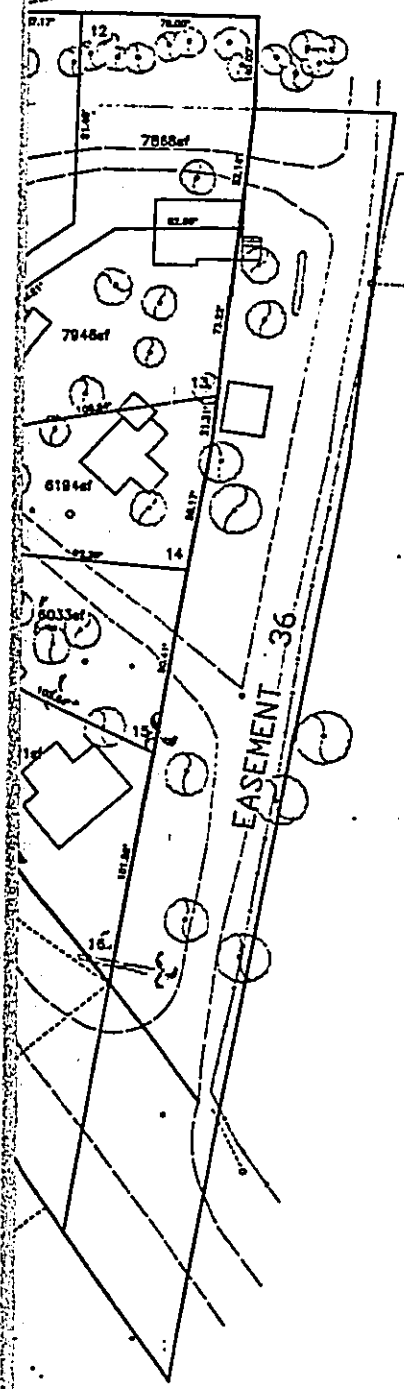


EXHIBIT AA
Preliminary Site Plan

REVISION	DATE	DESCRIPTION	MADE BY	APPROVED
STANLEY YIM & ASSOCIATES, INC. CONSULTING ENGINEERS 770 KAPIOLANI BLVD. • SUITE 703 • HONOLULU • HAWAII • 96813				
COPRA VILLAGE SUBDIVISION TMK: 6-07-07-37 Kamananui, Waialua, Oahu, Hawaii				

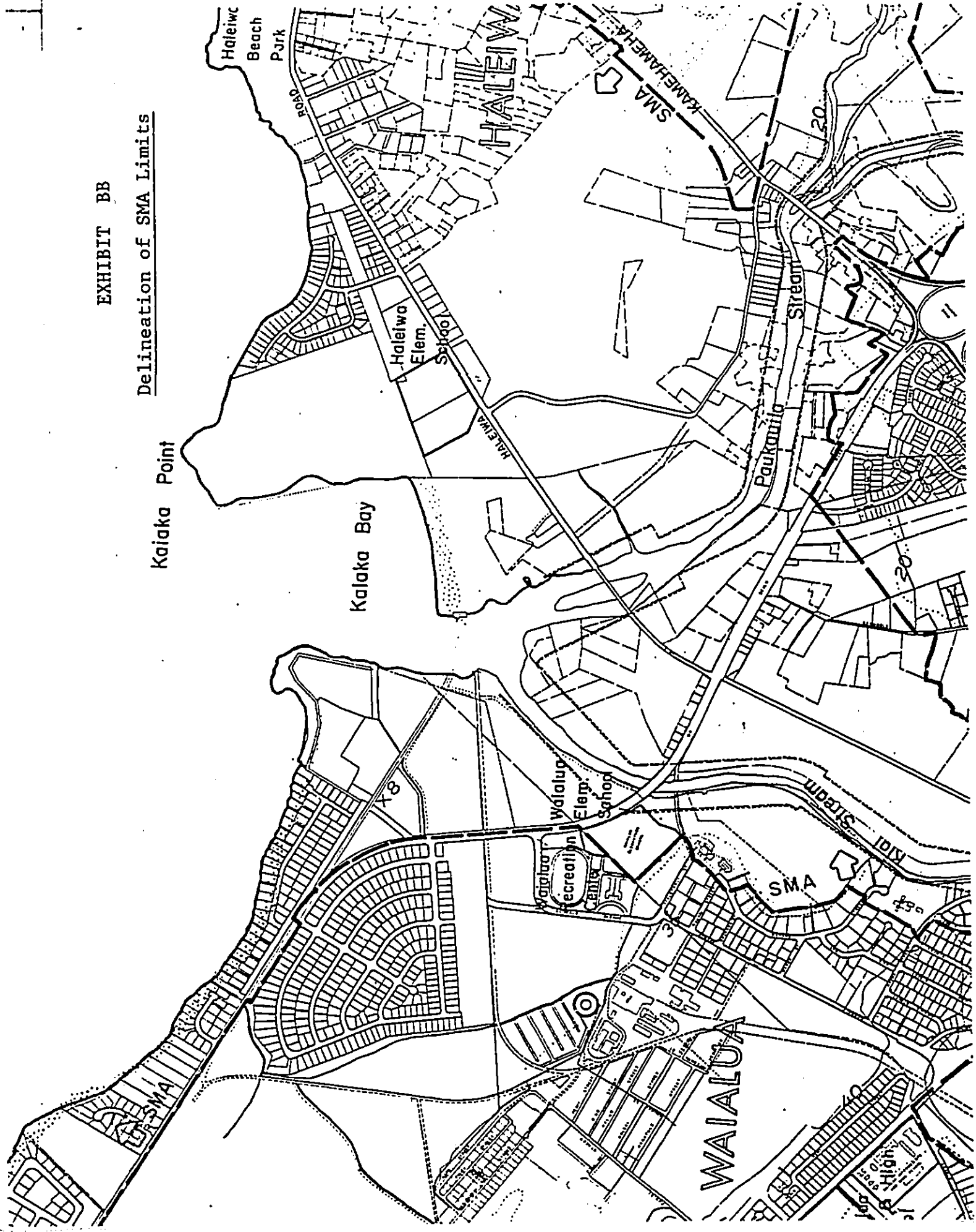
APPROVED BY: _____

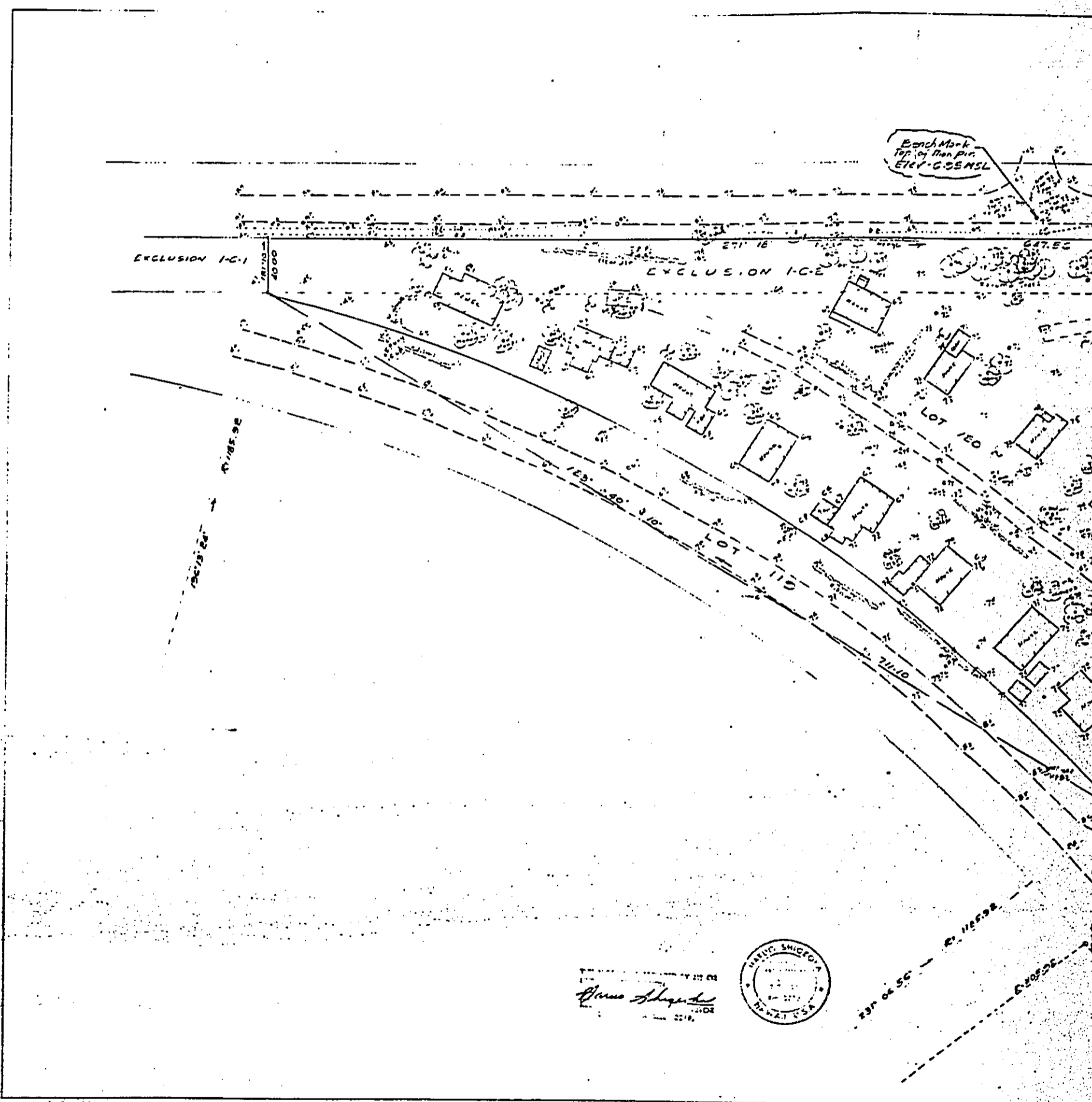
EXHIBIT BB

Delineation of SMA Limits

Kaiaka Point

Kalaka Bay



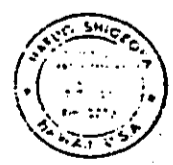


Bench Mark
Top of Iron pin
ELEV. 6.5551

EXCLUSION 1-C-1

EXCLUSION 1-C-2

Surveyed by
James H. ...
2018



LEON L. HENRI
JOB NO 1644 PG 650

TONY L. EHIGEOKA & ASSOCIATES INC
Land Surveyors

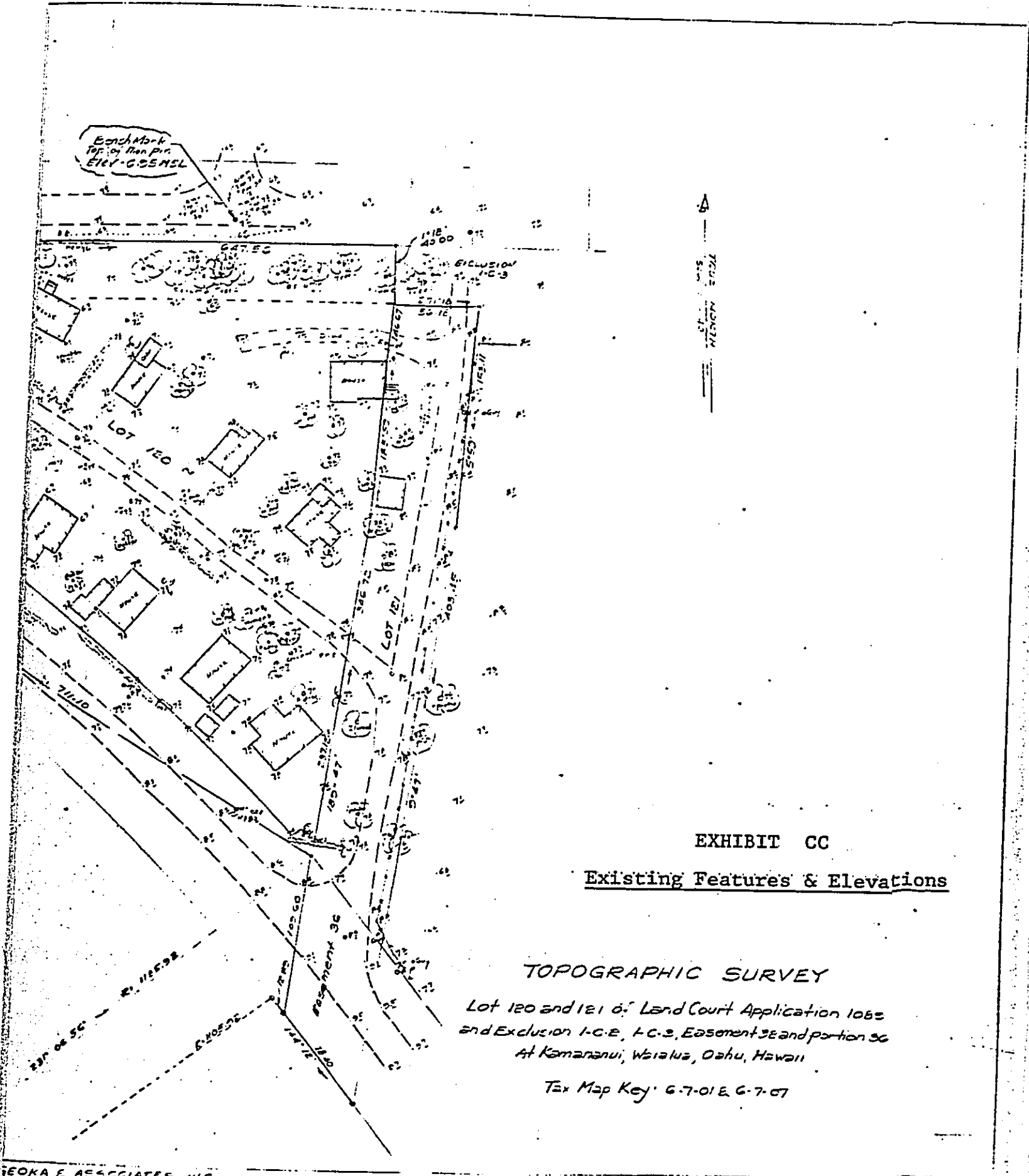


EXHIBIT CC

Existing Features & Elevations

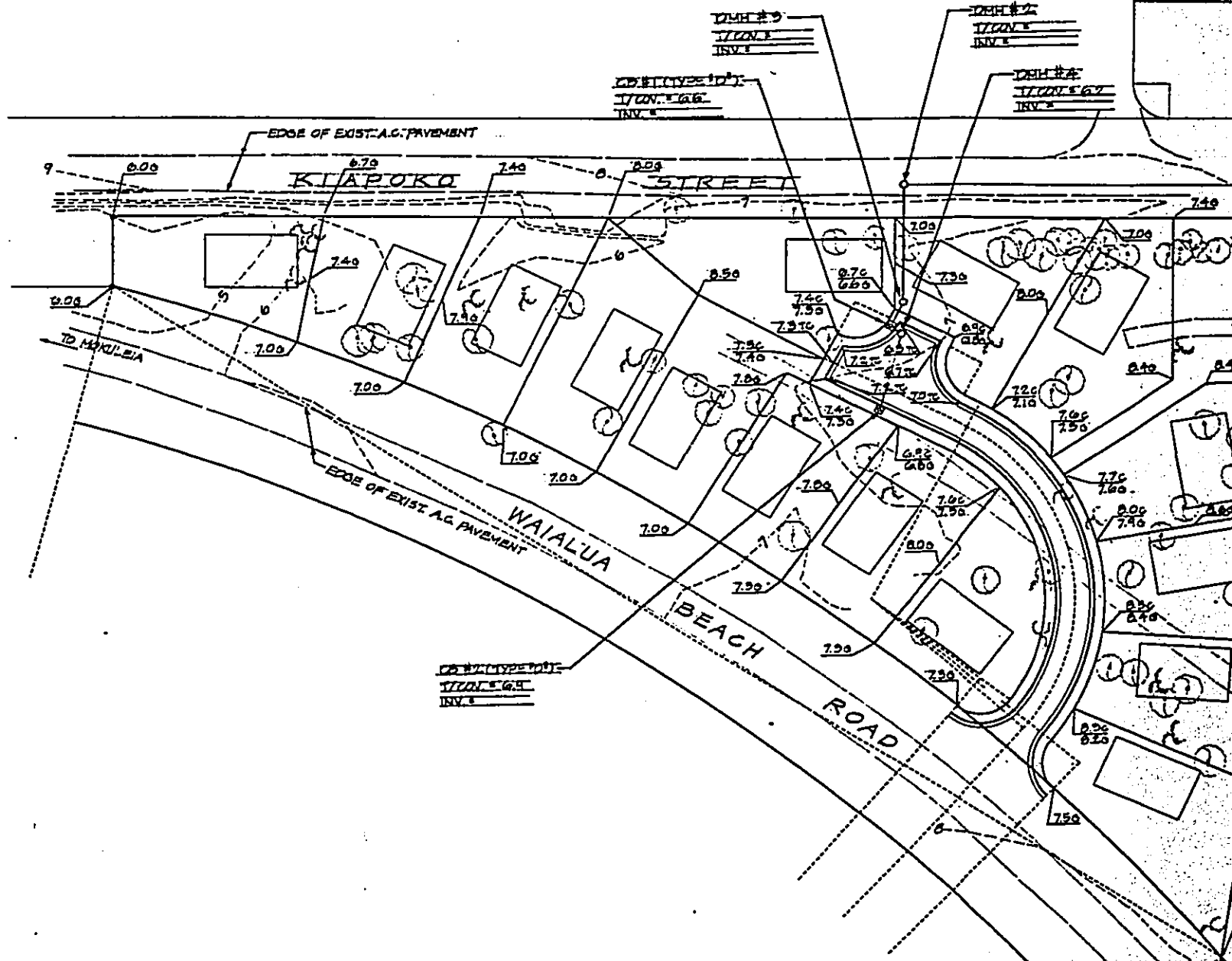
TOPOGRAPHIC SURVEY

Lot 120 and 121 of Land Court Application 1082
 and Exclusion 1-C-2, 1-C-3, Easement 3E and portion 3G
 At Kamaanui, Waiakua, Oahu, Hawaii

Tex Map Key: G-7-01 & G-7-07

TEOKA & ASSOCIATES INC
 Land Surveyors

1270 QUEEN Emma St
 Honolulu, Hawaii



GRADING PLAN



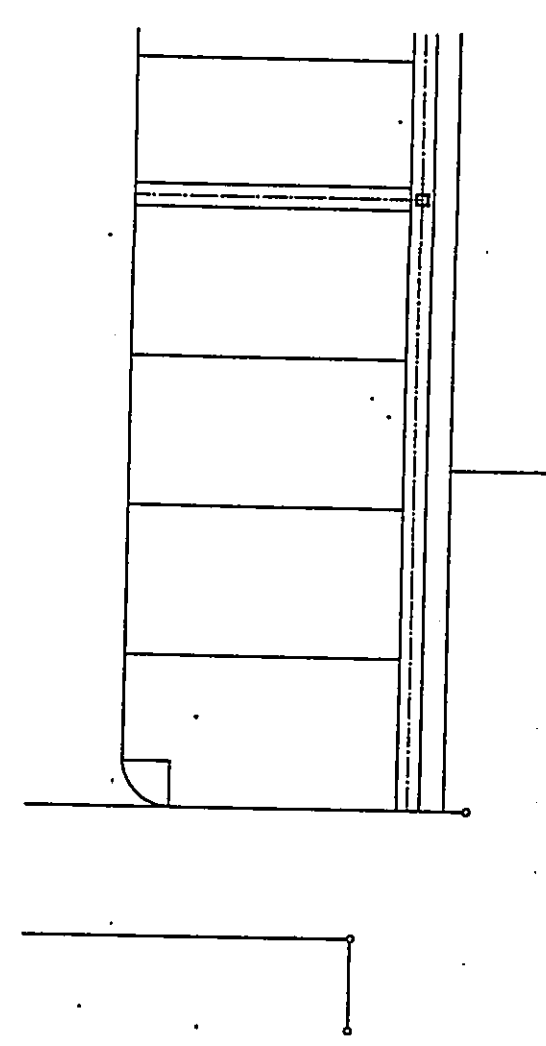
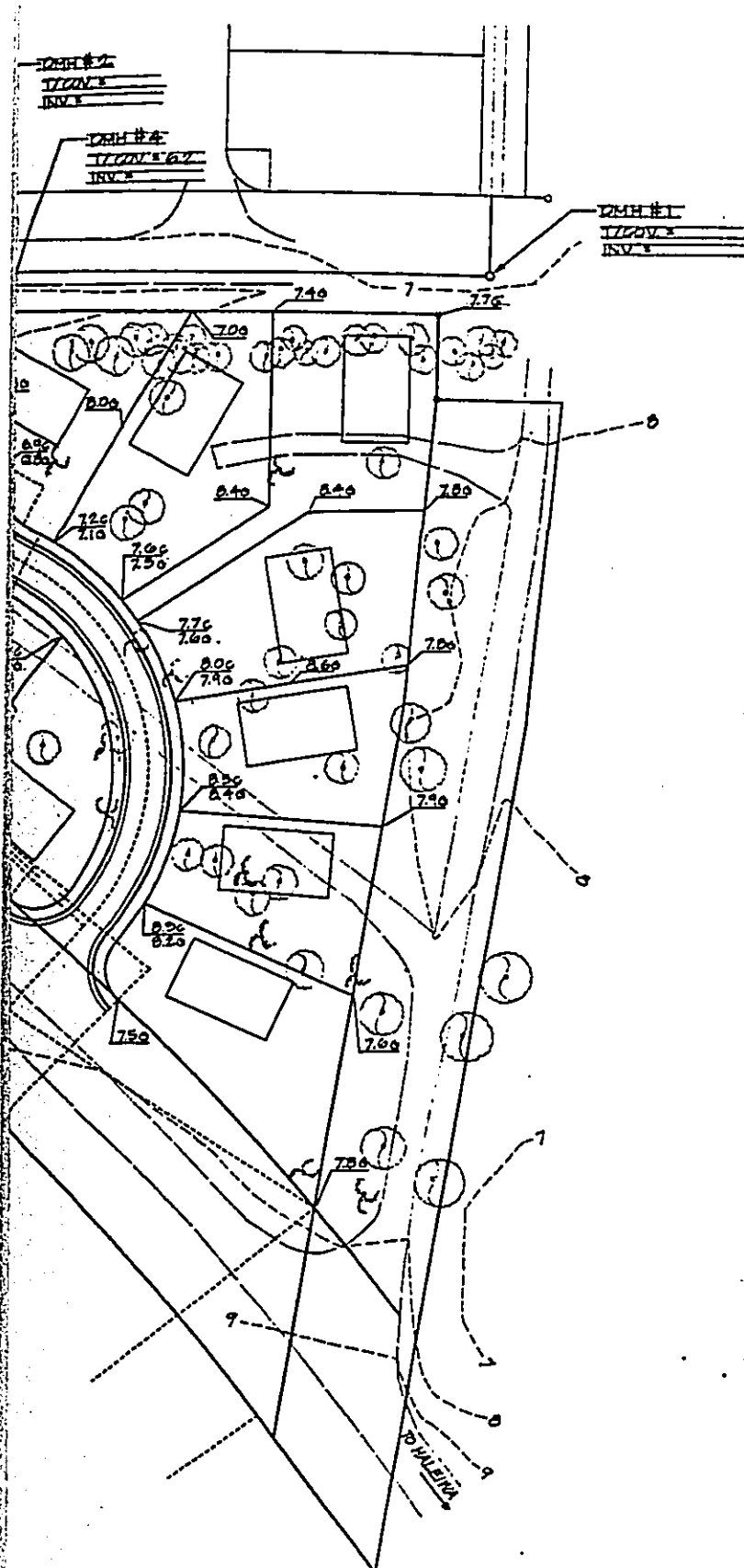


EXHIBIT DD

APPROVED FOR GRADING ONLY:

DIRECTOR AND CHIEF ENGINEER, D.P.E. _____ DATE _____

REVISION	DATE	DESCRIPTION	MADE BY	APPROVED
STANLEY YIM & ASSOCIATES, INC. CONSULTING ENGINEERS 770 KAPIOLANI BLVD. • SUITE 703 • HONOLULU • HAWAII • 96813				
COPRA VILLAGE SUBDIVISION TMK: 6-07-07-37 Kamananui, Waialua, Oahu, Hawaii				

DRAINAGE REPORT

for

COPRA VILLAGE SUBDIVISION

Kamananui, Waialua, Oahu, Hawaii

TMK: 6-7-7:37

EXHIBIT EE

PROJECT DESCRIPTION

The proposed project involves subdividing the existing parcel into 16 residential lots and constructing a 32 ft. wide access road into the development. The project site consisting of approximately 2.85 acres is located between the Kiapoko Street and Waialua Beach Road fork in Waialua on the island of Oahu.

EXISTING CONDITIONS

There are currently 13 houses on the site. The site is generally covered with grass, trees, shrubs and bushes. A small dirt road provides access to the existing houses. Currently, drainage of the project site is entirely by surface runoff. Based on information provided by the topographic survey map prepared for this project, it appears that runoff ponds at various low spots within the site. During large storms, the standing water will over top these low spots and surface flow towards Waialua Beach Road and Kiapoko Street.

HYDROLOGY-EXISTING CONDITIONS (See Exhibit "A")								
Runoff Area		Area (Acres)	Tc (Min)	CF	i	C	Q (cfs)	Discharge To
Tm = 10 years I = 2.0 inches/hour Q = CiA								
1	1.67	5	2.8	5.6	0.65	6.08	Kiapoko Street Waialua Beach Road	
2	1.18	5	2.8	5.6	0.75	4.96		
Runoff Area		Area (Acres)	Tc (Min)	CF	i	C	Q (cfs)	Discharge To
Tm = 50 years I = 3.0 inches/hour Q = CiA								
1	1.67	5	2.8	8.4	0.65	9.12	Kiapoko Street Waialua Beach Road	
2	1.18	5	2.8	8.4	0.75	7.43		

PROPOSED DRAINAGE SYSTEM AND RUNOFF AREAS

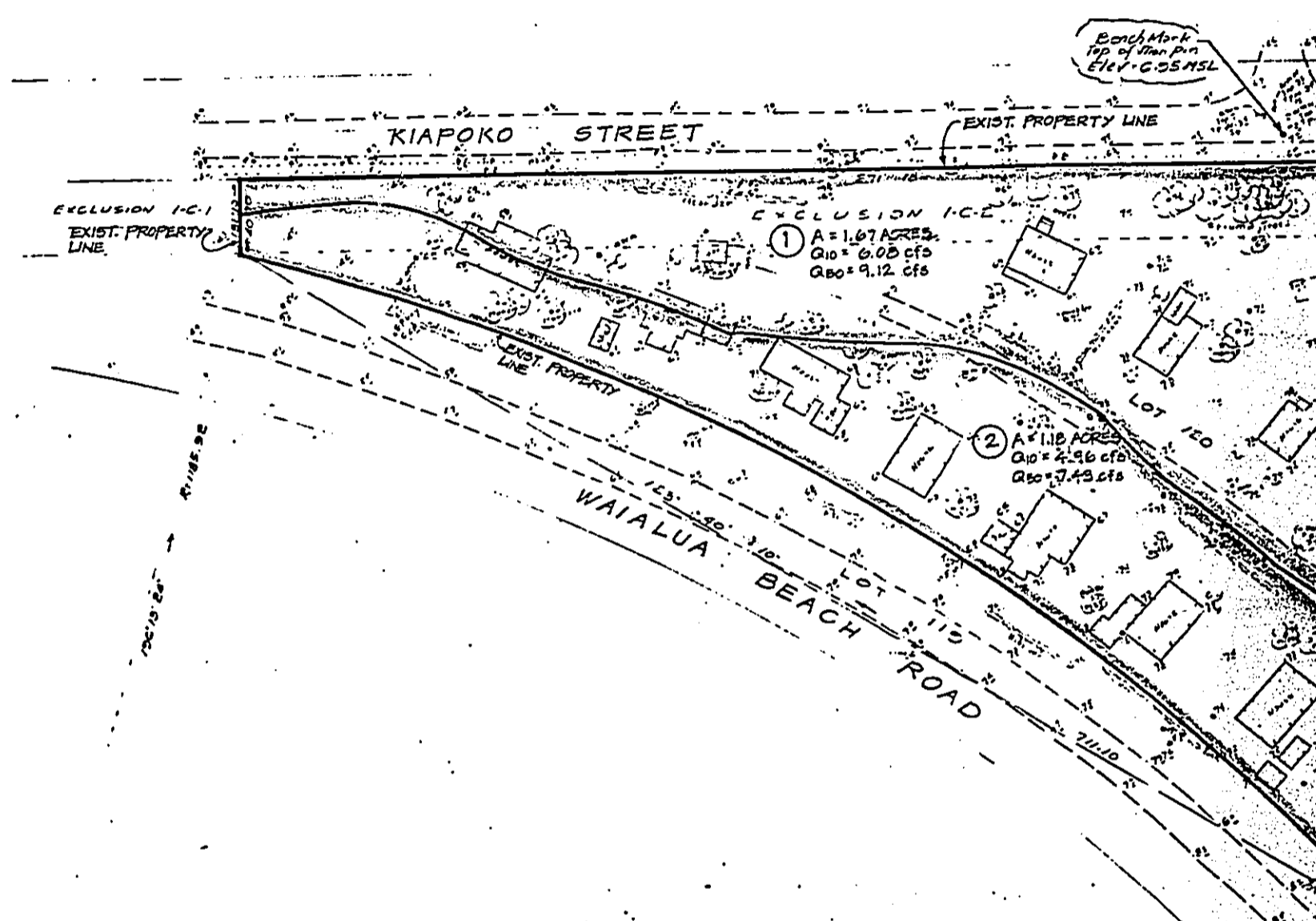
The proposed development will subdivide the existing parcel into 16 residential lots. A 32 ft. wide access road will also be installed. The existing houses on the site will be demolished and new houses will be constructed. Grading of the project site will primarily consist of leveling of the project site and filling low areas to accommodate the new development.

Drainage of the new development will be accomplished by a combination of new underground drain lines and overland flow. The new underground drainage system will consist of a drain line connecting to the City's existing drainage system within an existing residential development North of the site. Catch basins will be installed within the new road to collect storm runoff from a portion of the new development. Runoff from the remainder of the project site will be discharged via surface flow towards Waialua Beach Road and Kiapoko Street as it currently does.

HYDROLOGY-PROPOSED NEW DEVELOPMENT (See Exhibit "B")							
Tm = 10 years		I = 2.0 inches/hour		Q = CiA			
Runoff Area	Area (Acres)	Tc (Min)	CF	i	C	Q (cfs)	Discharge To
1	0.202	5	2.8	5.6	0.70	0.79	Kiapoko Street
2	0.646	5	2.8	5.6	0.70	2.53	Kiapoko Street
3	1.202	5	2.8	5.6	0.70	4.71	Waialua Beach Road
4	0.506	5	2.8	5.6	0.75	2.12	CB #1
5	0.298	5	2.8	5.6	0.75	1.25	CB #2
Tm = 50 years		I = 3.0 inches/hour		Q = CiA			
Runoff Area	Area (Acres)	Tc (Min)	CF	i	C	Q (cfs)	Discharge To
1	0.202	5	2.8	8.4	0.70	1.19	Kiapoko Street
2	0.646	5	2.8	8.4	0.70	3.80	Kiapoko Street
3	1.202	5	2.8	8.4	0.70	7.07	Waialua Beach Road
4	0.506	5	2.8	8.4	0.75	3.19	CB #1
5	0.298	5	2.8	8.4	0.75	1.88	CB #2

CONCLUSION

The additional runoff generated by the proposed new development will be taken care of by the new drainage system. Surface runoff discharged onto Kiapoko Street and Waialua Beach Road will actually be less than it is currently. The proposed development should not have a drastic negative impact on the existing drainage conditions in the area.



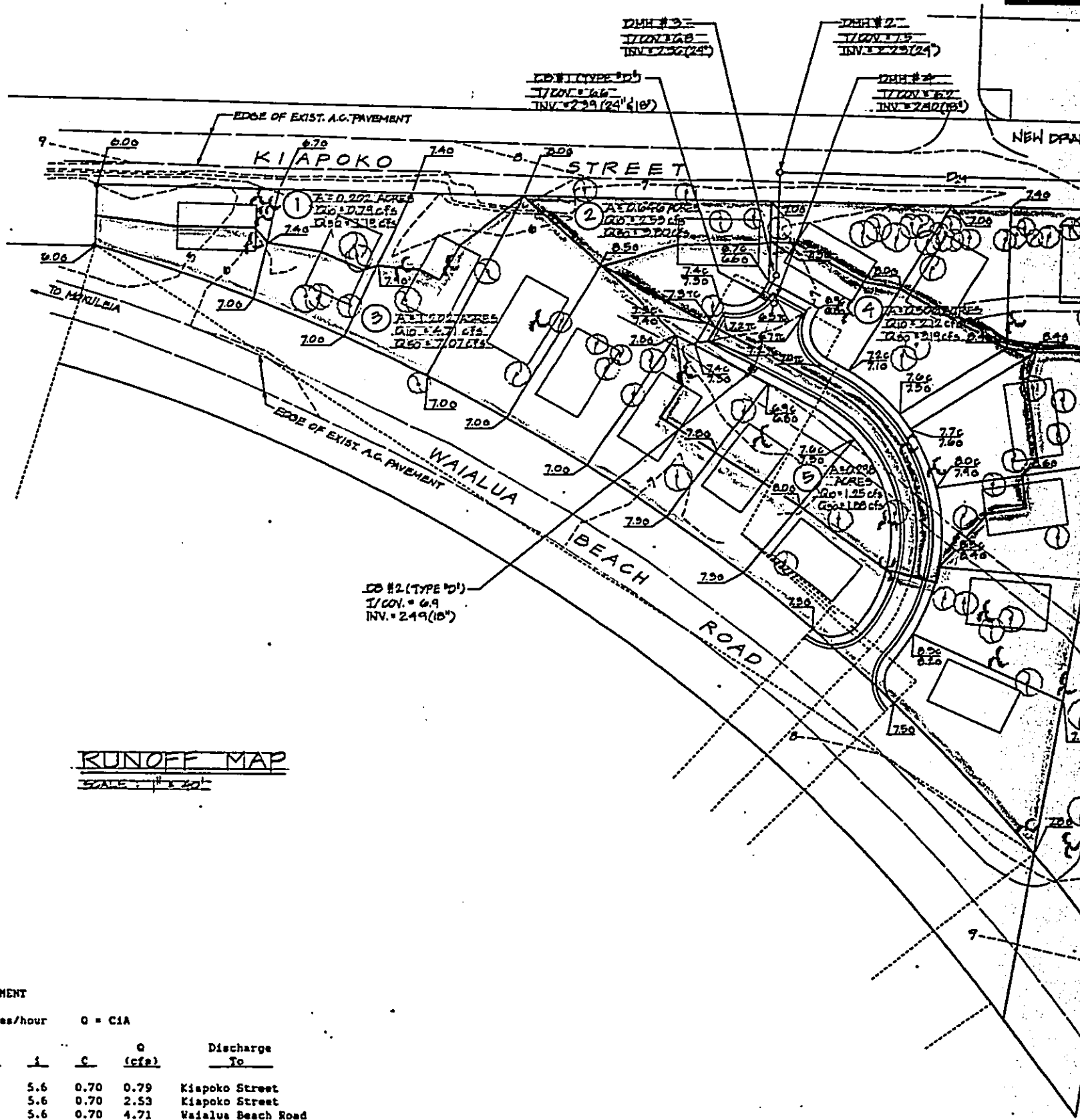
HYDROLOGY-EXISTING CONDITIONS

T_a = 10 years I = 2.0 inches/hour O = CIA

Runoff Area	Area (Acres)	T _c (Min)	C.F.	I	C	Q (cfs)	Discharge To
1	1.67	5	2.8	5.6	0.65	6.08	Kiapoko Street
2	1.18	5	2.8	5.6	0.75	4.96	Waialua Beach Road

T_a = 50 years I = 3.0 inches/hour O = CIA

Runoff Area	Area (Acres)	T _c (Min)	C.F.	I	C	Q (cfs)	Discharge To
1	1.67	5	2.8	8.4	0.65	9.12	Kiapoko Street
2	1.18	5	2.8	8.4	0.75	7.43	Waialua Beach Road



RUNOFF MAP
SCALE: 1" = 20'

HYDROLOGY-PROPOSED NEW DEVELOPMENT

Runoff Area			Tc (Min)			C.F.			i			C			Q (cfs)			Discharge To		
<p>Ta = 10 years I = 2.0 inches/hour O = CIA</p>																				
1	0.202	5	2.8	5.6	0.70	0.79	Kiapoko Street													
2	0.646	5	2.8	5.6	0.70	2.53	Kiapoko Street													
3	1.202	5	2.8	5.6	0.70	4.71	Waialua Beach Road													
4	0.506	5	2.8	5.6	0.75	2.12	CB #1													
5	0.298	5	2.8	5.6	0.75	1.25	CB #2													
<p>Ta = 50 years I = 3.0 inches/hour O = CIA</p>																				
1	0.202	5	2.8	8.4	0.70	1.19	Kiapoko Street													
2	0.646	5	2.8	8.4	0.70	3.80	Kiapoko Street													
3	1.202	5	2.8	8.4	0.70	7.07	Waialua Beach Road													
4	0.506	5	2.8	8.4	0.75	3.19	CB #1													
5	0.298	5	2.8	8.4	0.75	1.88	CB #2													

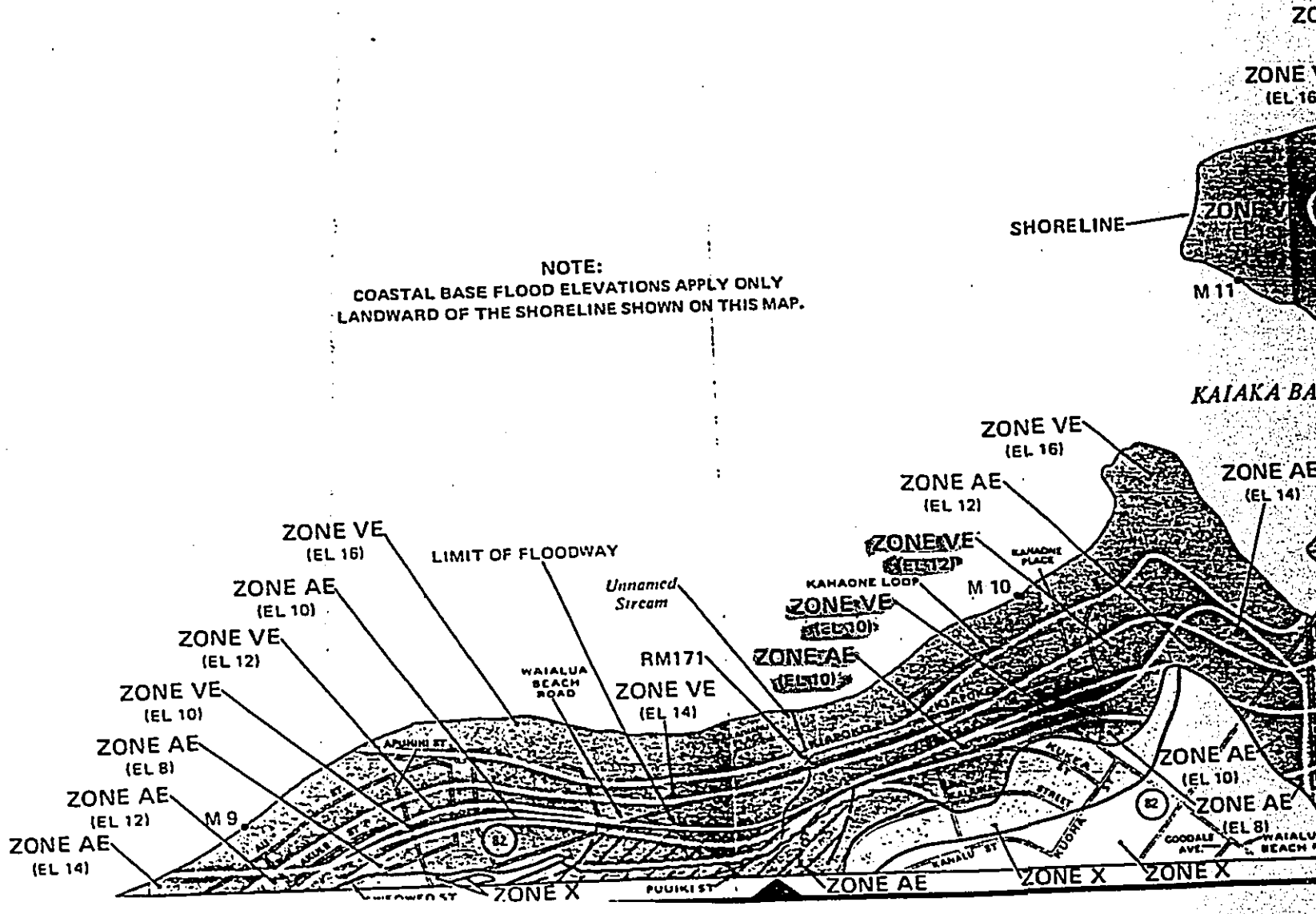
EXHIBIT FF
 Portion of
 FLOOD INSURANCE RATE MAP
 Panel Number 150001-0020 B

September 4, 1987

KEY TO NUMBERED STREETS

ALAPII STREET	8
AWAI LANE	6
FRESH AIR CAMP ROAD	9
HALEIWA ROAD	1
KAIKA PLACE	5
KEIKI PLACE	12
NALIMU ROAD	3
NADIWI LANE	2
NIUULA ROAD	4
PIKAI STREET	7
SMILEY PLACE	10
WANA PLACE	11

NOTE:
 COASTAL BASE FLOOD ELEVATIONS APPLY ONLY
 LANDWARD OF THE SHORELINE SHOWN ON THIS MAP.

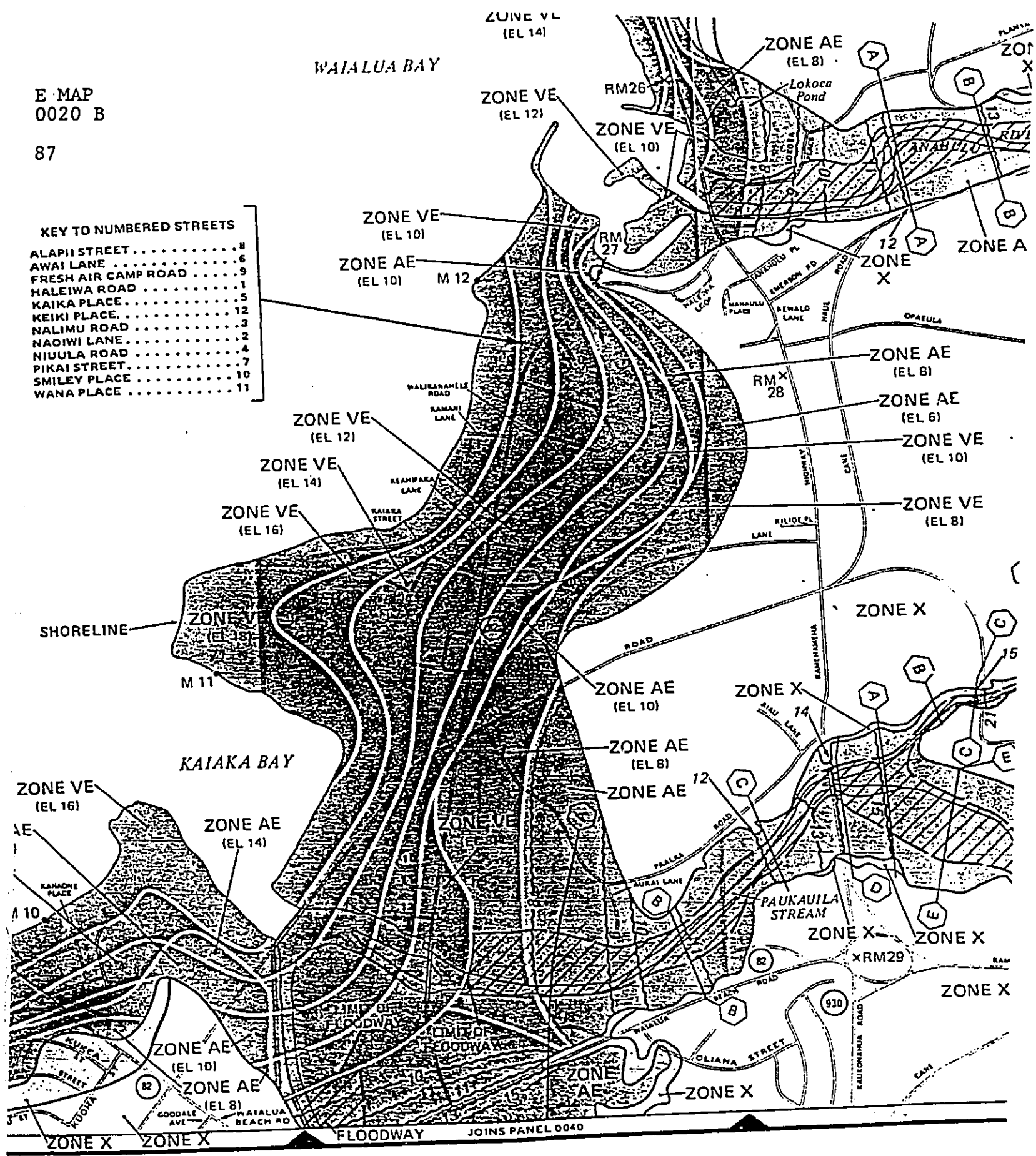


E MAP
0020 B

87

KEY TO NUMBERED STREETS

- ALAPII STREET 8
- AWAI LANE 6
- FRESH AIR CAMP ROAD 9
- HALEIWA ROAD 1
- KAIKA PLACE 5
- KEIKI PLACE 12
- NALIMU ROAD 3
- NAOIWI LANE 2
- NIUULA ROAD 4
- PIKAI STREET 7
- SMILEY PLACE 10
- WANA PLACE 11



FLOODWAY JOINS PANEL 0040

CORRECTION

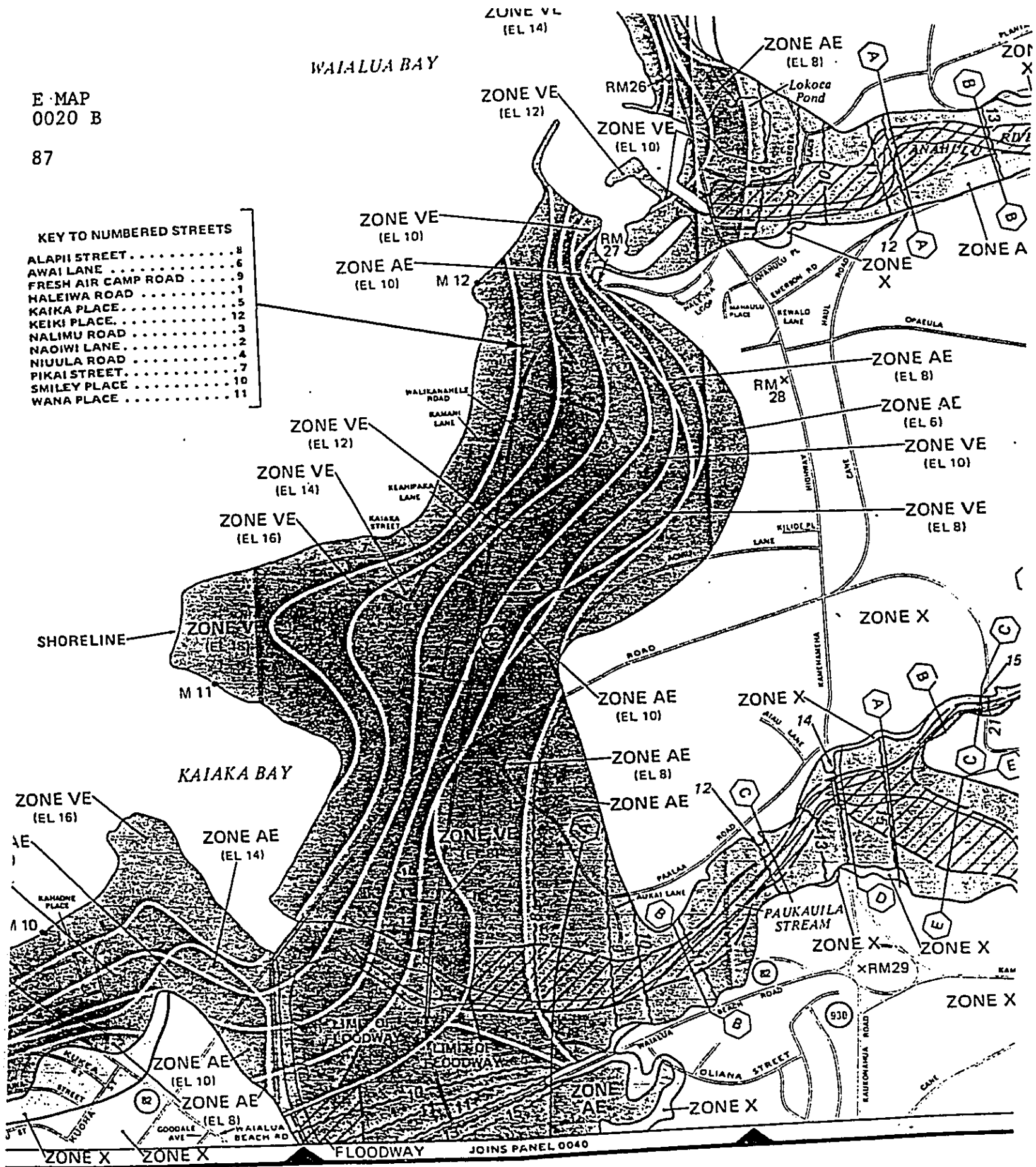
THE PRECEDING DOCUMENT(S) HAS
BEEN REPHOTOGRAPHED TO ASSURE
LEGIBILITY
SEE FRAME(S)
IMMEDIATELY FOLLOWING

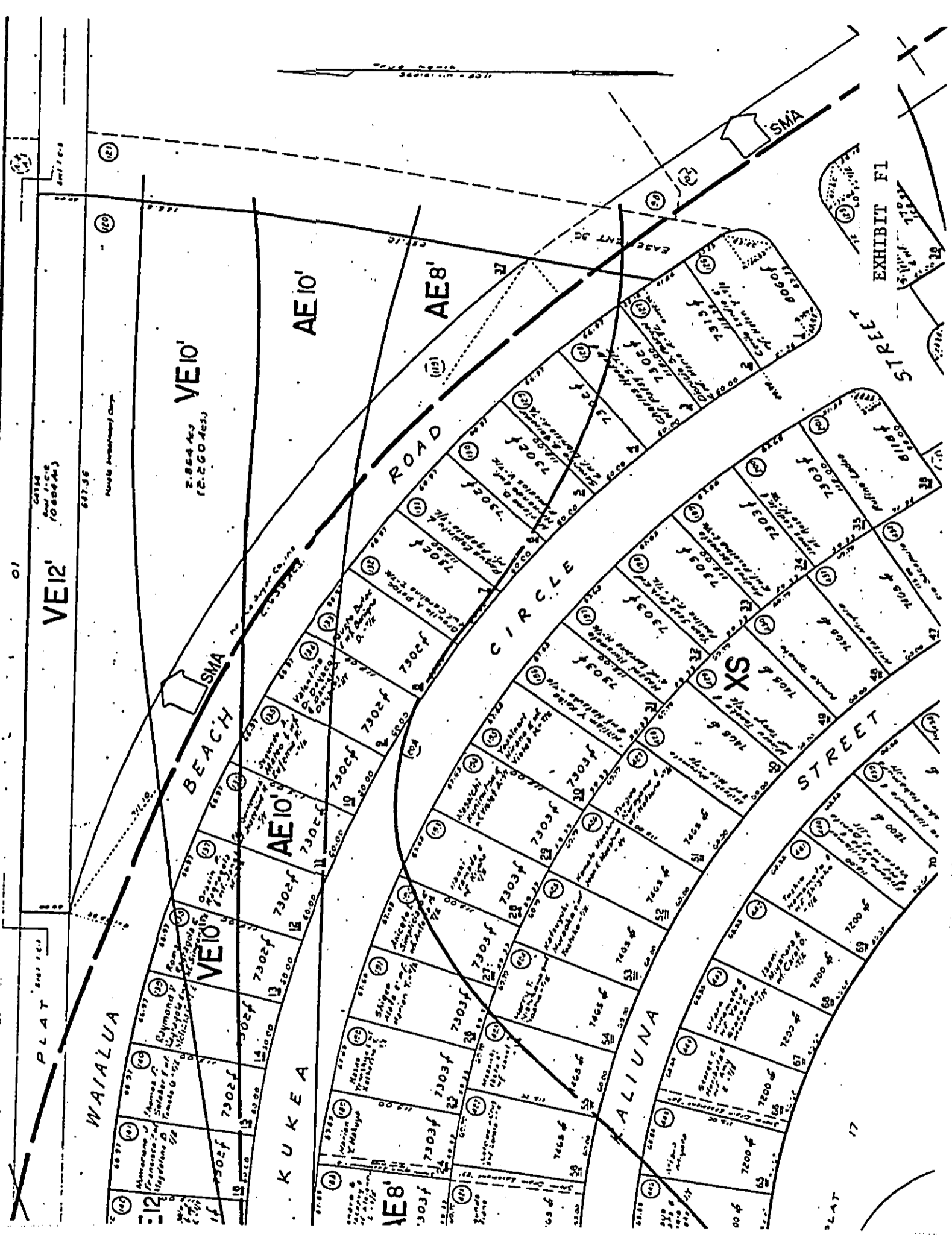
E MAP
0020 B

87

KEY TO NUMBERED STREETS

ALAPII STREET	8
AWAI LANE	6
FRESH AIR CAMP ROAD	9
HALEIWA ROAD	1
KAIKA PLACE	5
KEIKI PLACE	12
NALIMU ROAD	3
NAOIWI LANE	2
NIUULA ROAD	4
PIKAI STREET	7
SMILEY PLACE	10
WANA PLACE	11





VE12

VE10
2.864 Ac.
(8,260 Ac.)

AE10'

AE8'

ROAD

CIRCLE

SMA

EXHIBIT F1

STREET

STs

STREET

WAIALUA

KUKEA

ALILUNA

17

PLAT

EROSION CONTROL PLAN

June 1990

EXHIBIT GG

Project:

COPRA VILLAGE SUBDIVISION
Waialua, Oahu, Hawaii
TMK: 6-7-7:37

Developers:

Frank Opperman,
Ed Reinhart,
Michael Horack
700 Bishop Street, Suite 1000
Honolulu, Hawaii 96813

On-Site Soils

Two soil types occur on the project site. These include Jaucus sand (JaC) and Waialua silty clay (WkA).

Jaucus sands (JaC) occur on the Northern portion of the project site. The slope range of this soil is 0 to 15 percent, but in most areas the slope does not exceed 15 percent. In a representative profile the soil is single grain, pale brown to very pale brown, sandy, and more than 60 inches deep. In many areas the surface layer is dark brown resulting from accumulations of organic matter and alluvium. Permeability is rapid, and runoff is very slow to slow. The hazard of water erosion is slight, but wind erosion hazard is high where vegetation is removed.

Waialua silty clays (WkA) occur on the Southern portion of the site. The slope range of this soil is 0 to 3 percent. In a representative profile the surface layer is dark reddish-brown silty clay about 12 inches thick. The subsoil, about 26 inches thick, is dark reddish-brown and reddish-brown silty clay that has a subangular blocky structure. The substratum is dark reddish-brown, mottled silty clay. Permeability is moderate, runoff is slow, and the erosion hazard is slight.

Erosion Hazard

Except for an existing slope bank along its Northern boundary, the project site is relatively flat with slopes ranging from 1 to 5 percent. Site grading for the project will generally consist of levelling of the existing ground and filling low-lying portions to accommodate the proposed development.

A soil erodibility factor "K" of 0.15 (JaC, K=0.10 and WkA, K=0.20) is used in the following computations. Since the project site is relatively flat, the erosion hazard should be slight.

Calculation of Severity Rating Number "H" = (2FT+3D)AE

Where: F=4 (Waiialua Beach Road and Kiapoko Street bound the project site)
T=0.5 years (based on 6 months construction from December 1, 1990 to May 31, 1991)
D=4 (based on Class "AA" waters within Kaiaka Bay)
A=2.85 acres (total lot area)
E=RK(LS)(CP) where:
R=275(1-0.85)+275(0.52)=184.25 (based on construction from December 1, 1990 to May 31, 1991)
K=0.15 (Jaucus sand (JaC, K=0.10) and Waiialua silty clay (WkA, K=0.20))
LS=0.40
Average site slope=2 percent
Max uncontrolled length=750(+/-) feet
C=0.75 (grading in winter, 1/2 the area seeded)
P=0.70 (area to be graded less than 15 acres)
CP=0.75(0.70)=0.53
E=184.25(0.15)(0.40)(0.53)=5.86
H=(2(4)(0.5)+3(4))(2.85)(5.86)=267

The severity rating number "H" computed for this project is 267, which is considerably below the 50,000 index. Based on this low rating number, the following erosion control measures should be adequate and observed.

Permanent erosion control measures:

- a. Install permanent drainage system to include swales and underground drain lines.
- b. Plant permanent ground cover at all areas not covered by buildings, pavements and walks as soon as the finish grades are attained.

Temporary erosion control measures:

- a. Plant temporary ground cover as needed immediately after the clearing, grubbing and grading work for all exposed areas that are not used for storage or parking. A temporary irrigation system need not be installed provided the Contractor maintains and cares for the growth of the temporary plantings.
- b. Install temporary drainage system to include temporary drainage swales and berms as needed.

The following is the anticipated construction schedule:

- | | | |
|--------------------|----|---------------------------------------|
| Dec 1990 | 1. | Clear and grub the site. |
| | 2. | Begin site grading. |
| Jan 1991 | 1. | Begin utility installation. |
| | 2. | Begin road construction. |
| | 3. | Complete site grading. |
| Feb to
Mar 1991 | 1. | Plant ground cover. |
| | 2. | Begin construction of houses. |
| | 3. | Complete road construction. |
| | 4. | Complete utility installation. |
| Apr 1991 | 1. | Continue with construction of houses. |
| | 2. | Complete all site work. |
| May 1991 | 1. | Complete construction of houses. |
| | 2. | Cleanup. |
| | 3. | New tenants begin moving in. |

APPROVED:

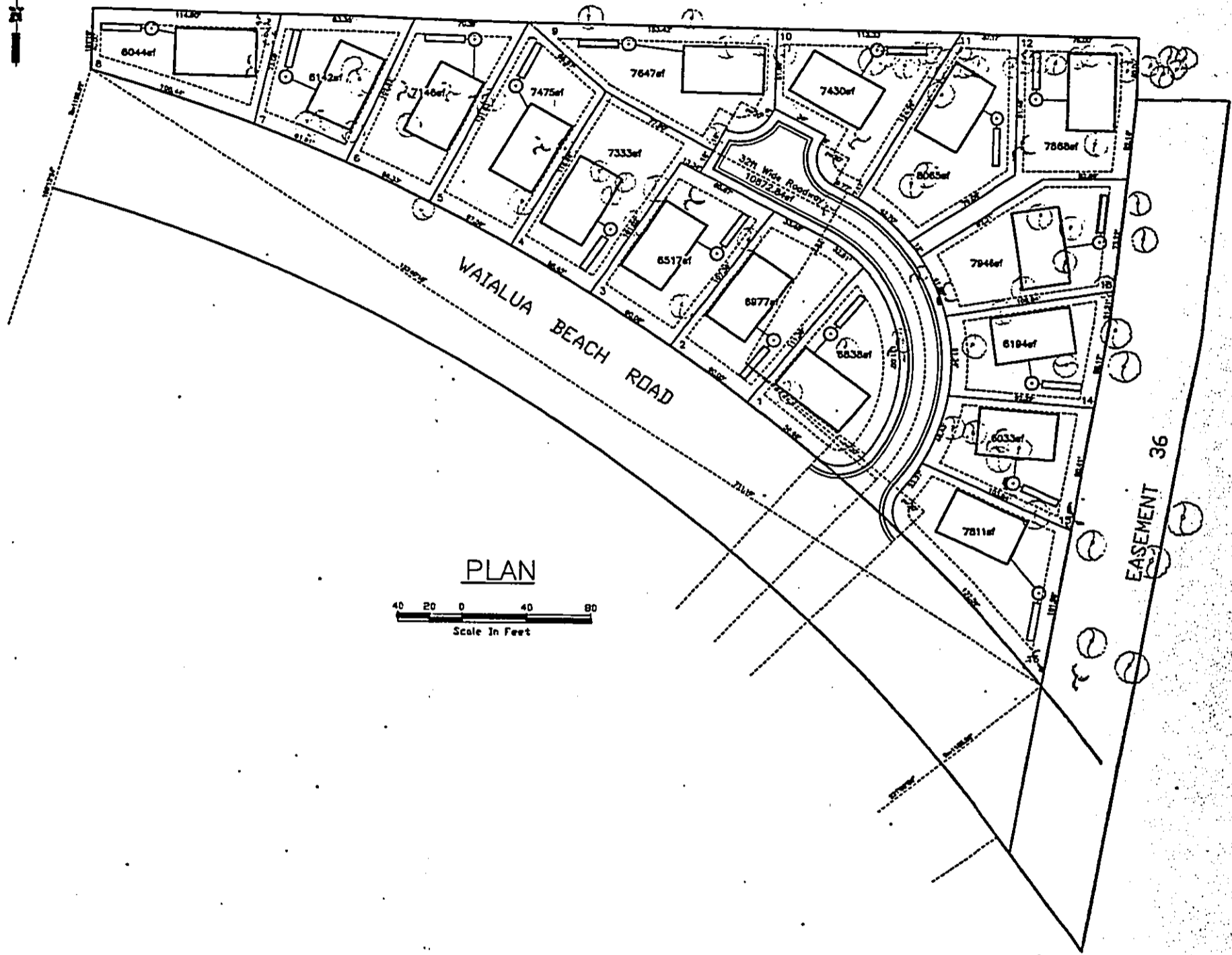
Director and Chief Engineer
Department of Public Works

Date

Chief, Division of Engineering
Department of Public Works

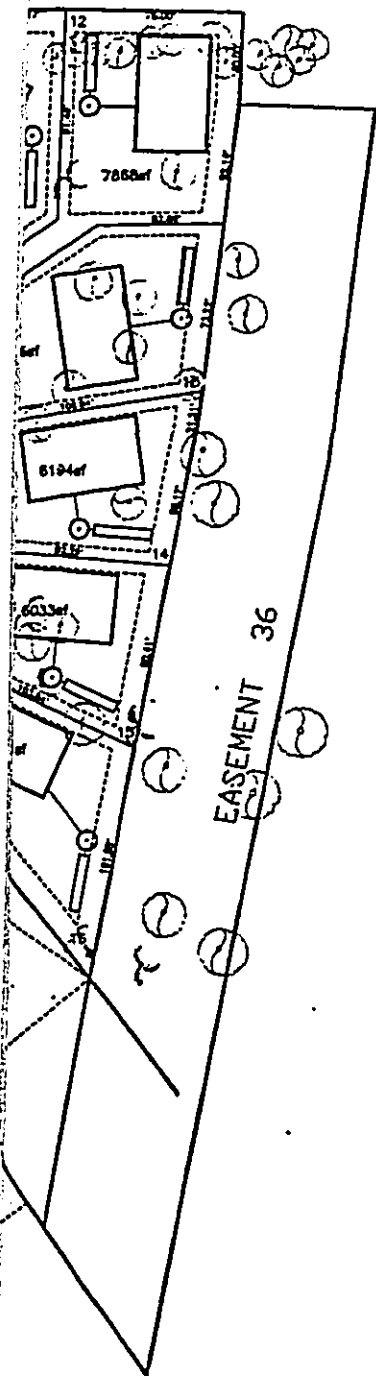
Date

KIAPOKO STREET



PLAN





SYSTEM NOTES

1. WS for each of the lots shall be installed as shown on the typical plan at right. The seepage tank shall be set a minimum of 10ft away from the nearest property lines. The out to out clearance between the septic tank and seepage tank shall be 2ft minimum. The connecting line between the septic and the seepage tanks shall be along the system's centerline and sized as shown.
2. Any existing trees that are located within 10ft of the seepage tank and 5ft of the septic tank must be either relocated or removed.
3. Percolation tests have been performed on the parcel by Soils International. The report and test results are available for review at Stanley Yim & Associates, Inc.
4. Topographic survey and map data were furnished by the owners/developers for this project.
5. New single family dwellings will be 3 bedrooms max.
6. @ 200 gal/bdrm, each new dwelling will generate a daily average flow of 600 gallons.
7. Septic tanks shall be 8ft diameter rain conc tanks, 4ft deep with 3ft water depth yielding a capacity of 1132 gallons per day. Tanks shall be furnished by Bill's Crane Service (DOH recommended minimum capacity for 3bdm dwellings is 900 gallons).
8. Seepage tanks shall be 4ft diameter reinforced conc tanks, 24ft long, having slotted walls. Tank length has been set based on the percolation test results and a daily flow of 600 gallons. Tanks shall be installed as shown on drawing.
9. Percolation test results ranged from 2.50 minutes to 3.21 minutes per inch fall of head in the test hole. For computations, this project adopts 3.00 minutes per inch fall of head.
10. For computations and sizing of seepage tank, see below.

COMPUTING STORAGE VS LEACH FOR DISCHARGE TIME

Number of bedrooms	3 bedrooms
avg daily flow @ 200g/bdrm	600 gals/day 80.289 cuft
Tank internal diameter	4 ft
Sectional area	12.566 sf

COMPUTING STORAGE ABILITY

height of air space	1 ft	bt/rad	0.5
tank radius	2 ft	arccos	1.047197
delta angle/2	40.900 degrees	1.047197 radians	
delta angle	120.000 degrees	2.094394 radians	
Area of air space	2.457 sf		
Net tank area	10.110 sf		

Length of tank need to store

1 day's flow	7.93 ft
2 days' flow	15.87 ft
3 days' flow	23.80 ft

COMPUTING SEEDAGE ABILITY

Field perc test rate	3.00 min/inch fall (avg)
Potential water level drop	
per hour	20 inches 1.67 ft
per day	480 inches 40.00 ft

To lose daily flow over 24hr period, assuming uniform perc, the rate would be, 0.417 gpm (Daily flow/24/60)

However, the potential seepage rate based on the 3.00 min/inch fall & a 26" water depth is, 5.554 gpm

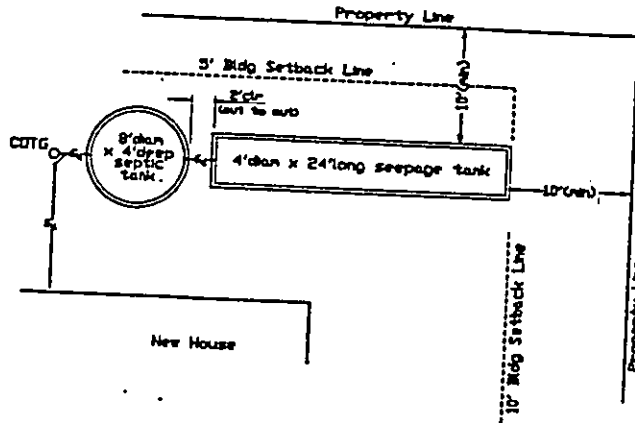
The tank should empty itself at this rate in about 1 hour 46 minutes of the entire 600 gallons assuming it was allowed to fill entirely with the daily flow before discharging. The actual operation will not follow this basis since the flow generated will not be all at once but over staggered periods during the 24 hour day. Based on this actual operation, the system as designed is functional since the smaller inflows will be allowed to seep out from the tank during the interim periods between flows.

REMARK: Use 4ft diameter tank x 24ft long (this provides for three days storage & should account for high water due to inclement weather conditions and other possible unforeseen circumstances)

APPROVED BY:

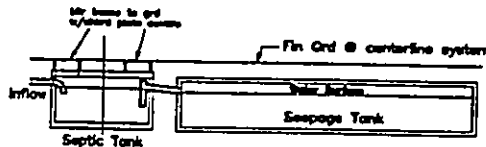
CHIEF, DIVISION OF ENGINEERING, D.P.W.

DATE



TYPICAL PLAN

Scale: 1/8" = 1ft



1. Cover over septic tank shall be 12" min.
2. Inv diff betwn outlet of septic tank to inlet of seepage pit shall be 3" min.
3. Air Space in septic tank and seepage tank shall be 12" min.
4. Contractor shall be responsible for maintaining the minimum dimensions.

TYPICAL ELEVATION

Scale: 1/8" = 1ft

OPERATIONS & MAINTENANCE

1. Operations and maintenance of the septic tank and seepage tank shall be in accordance with the Manual of Septic Tank Practice, US Department of Public Health, Education, and Welfare, US Public Health Service, pages 35 to 39, inclusive.

EXHIBIT HH

Septic Tank and Seepage Pit Layout

REVISION	DATE	DESCRIPTION	MADE BY	APPROVE

STANLEY YIM & ASSOCIATES, INC.
CONSULTING ENGINEERS
770 KAPIOLANI BLVD., SUITE 703 - HONOLULU - HAWAII - 06811

COPRA VILLAGE SUBDIVISION
TMK: 6-07-07-37
Kamalanui, Waialua, Oahu, Hawaii

INDIVIDUAL WASTEWATER SYSTEM (IWS)

I CERTIFY THAT THIS WORK WAS DONE BY ME OR



SANGABRIEL
ANAHEIM
HONOLULU

2153 NORTH KING STREET, SUITE 322, HONOLULU, HAWAII 96819

(808) 841-7611

April 20, 1990
Project No. H-1712-F

Hawaii California Investments
c/o Stanley Yim and Associates
770 Kapiolani Boulevard, Suite 703
Honolulu, Hawaii 96813

Subject: Field Percolation Test Results
16-Lot Subdivision
Waialua, Oahu, Hawaii
TMK: 6-7-07: 37

Gentlemen:

Submitted herewith are the results of field percolation tests performed at the subject property.

Field Work

The field work consisted of performing percolation tests at 5 locations on the site. The locations of the tests are shown on the attached Plot Plan.

In general the test consisted of drilling a shallow and a deep hole at each of the test locations. The deep holes was drilled to determine depth to groundwater and percolation rate at the deeper depth. The shallow hole was used to test the upper soil strata.

Percolation tests were performed in accordance with the Robert A. Taft Sanitary Engineering Center Percolation Test procedure. In general, this consists of excavating the test hole, filling the bottom with 2 inches of coarse sand and then saturating the hole with water (over-night for clayey soils). The test is conducted by filling the hole with clear water and then measuring the drop in water level with time. The results of the measurements are used to determine the percolation rate.

Conclusions and Recommendations

The site is generally overlain by a shallow layer of brown silty SAND and sandy SILT. Below the surface layer, tan SAND was found. Groundwater was found at depths of 5 to 7 feet below gade.

Hawaii California Investments
April 20, 1990
Page Two

The results of the percolation tests are as follows:

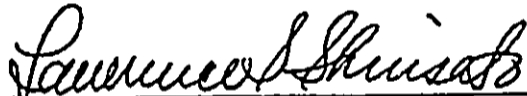
<u>Test Area No.</u>	<u>Test Depth</u>	<u>Groundwater Level</u>	<u>Percolation Rate</u>
1 (deep)	7'	7'-0"	1"/2.9 minutes
1 (shallow)	3'		1"/0.64 minutes
2 (shallow)	3.5'		1"/2.53 minutes
2 (deep)	hardpan could not penetrate		
3 (deep)	6'	7'-4"	1"/2.70 minutes
3 (shallow)	2'		1"/0.41 minutes
4 (deep)	5'	6'-0"	(hole caved)
4 (shallow)	2'		1"/0.38 minutes
5 (deep)	5'	5'-0"	1"/3.21 minutes
5 (shallow)	3'		1"/2.5 minutes

The percolation rates indicate that the subsurface soils are suitable for sewage disposal.

Should you have any questions or require any further information, please do not hesitate to contact us.

Very truly yours,

SOILS INTERNATIONAL



Lawrence S. Shinsato, P.E.
Vice-President

LSS:ls

Attachment/

6-7-07

