

**PRELIMINARY ENGINEERING REPORT**  
**FOR**  
**KAPOLEI HARBORSIDE CENTER**  
**KAPOLEI, OAHU, HAWAII**

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**Exhibit "44"**

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**KAPOLEI HARBORSIDE CENTER  
PRELIMINARY ENGINEERING REPORT  
EXECUTIVE SUMMARY**

The proposed Kapolei Harborside Center in Ewa, Oahu, will encompass about 345 acres adjacent to Campbell Industrial Park and is planned to provide for a variety of industrial and commercial uses. Preliminary engineering information pertaining to infrastructure for Kapolei Harborside Center is addressed in this report.

The site is relatively flat and scattered with mounds and depressions. Elevations range from 5 to 75 feet MSL, with slopes of 0.5 to 5 percent. Current land uses include agriculture, coral mining, and a greenwaste recycling operation.

**Drainage**

There are no existing drainage improvements within the site. Runoff generated from the site and adjacent areas drains overland via sheet flow and small ditches to onsite depressions. With the exception of major storms, very little runoff is generated under existing conditions due to the agricultural use and infiltration characteristics of the soil. Estimated runoff for the petition area under existing conditions ranges from 393 cfs for a 10-year, 1-hour storm to 559 cfs for a 100-year, 1-hour storm.

The proposed development will alter the character of the site by replacing existing vegetative cover with buildings, pavement, landscaped areas, and other improvements normally associated with industrial developments. Consequently, peak runoff generated onsite is expected to increase. Estimated runoff for the amendment area under developed conditions ranges from 701 cfs for a 10-year, 1-hour storm to 1,250 cfs for a 100-year, 1-hour storm.

Implementation of an underground onsite drainage system of catchbasins/manholes and pipe culverts, with conveyance to a major drainage channel running through the site to the ocean, is proposed to alleviate current flooding problems and prevent flooding resulting from runoff from the proposed development. The major drainage channel will be sized to accommodate runoff from the entire watershed based on the City and County of Honolulu's Storm Drainage Standards.

### Soil Erosion

Soil erosion potential for the petition area, Kapolei Business Park site, and entire watershed is estimated by the Universal Soil Loss Equation (U.S. Soil Conservation Service). Under existing conditions, soil erosion potential for the industrial in which the petition area is situated is estimated to be 718 tons per year. The estimated soil erosion potential for the entire watershed is over 480,000 tons per year in comparison. After development, a reduction of soil erosion potential is expected due to: reduction of erodible surfaces; site grading and construction of storm drain systems; and increase in landscaped areas. The resulting soil erosion potential for the developed amendment area and developed watershed is estimated to be 70 and about 265,000 tons per year, respectively.

In the short term, it is estimated that over 10,000 tons per year of soil erosion may result from grading the industrial area. Implementation of mitigation measures will reduce this short-term impact by about 50 percent. These mitigation measures include limiting grading to not more than 15 consecutive acres at a time and establishment of vegetation. Implementation of additional erosion control measures would lessen construction impacts even further.

### Wastewater

There are no existing wastewater facilities within the site. Individual wastewater treatment systems service tenants in the neighboring James Campbell Industrial Park. Kapolei Business Park to the east of the site is served by an underground collection system and private sewer pump station and force main connecting to a City system along the railroad right-of-way. The existing Ko Olina Interceptor Sewer, Segment 1, serves the Ko Olina development to the north. Honouliuli Wastewater Treatment Plant (WWTP) (38 MGD capacity) is the nearest municipal treatment facility. The treatment plant currently accepts about 28 MGD of wastewater flows.

Wastewater generated from Kapolei Harborside Center is expected to be mainly of domestic composition, with some industrial discharges. Construction of pretreatment facilities will be required if industries are unable to meet City and County of Honolulu pretreatment

standards prior to disposal into municipal sewers. The Harborside Center development is expected to generate average wastewater flows of 2.9 MGD, with peak design flows expected to reach 7.4 MGD.

Management of the wastewater flows from the proposed development will be necessary to prevent negative health and environmental impacts. An underground collection system discharging to the Honouliuli WWTP is the proposed wastewater management scheme.

### Water

Additional potable and nonpotable water demands will be generated by the proposed development. Preliminary hydraulic analysis indicates that the existing mains currently servicing the James Campbell Industrial Park will be adequate to accommodate the requirements of the proposed development.

To mitigate increased water demands due to development in the Ewa area, implementation of a dual water system is proposed for Kapolei Harborside Center and adjacent industrial developments, reducing its potable water requirement. The nonpotable infrastructure requirements are currently being studied and an updated nonpotable master plan will be prepared and submitted to the Board of Water Supply.

The offsite water system will be adequate to service the initial development of the project as well as the other planned developments in the Kapolei area. Ultimately, however, additional improvements to the water system will be required. Implementation of the improvements will be governed by development schedules of the proposed projects and will be coordinated with the Board of Water Supply.

### Solid Waste

The tenants of the existing industrial areas are currently served by private refuse collection companies. It is expected that the Harborside Center development will also use private refuse collection companies.

The City and County is currently operating a landfill site in Waimanalo Gulch and the H-POWER waste energy recovery facility on the leeward side of Oahu. The City is currently exploring alternative means of handling solid waste as an ongoing city-wide concern. Other programs being implemented are recycling and reuse of green waste.

#### Power and Communications

Hawaiian Electric Company (HECO) and Hawaiian Telcom (HawTel) currently serve the areas adjacent to the proposed business-industrial park. Preliminary consultations with HECO and HawTel indicate that service can be provided. The estimated range of the electrical load requirements for the Harborside Center is approximately 43.5 to 65.2 MVA.



**PRELIMINARY ENGINEERING REPORT  
FOR THE  
PROPOSED KAPOLEI HARBORSIDE CENTER**

**INTRODUCTION**

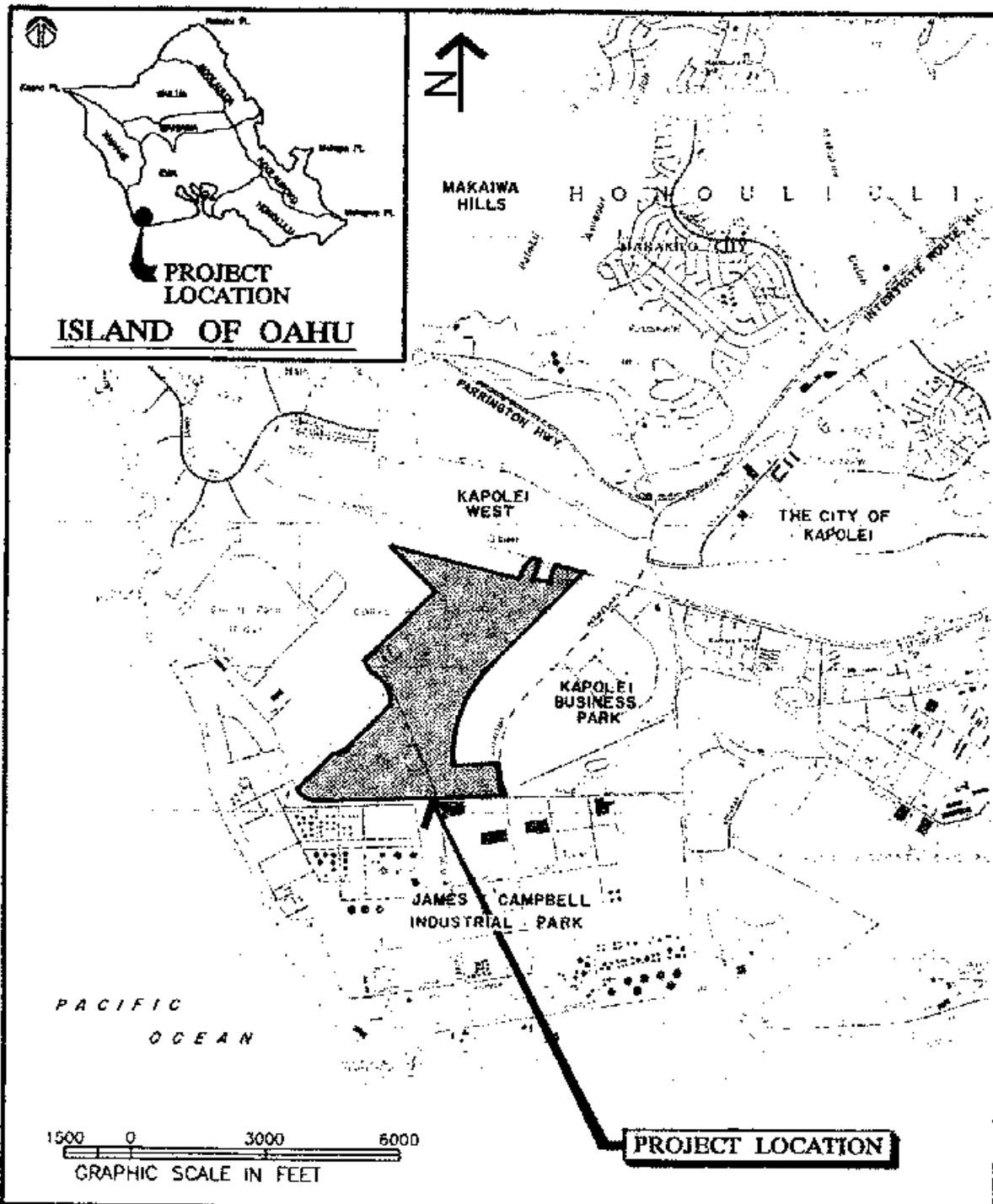
Kapolei Property Development, LLC, and affiliate of The Estate of James Campbell, is proposing an industrial development adjacent to existing industrial properties in the vicinity of the James Campbell Industrial Park in Kapolei, Oahu (TMK: 9-1-14:Por. 33-35; 9-1-15:Por. 20). The development, known as Kapolei Harborside Center, will occupy an area of approximately 345 acres bounded by Malakole Road to the south, the railroad right-of-way to the north, the Barbers Point Harbor and Ko Olina to the west, and existing industrial property and Kalaeloa Boulevard to the east (Figure 1). The property is currently designated industrial on the Development Plan Land Use Maps. The property is also currently designated agriculture for zoning and State Land Use purposes. Kapolei Property Development (KPD) is proposing to amend the State Land Use classification from Agriculture to Urban.

The objective of this report is to present preliminary engineering information pertaining to infrastructure requirements for the proposed regional development in general and the petition area in particular. Specifically, this report will address--

1. Background information on the proposed project;
2. Existing conditions;
3. Modifications after development; and
4. Impacts and mitigation of the proposed development.

**PROJECT BACKGROUND**

The proposed Kapolei Harborside Center is an industrial park providing for industrial similar to the recently developed Kapolei Business Park to the east. In addition to the industrial uses, areas for public facilities and preservation uses have also been identified.



<p><b>Fig. 1</b></p>	<p><b>Location Map</b></p>	<p>KAPOLEI HARBORSIDE CENTER EWA, OAHU, HAWAII Prepared By: ENGINEERING CONCEPTS, INC.</p>
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### Land Use and Zoning

The petition area is currently designated an Agricultural District by the State. An application for land use designation change to Urban will be submitted.

The petition area is currently zoned either AG-1 or AG-2. An application for a zone change will need to be submitted to the City. Kapolei Harborside Center area is currently designated Industrial on the City's Development Plan Land Use Map.

### Existing Uses

Current land uses within the petition area include agricultural uses, coral mining, and a greenwaste/compost producing operation (Figure 2). The existing JCIP is located immediately makai of the petition area. The development of the Ko Olina resort area to the west is ongoing with residential and resort components planned or under construction. Barbers Point Harbor, also to the west of the site, is in operation by the State Department of Transportation.

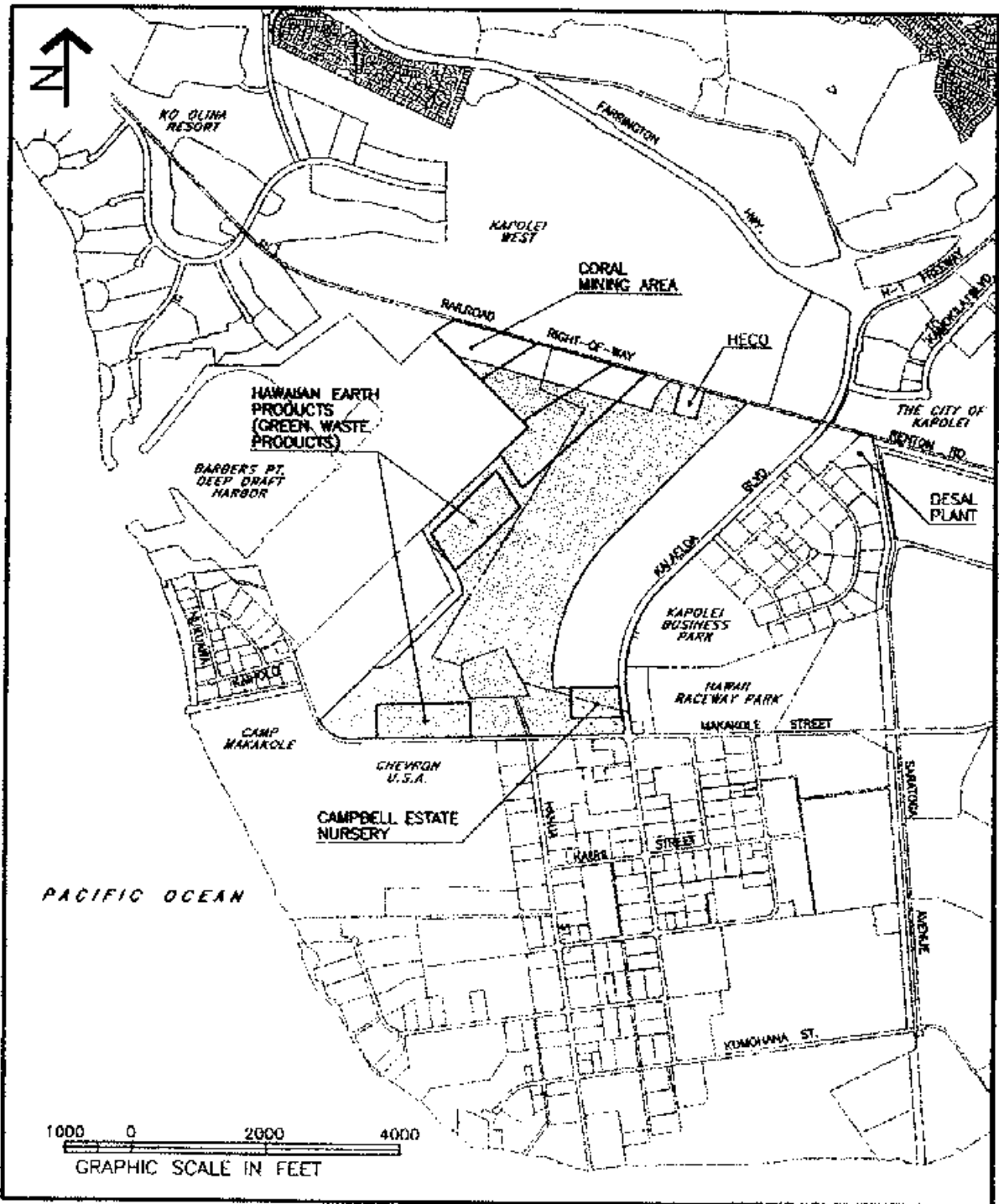
KPD also uses a portion of the land for agricultural purposes. A nursery covering approximately 10 acres is located near the intersection of Kalaeloa Boulevard and Malakole Road.

Coral mining operations are currently performed by Hawaiian Cement for the manufacture of cement and concrete products. The original Hawaiian Cement option area extended over approximately 267 acres in the northwest corner of the area. The Hawaiian Cement agreement is nearing termination and coral mining and cement producing operations have significantly slowed.

### Climate

The climate of the Kapolei Harborside Center area is relatively warm and dry and is typical of the climate throughout the Ewa Plains. Tradewinds from the northeast occur much of the time, with occasional Kona winds.

The normal temperature range for the area is from the high 60s (Fahrenheit) to the low 90s. Rainfall is light, with an average annual rainfall of approximately 20 inches.



**Fig. 2 Existing Uses**

**KAPOLEI HARBORSIDE CENTER**  
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### Topographic Features

The natural topography of the petition area is flat, with mounds and depressions scattered over the site (Figure 3). Elevations range from approximately 5 feet mean sea level (MSL) near the intersection of Kalaeloa Boulevard and Malakole Road to approximately 75 feet MSL near the northwest corner of the petition area. Slopes of less than 0.5 percent to 5 percent are found on the site. In general, the petition area slopes from the railroad right-of-way to Malakole Road, with an average slope of approximately 1 percent.

A large coral stockpile occupies an area of approximately 50 acres in the southwest corner of the property. Approximately 25 acres of the stockpile encroaches into the petition area.

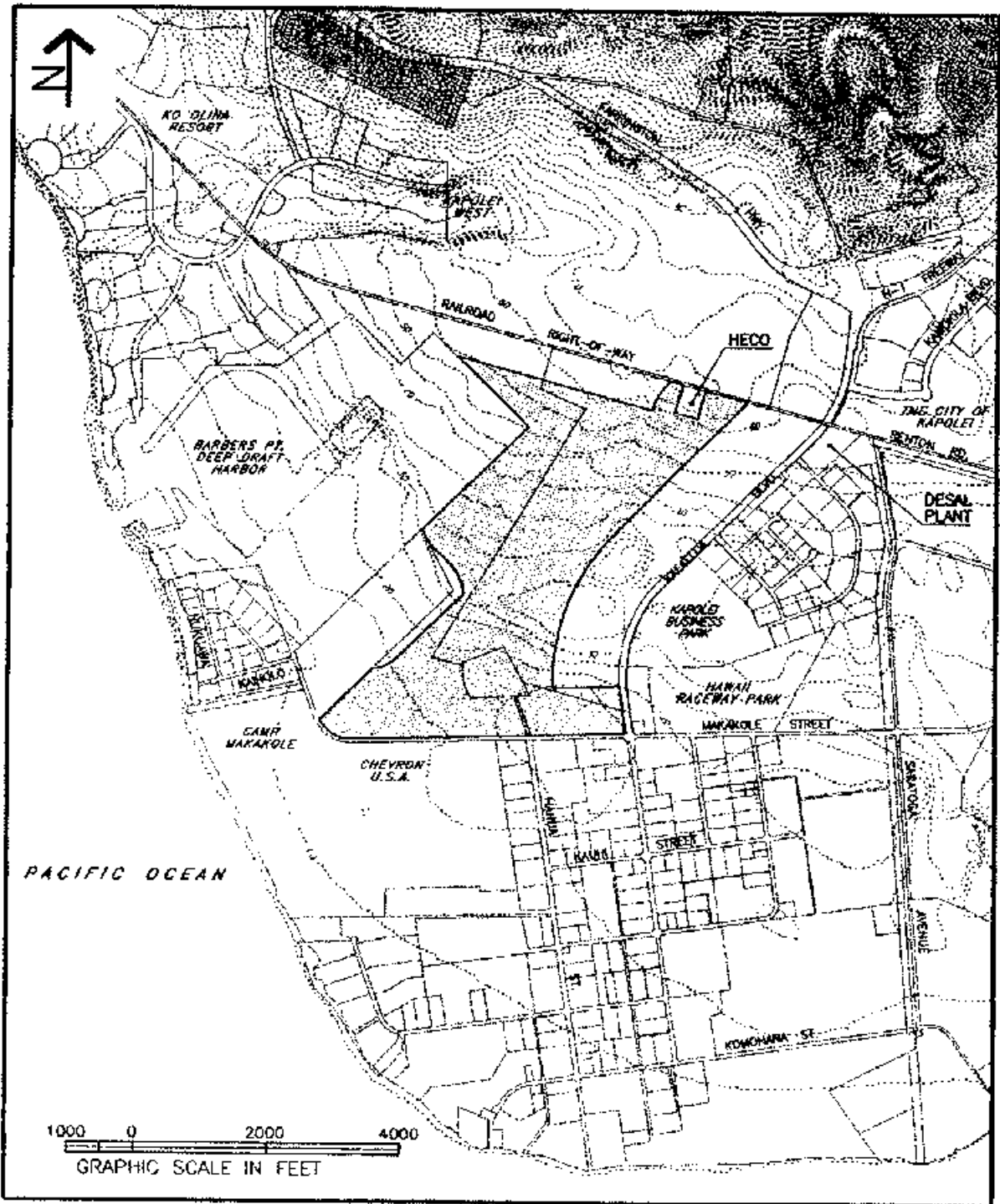
The offsite watershed exhibits varying terrain, extending from the railroad right-of-way to the crest of the Waianae Range at an elevation of approximately 2,400 feet MSL. The area immediately north of the site up to the 11-1 freeway is currently vacant former sugar cane fields and is relatively flat, with slopes similar to those found in the business-industrial park site. The topography of the watershed area above the freeway ranges from gently sloping areas (1 to 10 percent) adjacent to the freeway to steep slopes in excess of 50 percent along the gulches. Several plateaus with slopes ranging from 5 to 25 percent are located in the upper watershed area. The area above the freeway is currently covered with grass, scrub brush, and trees, with bare areas of rock and pockets of erosion also evident.

### Soils

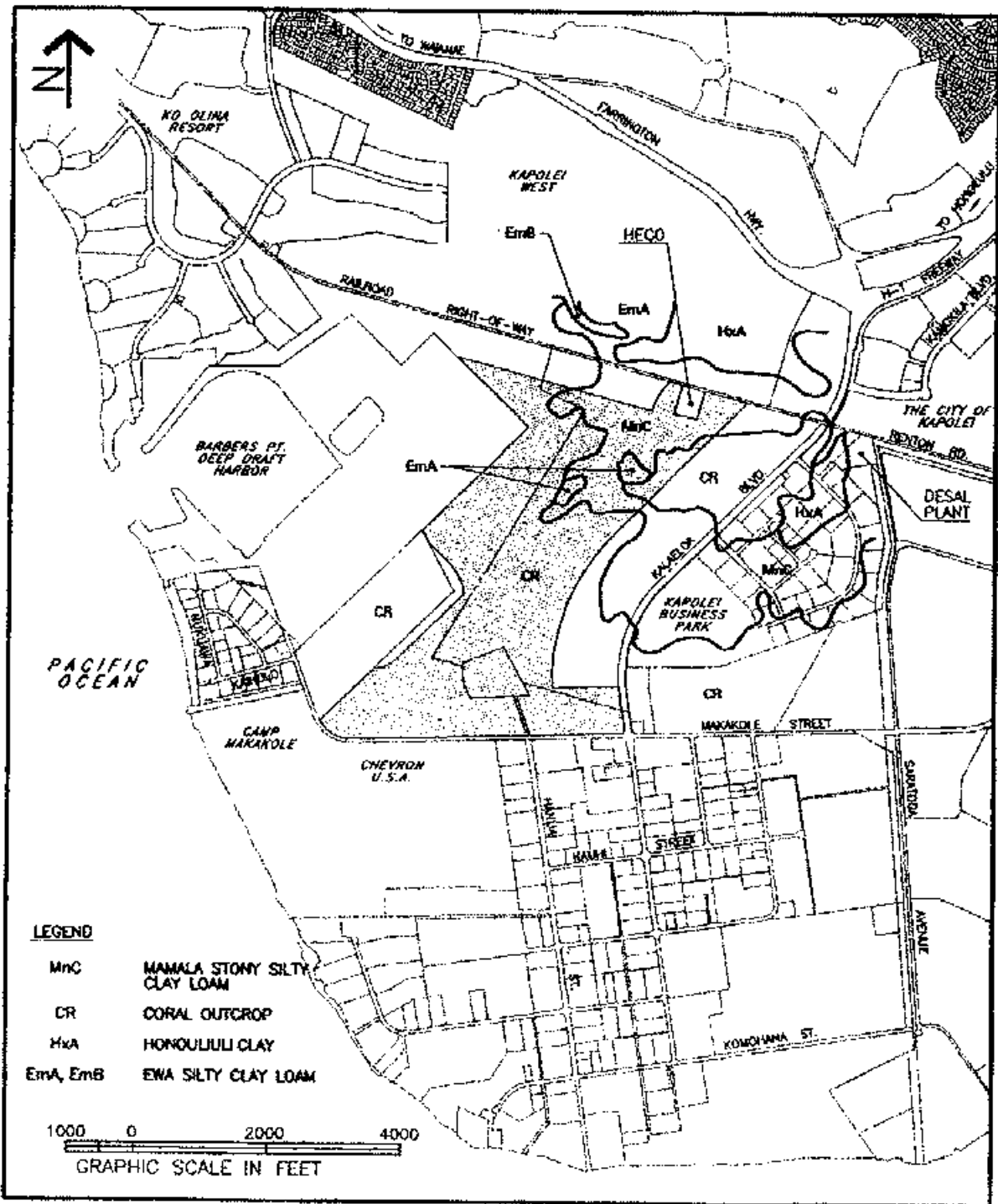
According to the Soil Survey by the U.S. Department of Agriculture Soil Conservation Service, the existing soil types currently found in the petition area (Figure 4) include:

Coral Outcrop (CR) -- Coral or cemented calcareous sand with a thin layer of friable red soil material in cracks, crevices, and depressions

Ewa silty clay loam, moderately shallow, 0 to 2 percent slopes (EmA) -- Soil found on alluvial fans and terraces. Surface layer is dark reddish-brown silty clay loam about 18 inches thick. Subsoil is about 42 inches thick and is dark reddish-brown and dark-red silty clay loam.



<p><b>Fig. 3</b></p>	<p><b>Topographic Map</b></p>	<p><b>KAPOLEI HARBORSIDE CENTER</b>  <b>EWA, OAHU, HAWAII</b>          Prepared By: ENGINEERING CONCEPTS, INC.</p>
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**Fig. 4 Soils**

**KAPOLEI HARBORSIDE CENTER**  
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Substratum is coral limestone, sand, or gravelly alluvium. The soil is neutral with moderate permeability. Runoff is slow and the erosion hazard is slight.

Mamala stony silty clay loam, 0 to 12 percent slopes (MnC) -- A dark reddish-brown stony silty clay loam with a surface layer of about 6 inches thick. The subsoil is a dark reddish-brown silty clay loam about 11 inches thick. The substratum is coral limestone or consolidated calcareous sand. The soil is neutral to slightly alkaline with moderate permeability. Runoff is very slow and erosion hazard is slight to moderate.

## DRAINAGE

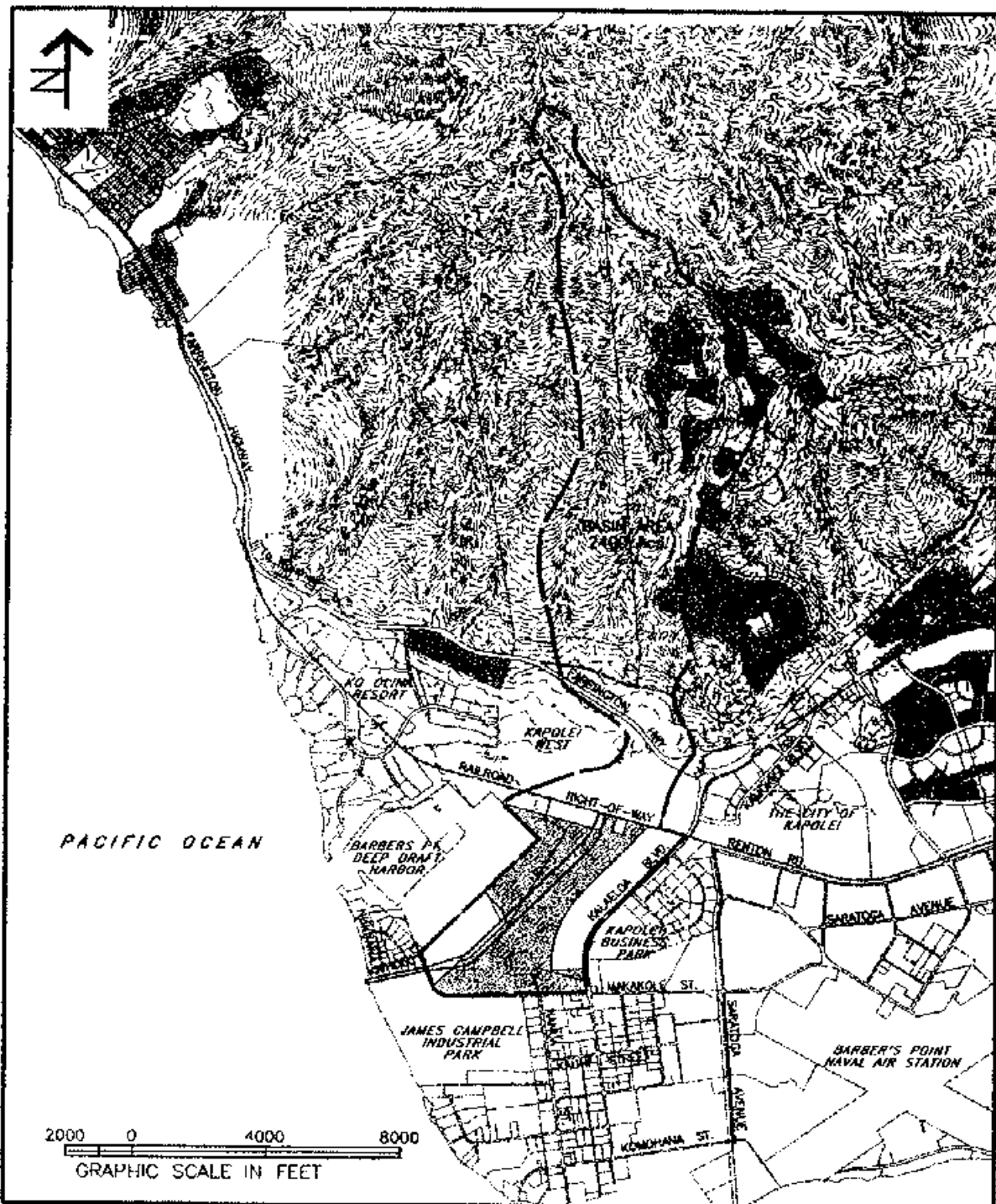
### Existing Conditions

The watershed in which the petition area is located encompasses approximately 2,400 acres (Figure 5), reaching almost six miles inland.

Runoff from the area above the freeway is collected by three gulches: Awainui Gulch, Palailai Gulch, and an unnamed gulch. The three gulches converge just mauka of the freeway before crossing the H-1. The drainage way, a former sugar cane irrigation ditch, continues parallel to the freeway for a short distance before heading makai through the abandoned cane fields. The drainage way crosses under the railroad right-of-way into the proposed project site, winding its way down towards Malakole Road. The defined drainage way ends approximately halfway between the railroad tracks and Malakole Road, at an existing service road used by Hawaiian Cement.

There are no existing drainage improvements in the petition area other than the former irrigation ditch. Runoff generated on the site and from adjacent areas drains overland via sheet flow and small ditches to the depressions on the site. With the exception of major storms, very little runoff is generated under existing conditions due to the former agricultural use and infiltration characteristics of the soil. Runoff from major storms flows to the depression near the Kalaeloa Boulevard/Malakole Road intersection, flooding the low-lying area. Small culverts along Malakole Road aid to relieve the ponding of runoff.





<p><b>Fig. 5</b></p>	<p><b>Drainage Basin</b></p>	<p><b>KAPOLEI HARBORSIDE CENTER</b>          EWA, OAHU, HAWAII          Prepared By: ENGINEERING CONCEPTS, INC.</p>
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Kalaeloa Boulevard, Malakole Road, and the roadways in the existing industrial park contain underground drainage systems that collect and convey runoff to drainage ditches and channels, ultimately discharging into the ocean. A major drainage channel intended to serve the areas east of Kalaeloa Boulevard is located along the Barbers Point Naval Air Station boundary.

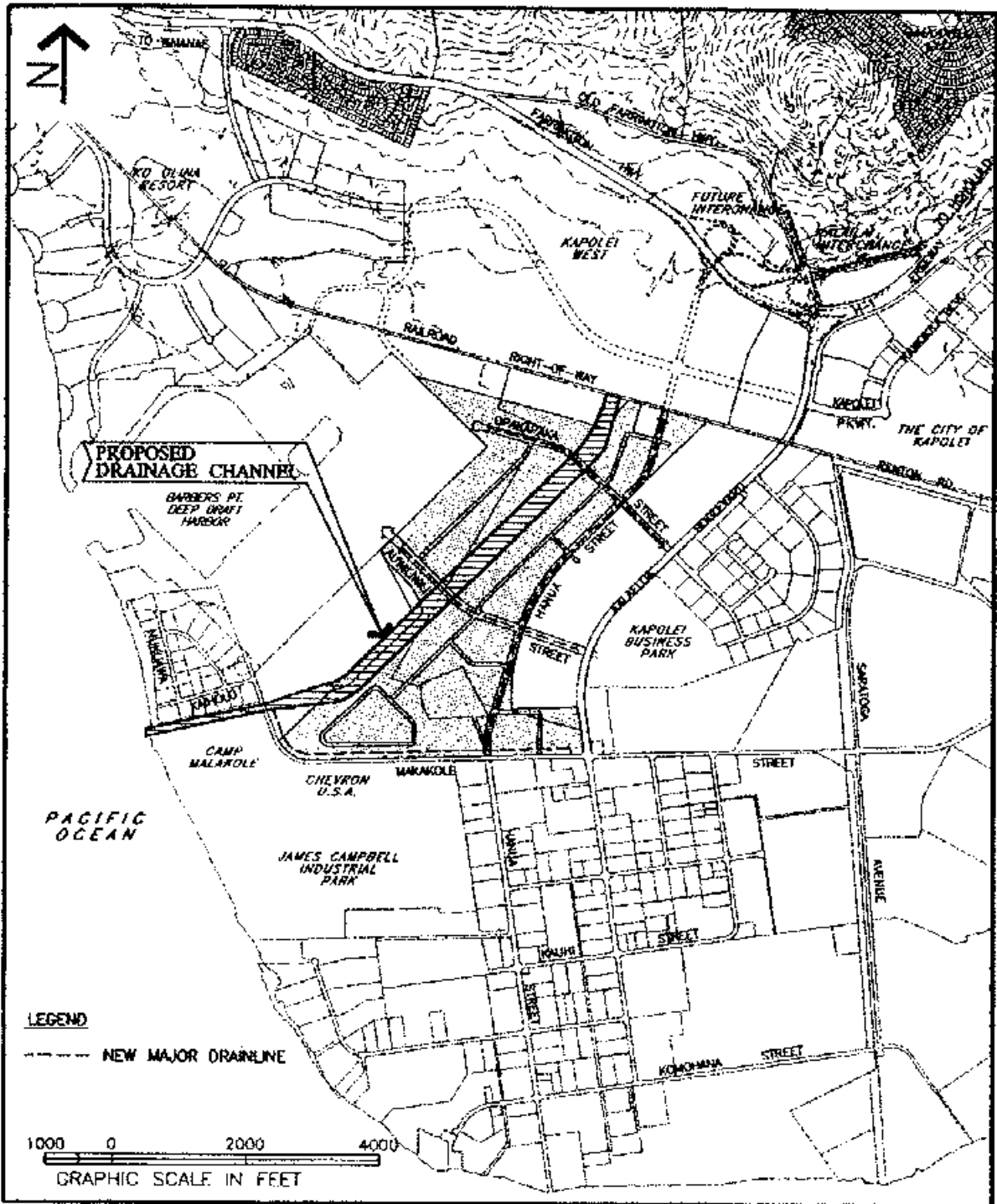
Runoff from the petition area as well as the entire watershed was estimated for 10-, 50-, and 100-year storms under existing conditions and are listed in Table 1. One-hour rainfall intensities used in the analysis were 1.9 inches per hour for the 10-year storm, 2.4 inches per hour for the 50-year storm, and 2.7 inches per hour for the 100-year storm. The petition area was divided into three subareas, as shown on Figure 6.

**TABLE 1  
EXISTING RUNOFF (1-HR DURATION)**

<u>Area</u>	<u>Acres</u>	<u>10-yr (cfs)</u>	<u>50-yr (cfs)</u>	<u>100-yr (cfs)</u>
A	61	70	88	99
B	131	149	189	212
C	153	174	220	248
Total Petition Area	345	393	497	559
Total Watershed Area	2400	2000	3018	3661

#### Flood Hazard

The petition area is designated Zone D in the Flood Insurance Rate Map, indicating areas in which flood hazards are undetermined (Figure 7).



<p><b>Fig. 6</b></p>	<p><b>Onsite Drainage System</b></p>	<p><b>KAPOLEI HARBORSIDE CENTER</b>  <b>EWA, OAHU, HAWAII</b>          Prepared By: ENGINEERING CONCEPTS, INC.</p>
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### Modifications after Development

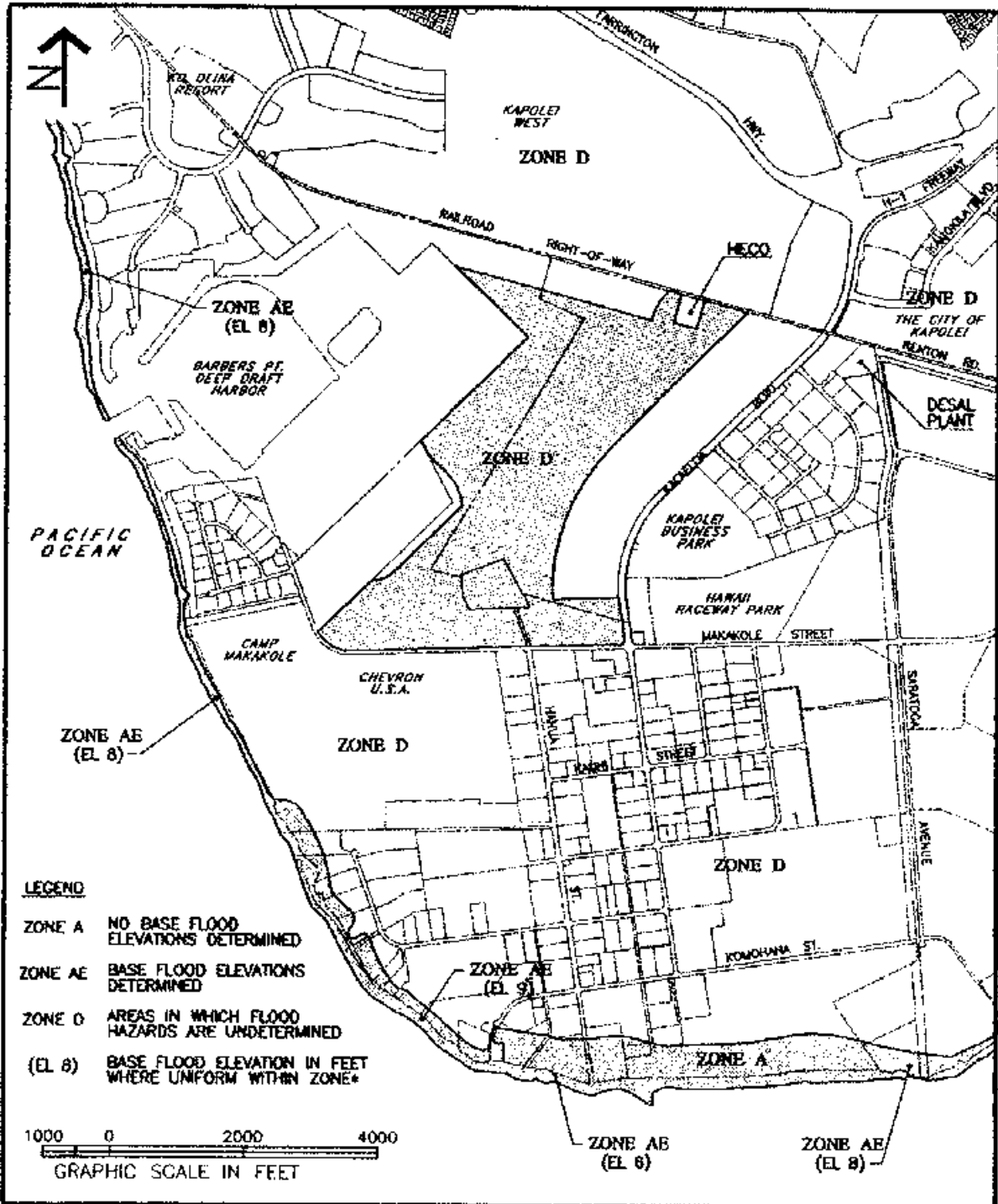
The proposed development will alter the character of the site. The vegetative cover currently found onsite would be replaced by buildings, paved areas, formal landscaped areas, and other improvements normally associated with industrial developments. Consequently, peak runoff generated onsite will increase.

Peak runoff rates under developed conditions were estimated for the 10-, 50-, and 100-year storms with a duration of one hour. The 10- and 50-year runoff was estimated using the Soil Conservation Service's TR-20 hydrology program, while the 100-year runoff was based on Plate 6 of the Rules Relating to Storm Drainage Standards (January 2000), City and County of Honolulu, Department of Planning and Permitting. Future runoff for the entire watershed also considered the possibility of future development mauka of the Kapolei Harborside Development. Kapolei Property Development is planning for the development of its lands between the railroad right-of-way and the freeway known as Kapolei West. Also, the proposed Makaiwa Hills development mauka of the freeway has received State land use and City development plan designations for future residential and commercial development. Future runoff estimates are shown in Table 2, with the percent increase shown in Table 3.

**TABLE 2  
FUTURE RUNOFF (PETITION AREA)**

<u>Area</u>	<u>Acres</u>	<u>10-yr (cfs)</u>	<u>50-yr (cfs)</u>	<u>100-yr (cfs)*</u>
A	61	108	140	200 <sup>∇</sup>
B	131	293	295	610
C	153	300	392	680
Total Petition Area	345	701	827	1250
Total Watershed Area	2400	2639	3772	5200

\* City and County of Honolulu Storm Drainage Standards, Plate 6



**Fig. 7 Flood Map**  
**KAPOLEI HARBORSIDE CENTER**  
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**TABLE 3  
PERCENT INCREASE**

<u>Area</u>	<u>Acres</u>	<u>10-yr (%)</u>	<u>50-yr (%)</u>	<u>100-yr (%)</u>
A	61	54	59	102
B	131	97	56	188
C	153	72	78	174
Total Petition Area	345	78	66	124
Total Watershed Area	2400	32	25	69

**Impact and Mitigation**

Development of the Kapolei Harborside Center will increase the runoff generated onsite. Without proper mitigative measures, major flooding problems will result due to the flat slopes found within the project site. Flooding may not be limited to the proposed project area but may also reach the existing industrial areas makai of the site.

Mitigative measures proposed for the Kapolei Harborside Center must also consider the overall increase in runoff for the entire watershed. Future development of the offsite watershed may significantly increase the runoff passing through the site from the mauka areas.

The major element of the proposed drainage improvements is a large drainage channel running through the Kapolei Harborside Center site, from the railroad right-of-way to the ocean (see Figure 6). The drainage channel will be sized to accommodate the peak runoff rate from Plate 6 of the City's Storm Drainage Standards. Preliminary analysis of the drainage requirements indicates that a trapezoidal channel with a bottom width of approximately 240-feet and 10-feet deep will be needed to convey runoff through the site. It is anticipated that the channel will be excavated in hard coral and will not require concrete lining through its entire

length. Concrete or rip-rap lining will be used in areas of excessive velocities or high erosion potential. A 150-foot wide strip of land below the project site has been set aside for continuation of the drainage way. This parcel runs from the shoreline to Malakole Road between the Chevron, USA property and the Kenai Industrial development. Construction of this portion of the channel will require various permits. Permit applications had been initiated previously, however, due to the economic conditions at the time, final permits were not pursued. Earlier studies addressing the channel impacts are being reviewed and updated prior to new applications for the various permits.

It is anticipated that the onsite runoff will be handled by an underground drainage system consisting of catchbasins/manholes and pipe or box culverts. Runoff would be collected and conveyed to the major drainage channel for ultimate discharge into the ocean. All onsite drainage improvements will be designed in accordance with City and County standards.

Implementation of the major drainage channel and onsite drainage system will alleviate any flooding problems currently experienced in the area as well as prevent flooding as a result of runoff from the proposed development. Runoff will be diverted away from the Barbers Point Harbor and directed to the major drainage channel.

#### Water Quality

In accordance with the requirements of the City's Storm Drainage Standards, individual developments within the Kapolei Harborside Center will be required to address stormwater quality. Developments may use detention, flow-through or structural methods to meet the stormwater quality requirements.

#### SOIL EROSION

##### Site Characteristics

The Harborside Center site and surrounding industrial areas are divided into six subareas for the purpose of calculating soil erosion potential (Figure 8). These subareas represent sites that vary in soil erosion potential characteristics such as terrain and drainage network. The offsite watershed is divided into four subareas for calculation of soil erosion potential.

### Calculation of Soil Erosion Potential

The U.S. Department of Agriculture, Soil Conservation Service, uses the Universal Soil Loss Equation (USLE) to estimate long-term annual soil losses from sheet and rill erosion. The equation is used to estimate erosion on forest land, farm fields, construction/development sites, and other areas. Soil losses can be estimated for present conditions or for a future condition. The soil loss equation is—

$$A = RKLS CP$$

where: A = soil loss (tons per acre per year)

R = rainfall factor

K = soil erodibility factor

L = slope length factor

S = slope gradient factor

C = cover and management factor

P = erosion control practice factor

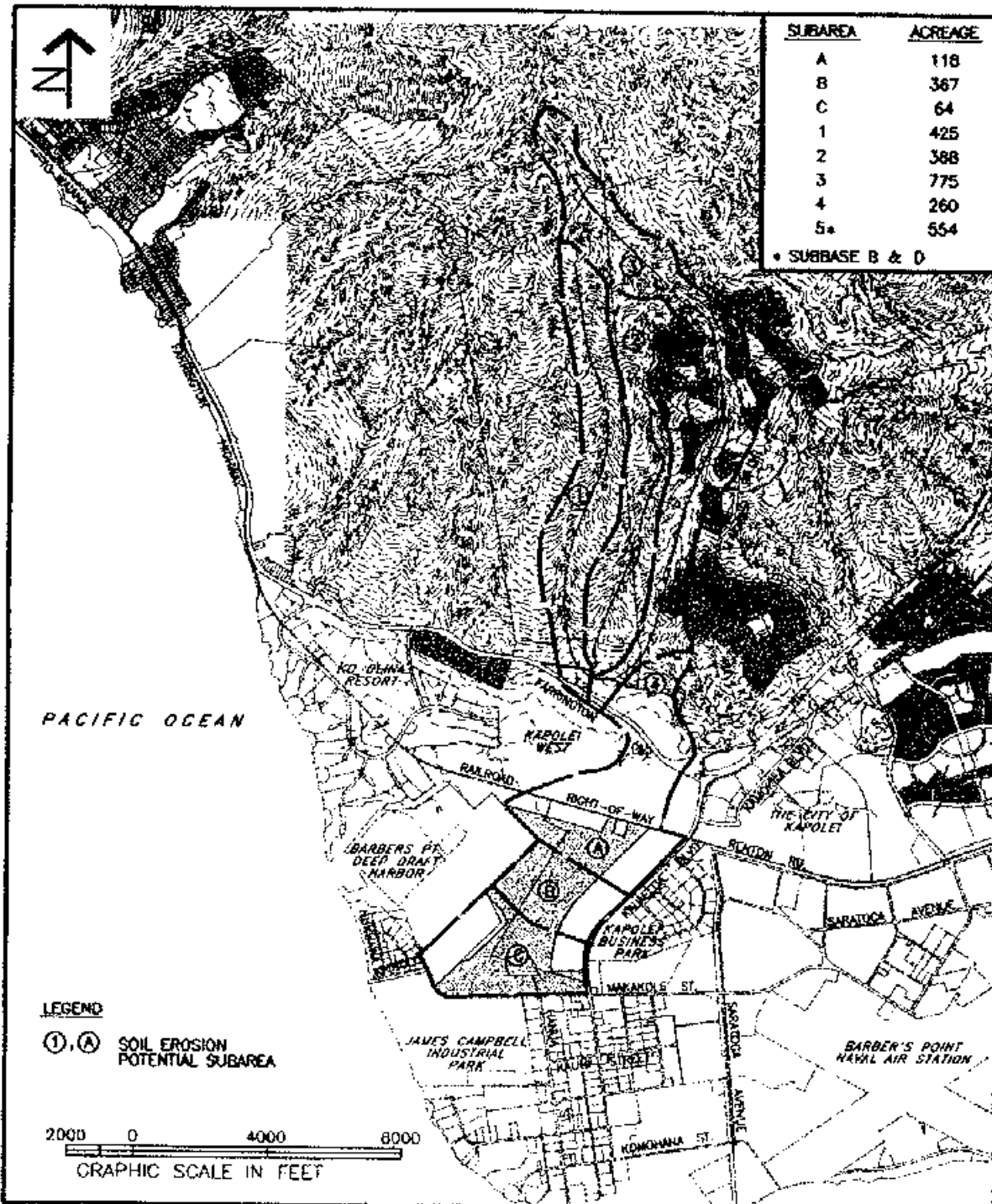
The existing soil erosion potentials for each subarea, the petition area, existing industrial property, and the entire watershed are listed in Table 4.

### Impact and Mitigation

Long-term Impacts. Based on the USLE, the soil erosion potential of the petition area, the adjacent developments, and the entire watershed should decrease after development. This decrease in soil erosion is due to the reduction of erodible surfaces (increase in buildings and pavement); reduction of length and slope of overland flow due to site grading and construction of the storm drain system; and increase in landscaped areas (reduction of bare ground).

Short-term Impacts. Construction will involve land disturbing activities that result in soil erosion. These land disturbing activities include removal of existing vegetation (clearing and grubbing), leveling, removing and replacing soil.





**Fig. 8**      **Soil Erosion Potential Subareas**

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**TABLE 4 - SOIL EROSION POTENTIAL.**

	Exist. Conditions <u>(tons/yr)</u>	After Development <u>(tons/yr)</u>	Reduction <u>(%)</u>
Subarea A	82	14	83
Subarea B	567	48	92
Subarea C	69	8	88
Subarea D	173	8	95
Subarea E	141	17	88
Subarea F	230	39	83
Subarea 1	98600	42835	57
Subarea 2	112582	45343	60
Subarea 3	255987	174360	32
Subarea 4	14477	2013	86
Subarea 5	881	73	92
Total Industrial	1262	134	89
Total Watershed	482437	264624	45

The USLE can be used to estimate soil erosion potential based on these short-term construction impacts. For purposes of calculation, it is assumed that the areas will be exposed for a period of two years.

In the short term, an estimated 10,141 tons per year of soil erosion may result from the Harborside Center development during the grading period. Mitigation measures can be implemented to reduce short-term soil erosion. For example, limiting grading to not more than 15 consecutive acres at a time and seeding half of the area will reduce estimated soil erosion potential for the site by 53 percent to 5,375 tons per year.

Additional erosion control measures would lessen construction impacts even further. These are--

1. Minimize time of construction.
2. Retain existing ground cover until latest date before construction.
3. Early construction of drainage control features.
4. Use of temporary area sprinklers in nonactive construction areas when ground cover is removed.
5. Station water truck on site during construction period to provide for immediate sprinkling, as needed, in active construction zones (weekends and holidays included).
6. Use temporary berms and cut-off ditches, where needed, for control of erosion.
7. Thorough watering of graded areas after construction activity has ceased for the day and on weekends.
8. Sod or plant all cut and fill slopes immediately after grading work has been completed.

Grading and Erosion Control Plans will be prepared in compliance with Chapter 23, Revised Ordinances of Honolulu.

## WASTEWATER FACILITIES

### Existing Conditions

The proposed Kapolei Harborside Center site currently remains undeveloped, with no existing wastewater facilities onsite. Tenants of the existing James Campbell Industrial Park are serviced by individual wastewater treatment systems.

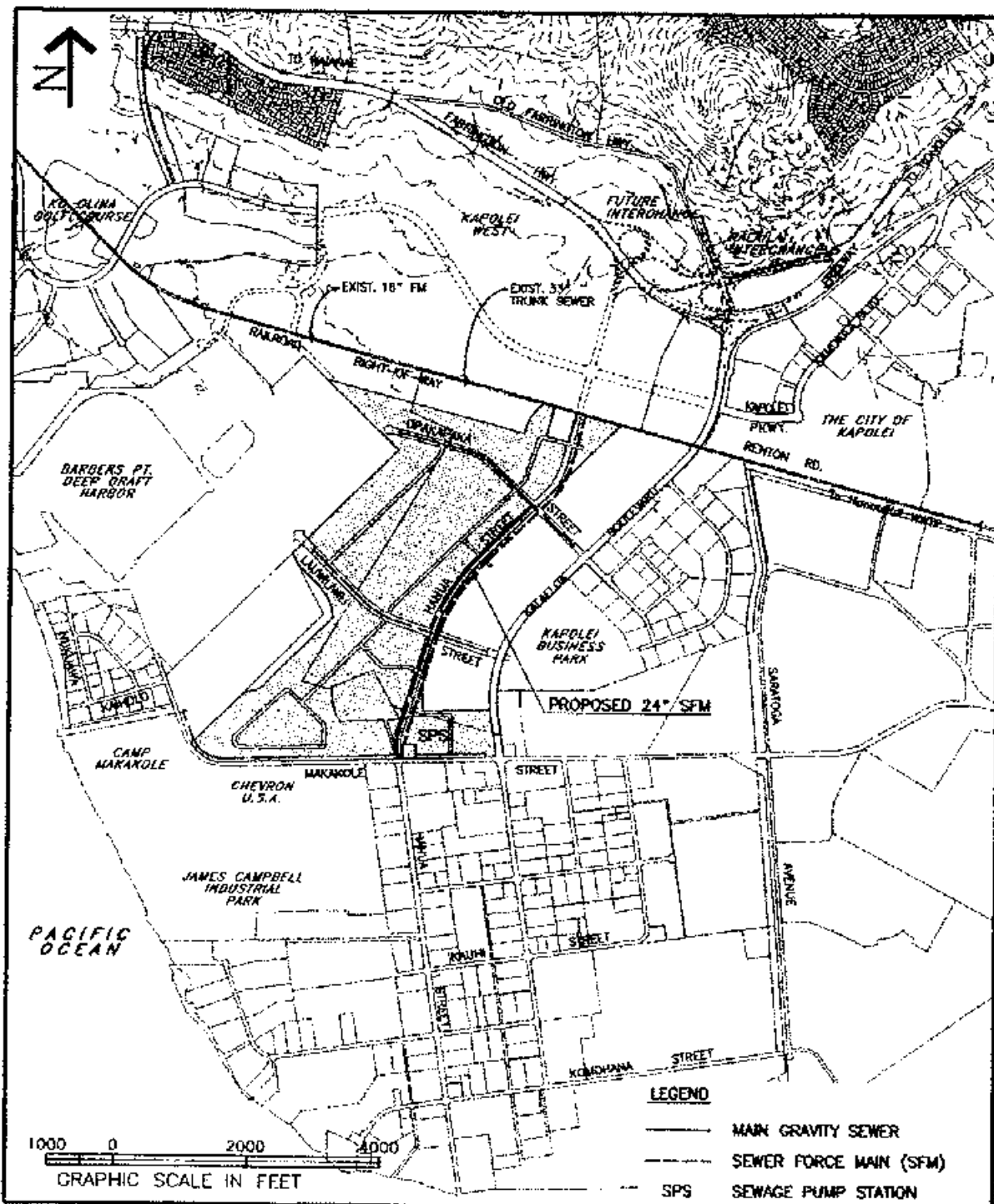
The nearest municipal treatment facility, the Honouliuli Wastewater Treatment Plant (WWTP) is located approximately 2.6 miles east of the proposed project. With a design capacity of 38 MGD, the treatment plant and is currently accepting flows of about 28 MGD.

An existing force main/gravity interceptor sewer (Ko Olina Interceptor Sewer, Segment 1) runs parallel to the railroad right-of-way above the site to serve the Ko Olina development. A private sewer pump station located near the intersection of Kalaeloa Boulevard and Malakole Road and a force main along Kalaeloa Boulevard currently services the existing Kapolei Business Park.

### Modifications after Development

The proposed industrial development will be developed to accommodate light industrial and maritime-related uses. The wastewater generated from the park is expected to be mainly of domestic composition, with some industrial discharges. Discharges from industrial facilities will be required to meet the City and County of Honolulu's pre-treatment standards.

The proposed development within the petition area is expected to generate average wastewater flows of 2.9 MGD with peak flows approaching 7.4 MGD.



**Fig. 9 Proposed Sewer**

**KAPOLEI HARBORSIDE CENTER**  
 EWA, OAHU, HAWAII  
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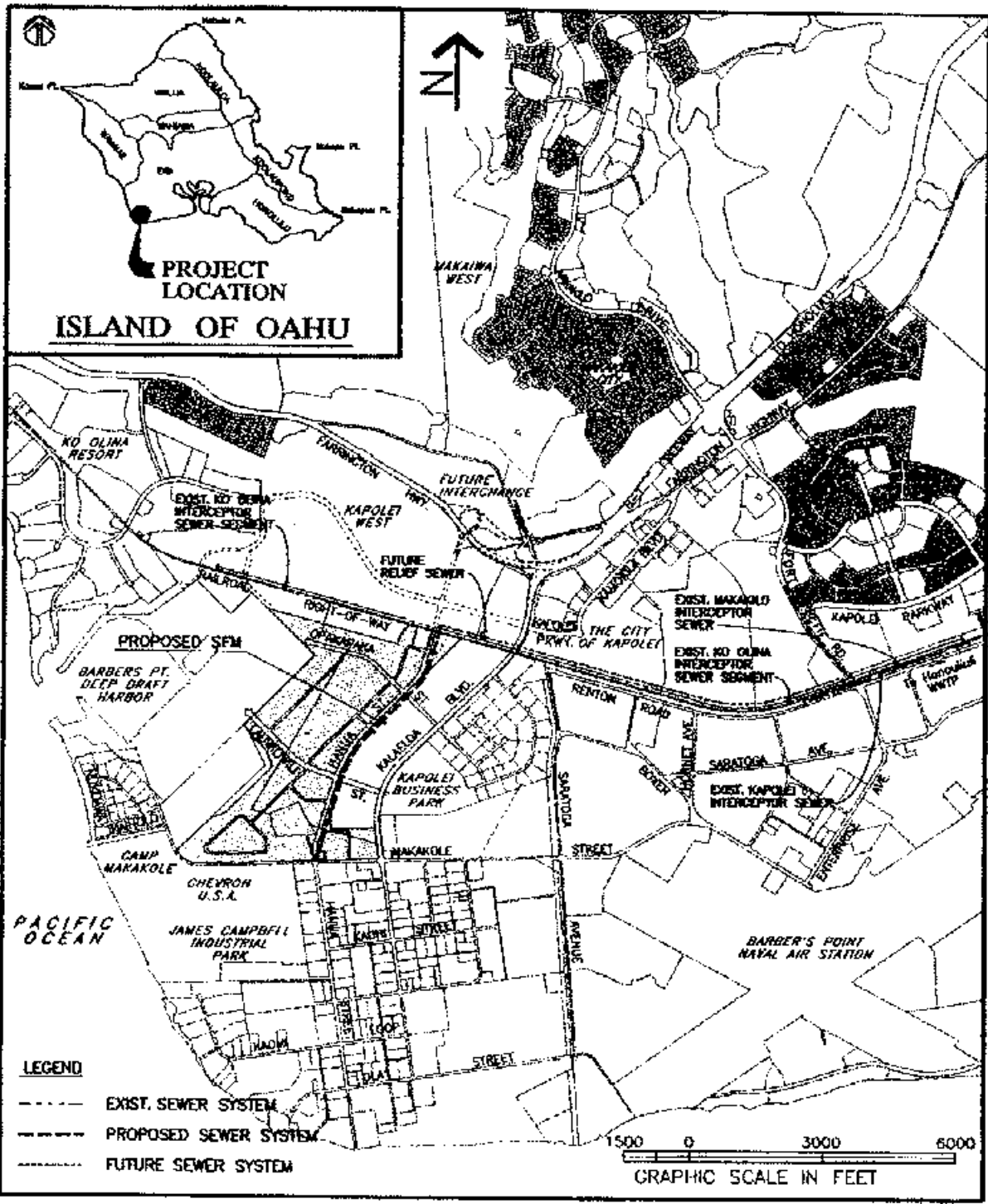
### Impact and Mitigation

The proposed industrial park will generate wastewater flows that currently do not exist. Management of these flows will be necessary to prevent negative health and environmental impacts. Wastewater generated from the proposed development will be collected by a series of gravity sewers and conveyed to a centralized wastewater pumping station. The wastewater would then be pumped via force main to a main trunk sewer running along the railroad right-of-way for transport to Honouliuli WWTP. The onsite collection system, pump station and force main will be designed in accordance with the standards of the City and County of Honolulu, Division of Wastewater Management. It is intended that the collection system, pump station and force main be dedicated to the City. Major elements of the onsite system are conceptually shown on Figure 9.

The existing Ko Olina interceptor sewer was oversized in the design phase to accommodate some additional flows from Campbell Estate projects, mainly the flows from the City of Kapolei. At the time, it was not anticipated that the proposed business-industrial park area would be required to collect and transport its sewage to the Honouliuli WWTP. Consequently, the existing segment 1 of the Ko Olina interceptor sewer does not have the capacity to accommodate both the industrial uses and the Kapolei City projects. A parallel sewer will ultimately be required to handle the additional flows.

The existing Ko Olina interceptor sewer currently ties in to the Makakilo interceptor sewer and the recently completed Kapolei Interceptor Sewer at Barbers Point Access Road. The Kapolei interceptor sewer (formerly segment 2 of the Ko Olina interceptor) runs parallel to the Makakilo interceptor sewer from Barbers Point Access Road to Honouliuli WWTP (Figure 10) and has been planned to accommodate almost all of the proposed developments in the Kapolei area below the freeway, including the proposed petition area.

Implementation of the wastewater facilities will be done in phases, according to the development schedule of the project.



**Fig. 10 Regional Wastewater**

**KAPOLEI HARBORSIDE CENTER**  
EWA, OAHU, HAWAII  
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## WATER FACILITIES

### Existing Conditions

The existing industrial developments are currently served by 24-inch and 20-inch Board of Water Supply (BWS) mains in Kalaeloa Boulevard to Malakole Road (Figure 11). Within Malakole Road, a 20-inch main runs toward the harbor, with a 16-inch main heading toward Barbers Point Naval Air Station. The water source is found near Waipahu in the vicinity of the Kunia Interchange. The Hoaeae Wells, Kunia Wells I and II, as well as the Waipahu Wells, feed the water system serving the Ewa/Kapolei area. It is estimated that the existing industrial park has an average daily water demand of approximately 5.3 MGD, with maximum daily demands and peak hour demands of 7.1 and 12.2 MGD respectively.

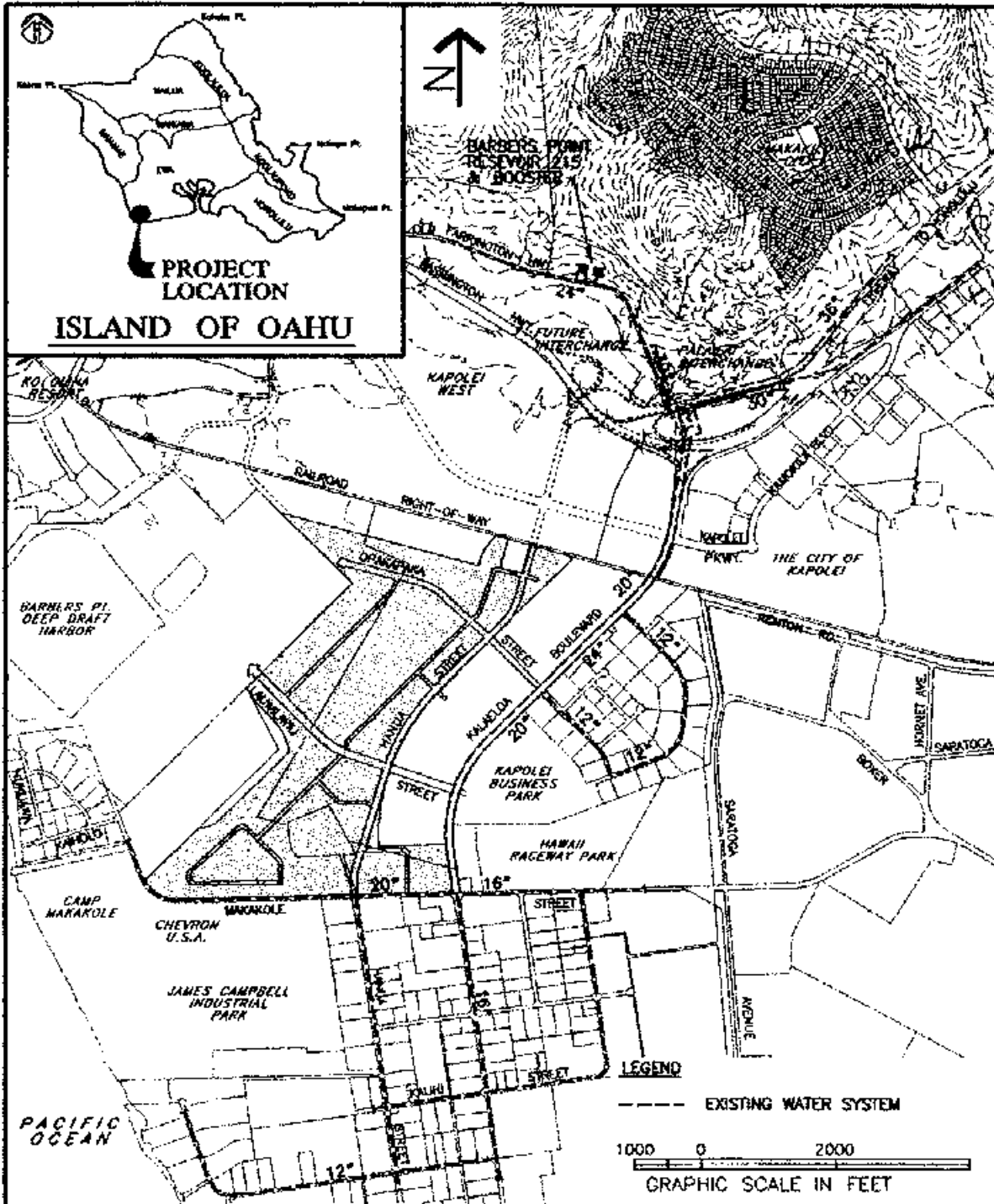
### Modifications after Development

The Kapolei Harborside Center will increase the area of industrial development from the existing industrial park. Buildings and paved areas will replace the existing vegetation and open areas currently found on the site. Consequently, additional water demands through the BWS system will be generated by the proposed development; however, water previously used for sugarcane cultivation is also no longer required. Campbell Estate has incorporated provisions for a dual water system in their developments in the Kapolei area. Both the City of Kapolei and Kapolei Business Park are being developed with dual water systems, although the system in the Kapolei Business Park has yet to be connected to a nonpotable water source. The dual water system will reduce the need for potable water by supplying irrigation and other potential nondomestic uses with a nonpotable water source, namely recycle effluent.

The anticipated potable and nonpotable water demands for the Harborside Center are listed below.

	<u>Potable Water Demand (MGD)</u>			<u>Nonpotable Water Demand (MGD)</u>		
	Ave.	Max.	Peak	Ave.	Max.	Peak
Harborside Center	1.17	1.76	3.52	0.49	0.74	1.48





**Fig. 11 Existing Water Facilities (Partial)**

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**EWA, OAHU, HAWAII**  
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### Impacts and Mitigation

Initial review of the Ewa Water Master Plan and a preliminary hydraulic analysis using data from the master plan as the basis, indicates that the 24-inch and 20-inch potable water mains in Kalaeloa Boulevard will be able to accommodate demands from the proposed project. A water master plan for the project will be prepared and submitted to the Board of Water Supply for their review and approval.

The offsite potable water system will be adequate to service the initial development of the industrial park as well as the other planned developments in the Kapolei area. Ultimately, however, additional regional improvements such as storage tanks and source development will also be required. Development of the former Oahu Sugar Co. wells EP-15 & 16 is currently underway by the Board of Water Supply. Development of this source will benefit the entire Kapolei region, including the Harborside Center. Implementation of other improvements will be governed by development schedules of the proposed projects in the area.

The onsite potable water system for the project will connect to the mains in Kalaeloa Boulevard and will be designed in accordance with BWS standards. Preliminary analysis indicates that 12- and 16-inch water lines will be needed to serve the potable water and fire protection requirements for the business-industrial park, including the petition area.

The proposed business-industrial park, as a mitigative measure, is planning to implement a dual water system that will use potable water for domestic uses and nonpotable water for irrigation and other nonconsumptive uses. Campbell Estate is incorporating dual water systems in the City of Kapolei and the Kapolei Business Park, although the business park's nonpotable system has yet to be connected to a nonpotable water source. The nonpotable water system will be extended from the City of Kapolei, which has the BWS recycled effluent line as a source, and connected to the existing and proposed nonpotable systems in the industrial area. An updated nonpotable water master plan for the City of Kapolei and the Kapolei industrial area, including Harborside Center, is being prepared for review and approval by the Board of Water Supply.

In general, the proposed Kapolei Business-Industrial Park, including the petition area, has been provided for in the planning of the regional water systems, resulting in minimal impact to the existing system.

## SOLID WASTE

### Existing Conditions

The project site does not currently generate solid wastes. Tenants in the existing industrial developments are serviced by private refuse collection companies.

### Impacts and Mitigation

The proposed development will be a new generator of solid waste. Generation of construction wastes due to clearing of the site will be a short term impact. The contractor will be required to remove all debris from the project site to mitigate the environmental impact. Private refuse collectors will service the development.

The City and County is currently operating a landfill site in Waimanalo Gulch and the H-POWER waste energy recovery facility on the leeward side of Oahu. The City is currently exploring alternative means of handling solid waste as an ongoing city-wide concern. Other programs being implemented are recycling and reuse of green waste.

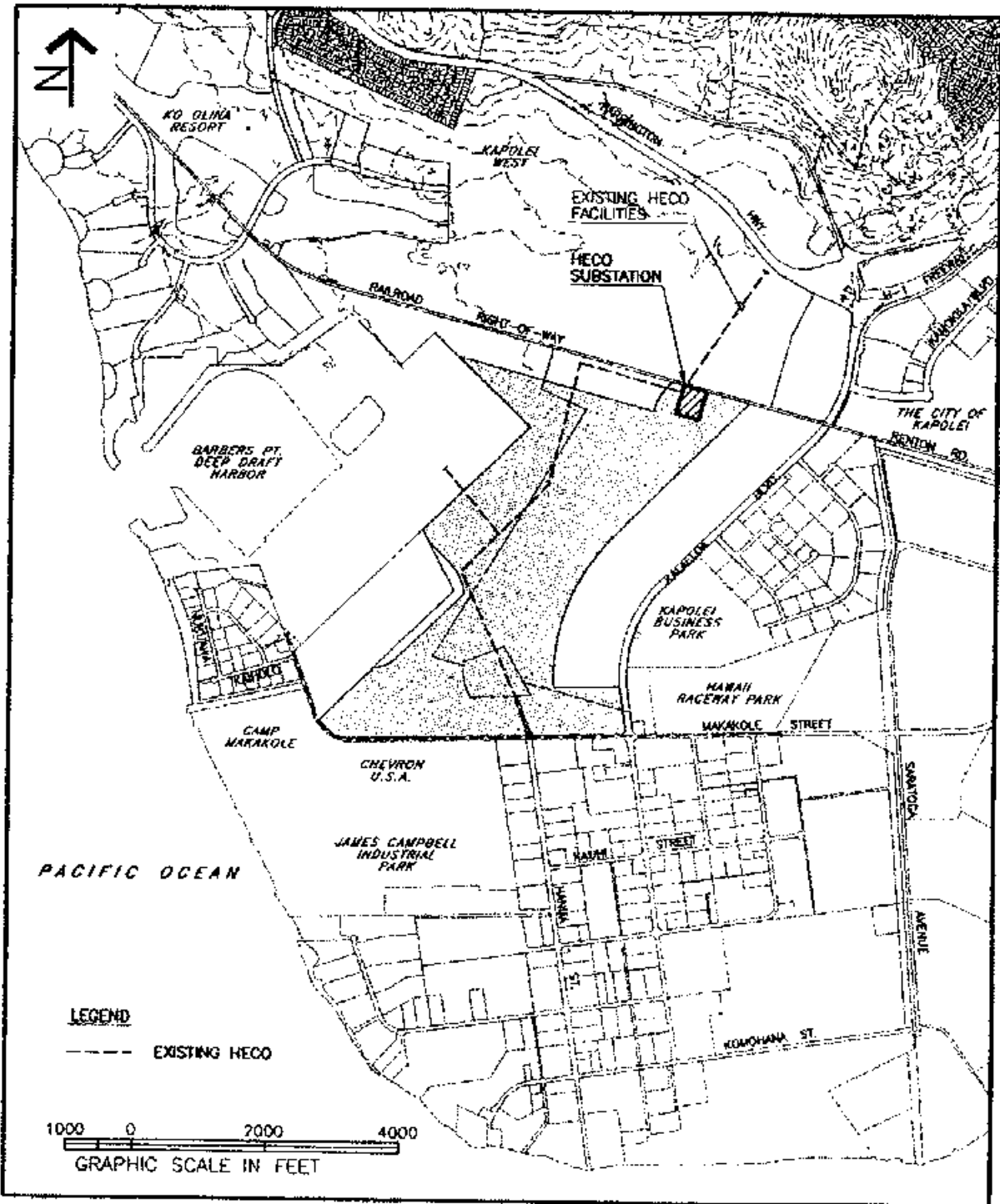
## POWER AND COMMUNICATIONS

### Existing Conditions

The project site is currently not served by Hawaiian Electric Company (HECO) and Hawaiian Telcom (HawTel). However, HECO and HawTel currently provide service to the existing industrial areas as well as to the adjacent developments of Ko-Olina and Barbers Point Harbor. An existing HECO substation is located within the adjacent to the petition area, next to the railroad right-of-way and west of Kalaeloa Boulevard (Figure 12). Several overhead lines are found traversing the petition area.

### Probable Impacts

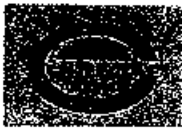
The proposed Kapolei Harborside Center will place additional demands on the utility systems. For planning purposes, HECO has indicated that electrical unit loads for industrial developments may range from 100 KVA/acre to 150 KVA/acre. Based on the information provided by HECO, the projected load requirements are estimated at 43.5 to 65.2 MVA for the petition area. Preliminary consultations with HECO and HawTel indicate that service can be provided to the project.



**Fig. 12**

**Existing HECO**

**KAPELEI HARBORSIDE CENTER**  
 EWA, OAHU, HAWAII  
 Prepared By: ENGINEERING CONCEPTS, INC.



## ENGINEERING CONCEPTS, INC.

Consulting Engineers

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September 27, 2006

Group 70 International, Inc.  
925 Bethel Street, 5<sup>th</sup> Floor  
Honolulu, Hawaii 96813

Attention: Mr. Troy Knott

Subject: Kapolei Harborside Center  
Response to Agency Comments

Please find below, responses to the various comments submitted by the reviewing government agencies.

### State Department of Transportation

Item 3, Lauwiliwili Street Alignment: The alignment of Lauwiliwili Street was initially coordinated with DOT Harbors Division when initial planning in the area was done over 10 years ago. The location of the entry to the Harbor, as shown, was requested by DOT at that time. The original entry point was further north of the current location. As a result of DOT's request, the entire Lauwiliwili alignment was adjusted from Kalaeloa Boulevard to the Harbor. Adjustments were also made to the Kapolei Business Park development on the east side of Kalaeloa Boulevard to accommodate this shift in the Lauwiliwili alignment.

Item 4, Drainage: Planning and initial design of the ultimate drainage improvements have begun. Also, work has begun on initiating the environment permitting process necessary for the ultimate outlet to proceed. Temporary drainage improvements are also being investigated to help alleviate the drainage concerns of the area for the interim period prior to construction of the ultimate drainage channel.

Item 5, Utility Improvements: Development of the utilities in the area will be coordinated with the DOT Harbors Division as planning of the development progresses.

Item 6, Hanua Street: Planning and initial design has begun. We have met with the Highways Division Traffic Branch to discuss requirements. A preliminary design is being prepared for initial review by the Traffic Branch.

*(Issues regarding funding will need to be responded to by Kapolei Property Development).*

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### Department of Environmental Services

#### Honouliuli Wastewater Treatment Plant Capacities:

Discussions were held with Mr. Jack Pobuk of the Department of Environmental Services regarding the treatment capacity at the Honouliuli Wastewater Treatment Plant. The treatment plant was expanded to handle a liquid stream capacity of 38 million gallons per day, however, the solids handling capacity is limited to 27 - 29 million gallons per day. According to Mr. Pobuk, there is still a limited amount of capacity in the solids handling stream, but is not sufficient to handle a large increase in flows that could be generated by a project of this size.

The City is currently in negotiations with a contractor to implement improvements to increase the solids handling capacity. The improvements are estimated to take two years to complete. It is likely that development of the project site will begin after completion of the improvements at Honouliuli since additional entitlements are required. In the event that Honouliuli improvements are not completed as hoped, temporary means of wastewater disposal could be investigated for the initial developments with the approval of the DES and the State's Department of Health. We will continue to coordinate our efforts with the Department of Environmental Services and Department of Planning and Permitting on this issue.

#### Drainage:

Re Pg 4-42: Figure 5 of the Preliminary Engineering Report shows the location of the drainage channel running through the middle of the site, from the railroad right-of-way to the ocean. WE acknowledge, however, that the drain channel was not specifically identified.

Re Pg 4-42 & Pg 10, PER: Existing runoff was based on a one-hour duration for comparative purposes between areas both larger and smaller than 100 acres. Actual design of drainage systems will be based on future developed conditions and will be based on the drainage areas served in accordance with the City's "Rules Relating to Storm Drainage Standards".

Re Pg 11, PER: The drainage channel transitions from a trapezoidal unlined channel to a rectangular lined channel at Malakole Street. The channel below Malakole Street will continue the rectangular lined configuration to the shoreline. The channel below Malakole will also be tidal.

Re Pg 14, PER: Initial hydraulic analyses assumed ledge coral or limestone (Rules Relating to Storm Drainage Standards). Vegetation was not anticipated.

Re Pg 15, PER: Developments draining to the drainage channel will be required to address water quality in accordance with the requirements of the storm drainage standards. This will minimize the impacts to the coastal waters.

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Re Pg 16, PER: Not all of the runoff from the area is currently discharged to Barbers Point Harbor. A large portion of the area runs off to Malakole Street to the existing drainageway adjacent to Chevron U.S.A. Prior to construction of the existing coal conveyor, most of the runoff from the area made its way to Malakole Street and the drainageway. Diversion of runoff away from the harbor will follow the more historic path of previous runoff. With the implementation of water quality improvements by the individual development within the watershed, sediment discharge and resulting impacts to coastal waters should be minimized.

### Department of Design and Construction

Street lighting as well as other improvements will be upgraded as required as development of the project progress.

### Board of Water Supply

The necessary water improvements will be installed as development progresses. A nonpotable water system is being planned for. The nonpotable water master plan for the area is currently being updated and will be submitted to the BWS for review. All required improvements will be coordinated with the BWS and construction plans submitted to review and approval.

### Hawaiian Electric Company

We will continue to work with Hawaiian Electric Company, as in the past, to ensure proper coordination of HECO's and the project's requirements.

### Department of Planning and Permitting

Item No. 3: Drainage master plan shall be submitted to the Department of Planning and Permitting for review and approval.

Item No. 7:

Water Supply: An "Application for Water Use Permit", if required, will be submitted as more detailed planning of the site is completed.

Wastewater: The date of construction for the parallel sewer will depend on the rate of development of the projects in the area. Construction timetable will be coordinated with the Department as additional information on development schedules becomes available. In addition, the sewer master plan for the area will be updated and submitted to the Wastewater Branch.

*(for solids handling see response to Dept. Of Env. Services)*



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Item No. 11, Water Quality: It is anticipated that water quality requirements will be the responsibility of the individual projects within the development rather than one large, common facility.

Department of Business, Economic Development and Tourism

Water Supply:

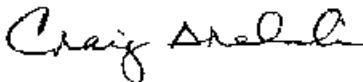
The project will be coordinated with the County, specifically with the Board of Water Supply, to ensure the project's needs are included in the development plan.

A nonpotable plan for the area is being updated to correspond to the BWS plans for a regional nonpotable water system.

Further investigation will be performed to determine the location of the existing monitoring well. Should the well be found to be within the project site, coordination with DOT Harbors will proceed to ensure proper procedures for closure are followed.

Please call me should you have any questions on the above.

Very truly yours,



Craig Arakaki, P.E.