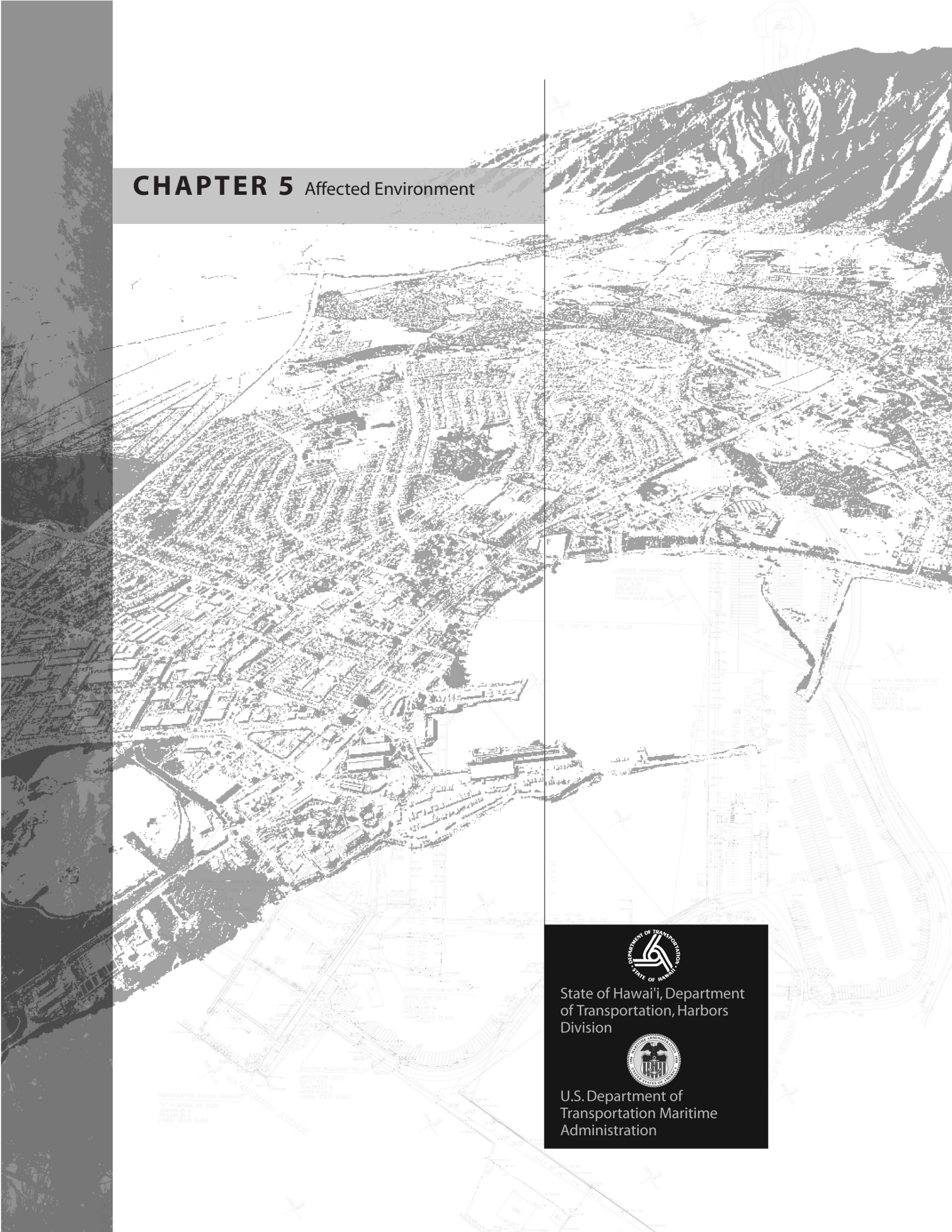
CHAPTER 5 Affected Environment



State of Hawai'i, Department of Transportation, Harbors Division

U.S. Department of Transportation Maritime Administration

CHAPTER 5
AFFECTED ENVIRONMENT

5.1 INTRODUCTION

This chapter describes existing environmental conditions in the regions of influence affected by the alternatives being evaluated for this project. Conditions which are relevant to the proposed action and alternatives, and therefore included in this chapter, are air quality, physical oceanography, marine biota, terrestrial flora and fauna, sensitive environments, geology, soils and topography (including bathymetry), groundwater and surface water resources, āā conditions, traffic conditions, public services and infrastructure, the noise environment, cultural and historic resources, visual and aesthetic resources, and recreational resources. The chapter is organized into sections for each resource area.

5.2 AIR QUALITY

The region of influence for air quality generally depends on the source and type of pollutant being evaluated, and may be as wide-ranging as the island of Maui for constituents such as ozone. Maui's tropical climate features mild temperatures throughout the year, typically ranging from a low of 70 degrees Fahrenheit (70°F) in January, the coldest month, to the mid-80°F during August, the warmest month. The trade winds blow from the northeast for the majority of the year, contributing to moderate humidity and infrequent severe storms. Rainfall is relatively light and occurs mostly during the wet season from November to April. Haleakalā, a 10,000-foot high mountain to the east of the project area, and the West Maui Mountains to the west generate a funneling effect which contributes to gusty winds during normal trade wind conditions. Occasional strong southerly winds, known as Kona winds, occur during the winter months.

As required by the Clean Air Act (CAA), the U.S. Environmental Protection Agency (EPA) has established National Ambient Air Quality Standards (NAAQS), 42 U.S. Code (USC) §7409, 40 Code of Federal Regulations (CFR) Part 50, for the following pollutants: carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter less than 10 microns in diameter (PM-10), particulate matter up to 2.5 microns in diameter (PM-2.5), ozone (O_3), and lead (Pb). The CAA has established primary and secondary standards: primary standards set limits to protect

public health, and secondary standards set limits to protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings.[1] Most of the secondary standards are the same as the primary standards, with the addition of the 3-hour sulfur dioxide concentration. There is currently no primary NAAQS for 3-hour sulfur dioxide. Hawai‘i has an ambient air standard for hydrogen sulfide (H_2S), in addition to the pollutants identified above.

NAAQS criteria, based on air monitoring data for the above pollutants, are used to designate all air regions within the United States into air quality categories for each pollutant: attainment, nonattainment, and unclassifiable. Regions that do not meet the NAAQS are classified as nonattainment; regions where air monitoring data results are better than the standard are classified as attainment. These standards, along with the State Ambient Air Quality Standards (AAQS) (Hawai‘i Administrative Rules [HAR] Title 11 Chapter 59), provide the basis for air pollution control rules and permitting procedures. Hawai‘i air pollution control regulations are established in HAR 11-60.1. The island of Maui and the state of Hawai‘i are in attainment of federal and state standards. Near Kahului Commercial Harbor, industrial, vehicular, and agricultural activities contribute to emissions of criteria air pollutants. Table 5-1 compares the Hawai‘i and federal AAQS. For constituents which have both federal and state standards, the Hawai‘i standards are as stringent as the NAAQS if not more conservative. The only constituents with federal standards and no state standards are 1-hour ozone concentration and particulate matter less than 2.5 micrometers in diameter ($PM_{2.5}$). Hawai‘i has AAQS for hydrogen sulfide and 3-hour sulfur dioxide concentrations.

According to the Department of Health (DOH) Clean Air Branch 2006 annual summary of Hawai‘i air quality data, there is one air quality monitoring station on Maui, near Kīhei on the south shore.[2] Agricultural activities are the primary source of air pollution on Maui measured by the air quality station; therefore, the station monitors only particulate matter. Air quality data is collected by the Air Surveillance and Analysis Section of the State Laboratories Division.

The U.S. EPA has established transportation conformity rules (40 CFR 93), as part of the CAA requirements, which apply to transportation plans, improvement programs, and highway and transit projects funded or approved by federal transportation agencies. Conformity rules prohibit federal agencies from engaging in actions that do not conform to a state’s air quality implementation plan. It is required in areas that do not meet NAAQS. As the state of Hawai‘i is in attainment of NAAQS, a conformity determination is not required for this project.

[1] EPA Air and Radiation NAAQS web page. www.epa.gov/air/criteria.html. Accessed November 8, 2007.

[2] State of Hawai‘i Department of Health Clean Air Branch, *Annual Summary 2006 Hawaii Air Quality Data*.

Table 5-1. Ambient Air Quality Standards

Air Pollutant		Ambient Air Quality Standards	
		Hawai'i (State AAQS)	Federal (NAAQS)
Carbon Monoxide	1-hour	**10 mg/m3** (9ppm)	**35 ppm** (45 mg/m^3)
	8-hour	**5 mg/m3** (4.4 ppm)	**9 ppm** (10 mg/m^3)
Nitrogen Dioxide	1-hour	—	—
	24-hour	—	—
	Annual	**70 µg/m3** (0.04 ppm)	**0.05 ppm** (100 µg/m^3)
Sulfur Dioxide	3-hour	**1,300 µg/m3** (0.5 pm)	—
	24-hour	**365 µg/m3** (0.14 ppm)	**0.14 ppm** (365 µg/m^3)
	Annual	**80 µg/m3** (0.03 ppm)	**0.03 ppm** (80 µg/m^3)
Ozone	1-hour	—	**0.12 ppm** (235 µg/m^3)
	8-hour	**157 µg/m3** (0.08 ppm)	**0.08 ppm** (157 µg/m^3)
PM_{10}	24-hour	**150 µg/m3**	**150 µg/m3**
	Annual	**50 µg/m3**	**50 µg/m3**
Lead	Calendar Quarter	**1.5 µg/m3**	**1.5 µg/m3**
Hydrogen Sulfide	1-hour	**35 µg/m3** (25 ppb)	—
$PM_{2.5}$	24-hour	—	**65 µg/m3**
	Annual	—	**15 µg/m3**

Note Standards are shown in bold, conversions in parentheses
ppm = parts per million
ppb = parts per billion
mg/m^3 = milligrams per cubic meter of air
µg/m^3 = micrograms per cubic meter of air

Source Hawai'i Department of Health Clean Air Branch website. www.hawaii.gov/health/environmental/air/chart.pdf; Accessed November 8, 2007 (taken from Hawai'i Administrative Rules Chapter 59; Code of Federal Regulations Title 40 Part 50)

In July 2005, the State of Hawai'i enacted Act 217, which replaced an October 2002 Memorandum of Understanding between the NorthWest Cruise Ship Association and the State relating to management of waste water, solid waste, hazardous waste, and air emissions. Act 217 amended Hawai'i Revised Statutes (HRS) Chapter 342D. Chapter 342D-C prohibits the operation of incinerators on large commercial passenger vessels in Hawaiian ports for the combustion of waste materials and limits the visible emissions allowed from large commercial passenger vessels.

A 1995 Air Quality Analysis conducted for the Kahului Airport Improvements Final Environmental Impact Statement compared air pollutant emissions for the island of Maui from sources such as electric power plants, gas utilities, fuel combustion in agricultural industry, motor vehicles, aircraft, and vessels. The data from the study, while outdated (1992), provided a relative comparison of air pollutant emissions from vessels statewide and other emissions sources. The study determined that contributions of sulfur oxides, nitrogen oxides, CO, and hydrocarbons from vessels were orders of magnitude lower than from sources such as electric power plants and motor vehicles.

5.3 PHYSICAL OCEANOGRAPHY

Kahului Commercial Harbor is fan-shaped and comprised of two rubble-mound breakwaters that angle toward the entrance channel to form a semi-enclosed basin with an area of approximately 214 acres (0.86 km^2). The 600-foot (183-m) wide opening between the seaward ends of the breakwaters forms the channel entrance. The eastern side of the harbor is dredged to a depth of greater than 33 ft (10 m) and contains the commercial port facilities, while the western side of the harbor consists primarily of a shallow, un-dredged reef platform less than 13 ft (4m) in depth. A small boat channel has been dredged through the reef platform leading from the small boat-launch ramp located at the westernmost corner of the harbor. The shoreline of the inner harbor is composed of sand and rubble beaches with several boulder groins.

The ocean floor in the harbor channel, and the immediately surrounding areas, consists of sand. However, off the outer sides of both the East and West Breakwaters, shallow reefs occur. The reefs off the eastern breakwater are relatively shallow at depths of approximately 13 ft (4m).

The U.S. Army Corps of Engineers (USACE) conducted a wave climate and wave response study in 2002 after the 2025 Master Plan was completed.[3] Wave data had been collected between November 1993 and May 1995 using a directional array gage located in approximately 48-foot (15-m) depth outside the harbor entrance and non-directional pressure sensors inside the harbor. The gage outside the harbor is part of a network of gages operated by the Scripps Institute of Oceanography. The results of the study indicated that the harbor is exposed to wind and waves from the north to northeast directions. The island of Maui shelters the harbor from wave energy from the northwest and east, and fringing reefs extending from the coast both east and west of the harbor help to further restrict the directional exposure of the harbor entrance. Depths to bottom within the harbor range from a few feet to greater than 30 feet (10 m).

[3] U.S. Army Corps of Engineers, Engineer Research and Development Center. June 2002. *Wave Climate and Wave Response, 2025 Plan, Kahului Harbor, Maui, Hawaii.*

Study findings show that the wave climate at Kahului Commercial Harbor exhibits distinct seasonal characteristics. Waves generated by winter storms in the Northern Pacific Ocean impact the harbor. High wave energy typically occurs seasonally from October through April, and the summer season (May through September) is typically characterized by low wave energy. Mean annual wave height for the harbor was observed to be approximately three feet (1 m), with a maximum of eight feet (2.5 m). This is lower than the offshore wave climate, which is expected due to the natural and constructed protection of the harbor from dominant offshore wave directions. The study indicated a strong tendency toward relatively long wave periods from the northwest and shorter periods from the east.

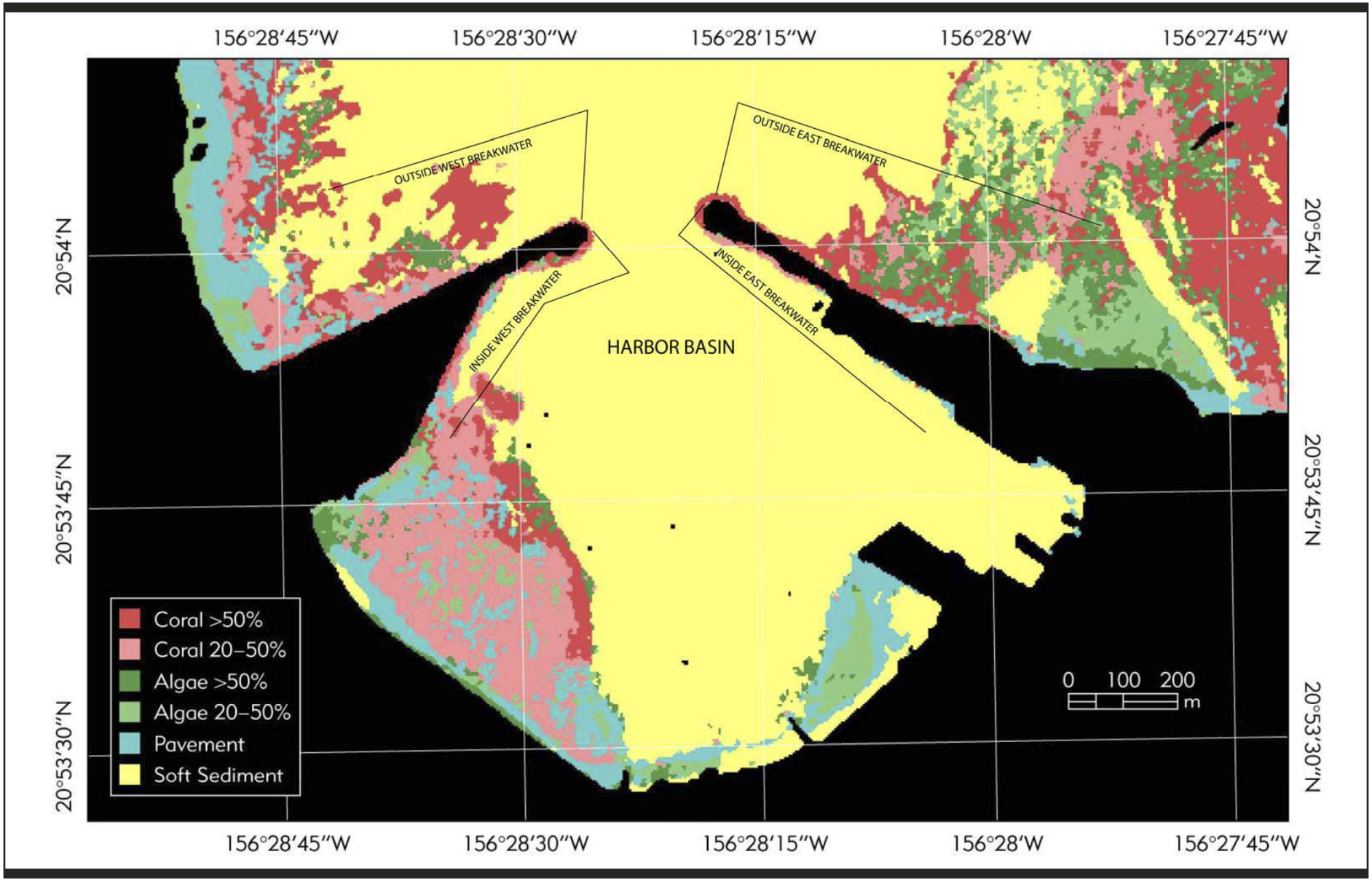
5.4 MARINE BIOTA

Marine biological resources were identified in a reconnaissance study conducted by Marine Research Consultants, Inc., in 2007. The report from this study, *Reconnaissance Survey of the Marine Environment, Kahului Commercial Harbor, Maui, Hawaii; Characterization of Benthic Habitats, Assessment of Impacts from Harbor Expansion* (June 2007), is provided in Appendix G.

5.4.1 Reef Zone Classification and Boundaries

Owing to the physical and biotic structure of Kahului Commercial Harbor, as well as the locations of the proposed alterations of separate areas of the harbor under the various alternatives, results are divided into five separate classes or zones. These classes are referred to as: 1. Outside East Breakwater; 2. Inside East Breakwater; 3. Outside West Breakwater; 4; Inside West Breakwater; and 5. Harbor Basin (Figure 5-1). As the region of influence for the project is within the harbor itself, information on zones 1 and 3 is provided for context only.

The only protected or endangered species encountered during fieldwork was the green sea turtle (*Chelonia mydas*). Several turtles were observed swimming near the reef surface outside of the East Breakwater of Kahului Commercial Harbor. Green sea turtles have become increasingly common since attaining federal protection status in the 1970s and are routinely observed throughout Hawaiian nearshore waters. No turtle nesting grounds are known to occur inside the harbor. Maui Ocean Center personnel collect fish from the harbor. During collection activities, green sea turtles, rays, sharks, and occasionally dolphins have been observed in the harbor.



Belt Collins

NORTH

Figure 5-1
BENTHIC MAP AND ZONATION

Kahului Commercial Harbor 2030 Master Plan
Draft Environmental Impact Statement
December 2007

Other protected and endangered species that might occur in the area are marine mammals, particularly the humpback whale (*Megaptera novaeangliae*) and Hawaiian monk seal (*Monachus schauinslandi*). While Kahului Commercial Harbor does not provide ideal habitat for these species, it is possible that they could occur within the project area.

The Western Pacific Regional Fishery Management Council (Council)[4] is one of eight regional fishery management councils established by the Magnuson Fishery Conservation and Management Act of 1976, which was amended in 1996 to address protection of fish stocks, and re-named the Magnuson-Stevens Fishery Conservation and Management Act. The Council has designated Essential Fish Habitat (EFH) for bottomfish, crustaceans, and precious corals and coral reef ecosystems in Hawai'i.[5] As described in Section 1.8.11 EFH is defined as "...those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." EFH also includes coral habitat. Most waters of the main Hawaiian islands, from the shoreline to the outer limit of the Exclusive Economic Zone (EEZ) have been determined to be EFH for bottomfish, crustaceans, or coral reef. Therefore EFH does exist in the project area for multiple fishery management plans.

Habitat Areas of Particular Concern (HAPC) are discrete subsets of EFH that provide extremely important ecological functions or are especially vulnerable to degradation. Councils may designate a specific habitat area as an HAPC based on one or more of the following reasons:

- Importance of the ecological function provided by the habitat
- Extent to which the habitat is sensitive to human-induced environmental degradation
- Whether, and to what extent, development activities are, or will be, stressing the habitat type
- Rarity of the habitat type

The HAPC designation does not confer additional protection or restrictions upon an area, but can help prioritize conservation efforts. HAPCs may exist within the Kahului Commercial Harbor; consultation with NMFS will occur to identify HAPCs.

Pelagic fishes are managed separately under the Pelagics Fishery Management Plan, which regulates fishing for pelagic species in the waters of the western Pacific region.

[4] Western Pacific Regional Fishery Management Council website. www.wpcouncil.org/maps.htm. Accessed December 10, 2007.

[5] Western Pacific Regional Fisher Management Council. Hawaii Archipelago Fishery Ecosystem Plan. www.wpcouncil.org/hawaii/HawaiiFEP/December12005HawaiiFEP.pdf. Accessed December 10, 2007.

OUTSIDE EAST BREAKWATER. The region outside the harbor basin fronting the East Breakwater is an extremely diverse area in terms of both physical structure and biotic community assemblages. The seaward portion of the reef is characterized by substantial vertical relief, consisting of a series of narrow "finger reefs" that have nearly vertical sides and flat upper surfaces. The finger reefs are composed of accreted limestone from growth of corals and other calcifying organisms. Coral cover on the steeply sloping sides of the fingers is uniformly close to 100 percent, composed exclusively of overlapping plates of various species of the genus *Montipora*. The tops of the fingers are colonized with a variety of coral species which occur primarily in flat encrusting or plating growth forms including *Porites lobata*, *Montipora patula*, *M. flabellata*, *M. capitata*, as well as the sturdy branching coral *Pocillopora meandrina*. Also abundant on the tops of the finger reefs was the soft-bodied colonial zoanthid *Palythoa tuberculosa*. Total coral cover on the tops of the finger reefs was on the order of 25 to 50 percent. While calcareous encrusting algae were common on the finger reefs, fleshy macroalgae were relatively rare. Motile macro-invertebrates were limited to rarely occurring sea urchins *Echinothrix diadema* and the boring urchin *Echinometra mathaei*.

Inland from the finger reefs, the reef on the outside of the East Breakwater has less vertical relief. Rather, the geomorphology of the reef is a raised limestone platform that is bisected by several large sand channels. Coral cover is less on the reef platform than on the more seaward zone, and is far patchier in occurrence. Dominant coral species were *Pocillopora meandrina* and *Montipora* spp. Scattered over the reef platform were large patches of short-fingered *Porites compressa*. The primary difference between the seaward finger reefs and the inner reef platform is the preponderance of fleshy macroalgae that occurred along with corals on the latter. The most noticeable alga was the fluorescent blue species *Martensia fragilis* which was very abundant throughout the area. The most dominant alga was *Acanthophora specifera*, which covered large expanses of the reef surface. Other conspicuous algae were *Halymenia formosa* and *Amansia glomerata*. While these species were the most abundant and conspicuous, other species were also observed over the reef platform. Total cover of macro-algae on the reef platform was on the order of at least 50 percent. Closer to shore, algal abundance increased and coral abundance decreased.

The most abundant motile macro-invertebrates were the sea cucumbers *Holothuria atra* and *Actinopyga mauritiana*. Sea urchins were conspicuously absent across the reef platform.

The reef platform outside the East Breakwater contained the highest abundance and diversity of fish of the areas studied in and around Kahului Commercial Harbor, largely based on the greatest degree of habitat relief. As is typical on many Hawaiian reefs, the most common fishes were the damselfishes (*Chromis agilis*, *C. hanui*, *Abudefduf abdominalis*), as well as a variety of surgeonfishes (*Acanthurus nigroris*, *A.*

nigrofuscans, *A. olivaceus*, *Naso lituratus*) and butterflyfishes (*Chaetodon miliaris*, *C. multicinctus*, *C. quadrimaculatus*, and *C. auriga*). Hawkfishes (*Parracirrhites arcatus*, *P. forsteri*, and *Cirrhitops fasciatus*) were common sitting on the upper branch tips of colonies of *Pocilloporid* corals. Common wrasses included *Bodianus bilunulatus* and *Thallosoma duperrey*. Numerous squirrelfish (*Myripristes* spp.) were observed under ledges cut in the reef platform. Several small jacks (*Caranx melampygus*) were observed swimming between the reef top and the channels between the reef fingers. On the sand flats that bisected the reef platform, the blue-lined snapper (*Lutjanus kasmira*) as well as several goatfishes (*Mulloidichthys* spp.) were observed.

In general, the marine habitats on the outside of the East Breakwater were remarkable in the diversity of physical structure and biotic composition.

OUTSIDE WEST BREAKWATER. The reef habitats outside of the West Breakwater are substantially different than off the East Breakwater. Most of the bottom cover off the West Breakwater consists of sand, with the exception of an area of raised hard-bottom. Benthic cover of the platform consist almost exclusively of the soft bodied zooanthids *Palythoa* spp. and *Zooanthus* spp. While these "soft corals" are very abundant in the area comprising up to 90 percent of bottom cover, stony corals comprised 5 to 10 percent of bottom cover, consisting primarily of the species *Porites lobata*, *Pocillopora meandrina*, *Montipora patula* and *M. capitata*. The dominant algae in the area were various encrusting red calcareous species including *Pneophyllum* sp., and *Hydrolithon* spp. As off the outer East Breakwater, macro-invertebrates were very sparse in the area, limited to rarely occurring *Echinometra mathaei*.

INSIDE EAST BREAKWATER. The East Breakwater seaward of Pier 1 is constructed of tubular concrete "dolos" or tetrapods. These submerged concrete structures are designed to provide a maximum amount of surface area, and as a result provide an ideal habitat for settlement of coral inside the wave-sheltered harbor. In addition, the spaces created in between the concrete structures provide sheltered habitat for fish and invertebrates (e.g., spiny lobsters, *Panulirus* spp.). The dominant coral colonizing the concrete structure is *Montipora capitata*. As is often observed in other Hawaiian settings, *Montipora capitata* is a very sediment-tolerant species, and many of the colonies on the concrete structures inside the harbor were partially covered by a coating of fine-grained sediment. Other corals that were observed include small colonies of *Pocillopora meandrina*, as well as colonies of *Porites lobata* and *P. compressa*. While present, these species comprised only a minor component of the coral community that consisted primarily of *Montipora*. Frondose macroalgae were rare along the inner eastern breakwater, limited to several large *Halymenia formosa* attached to the concrete structures. Sea urchins were not observed on the concrete structures.

The most abundant fish species included a variety of squirrelfishes (*Holocentridae*) in the interstitial spaces created by the tetrapods. Small jacks (*Caranx melampygus*) and a variety of surgeonfish (*Acanthuridae*) were also observed, as was a single sailfin tang (*Zebrasoma veliferum*).

INSIDE WEST BREAKWATER. The edge of the West Breakwater is composed of basaltic boulders that extend to the shallow, un-dredged harbor floor. Within the intertidal range, the boulders are covered with calcareous encrusting algae as well as patches of the red alga *Hypnea* sp. and the green alga *Chaetomorpha antennina*. Unlike the inner East Breakwater, where man-made structures are nearly completely colonized by coral, the submerged boulder surfaces on the inner side of the West Breakwater are relatively barren. The predominant colonizers are isolated heads of the hemispherical branching coral *Pocillopora damicornis* and *P. meandrina*, small plates of *Montipora* spp., as well as soft zooanthids *Palythoa* and *Zooanthus*. Sea urchins, particularly *Echinothrix diadema* and *Tripneustes gratilla* were common on the boulder surfaces of the inner West Breakwater.

HARBOR BASIN. The harbor basin, extending from the entrance channel between the ends of the east and west breakwaters to the shoreline is comprised of a variety of habitats. Most of the harbor floor that has been previously dredged is composed of sand or mud. Bottom areas close to the West Breakwater consisted primarily of coarse sands with substantial shell fragments, while most of the central harbor floor and eastern basin between Piers 1 and 2 were muddy sands containing numerous burrows from benthic infauna (likely a varied community including crabs, shrimps and worms).

A section of the inner harbor basin that extends from approximately the midway point of the fill area comprising the western shoreline of the harbor basin to the innermost part of the harbor at Hoaloha Beach does not appear to have been extensively dredged in the past. As a result, the substratum is predominantly hard bottom consisting of a limestone reef platform. The most prevalent biota on the reef are the soft zooanthids *Palythoa* and *Zooanthus*, which constitute near complete bottom cover over large areas. On sections of the reef platform with steep vertical relief, overlapping plates of *Montipora capitata* are prevalent. Other corals occurring on the reef platform were *Pocillopora meandrina*, *P. damicornis*, and occasional large heads of *Pavona duerdeni*. Also common on the reef platform were a variety of macroinvertebrates including the urchins *Echinothrix diadema* and *Tripnestes gratilla*, the sea cucumbers *Holothuria atra* and *Actinopyga mauritiana*. Numerous "feather-duster" sabellid worms were also observed across the reef face, particularly in areas covered with zooanthids.

The dominant alga in the inner harbor basin was *Bryopsis hypnoides*, which occurred as green tuft-like plants throughout the area. Fish were rarely observed within the

inner harbor basin during the current study, although the species *Mugil cephalus*, *Selar crumenophthalmus*, *Decapterus macarellus*, *Acanthurus triostegus*, *Etrumeus micropus*, *Kuhlia sandvicensis*, *Caranx ignobilis* and *Chanos chanos* have been reported as common within the harbor.

Prior studies conducted for the *Final Environmental Assessment and Finding of No Significant Impact, 2025 Master Plan Improvements, Kahului Commercial Harbor* (2025 Master Plan EA) identified the crab *Macrophthalmus telescopicus* as the most conspicuous inhabitant of the silty-sand bottom near the existing Piers 1 and 2. Other marine resources in the eastern part of Kahului Commercial Harbor include *Montipora* species of coral, striped mullet or *ʻamaʻama* (*Mugil cephalus*), big-eyed scad or *akule* (*Selar crumenophthalmus*), mackerel scad or *ʻopelu* (*Decapterus macarellus*), convict surgeonfish or *manini* (*Acanthurus triostegus*), herring (*Etrumeus micropus*), Hawaiian flagtail or *aholehole* (*Kuhlia sandvicensis*), giant trevalley or *ulua aukea* (*Caranx ignobilis*), and milkfish or *awa* (*Chanos chanos*).

Marine resources documented at the West Breakwater in a 1989 EIS prepared by the USACE included intertidal organisms such as *aʻama* crab (*Grapsus tenuicrustatus*), periwinkle (*Littorina* spp.), false opihi or ʻ*opihi awa* (*Siphonaria normalis*), and algae species (*Ulva* spp.). Fish identified in the area included the Hawaiian anchovy or *nehu* (*Encrasicolina purpurea*), white goatfish or ʻ*oama* (*Mulloides flavolineatus*), and *akule.*

5.4.2 Benthic Habitat

Figure 5-1 shows the benthic habitat map produced by the supervised classification scheme described in the report provided in Appendix G. Spectral resolution of the image allowed for distinction of four bottom classifications dominated by biotic cover, including dense coral (greater than 50 percent bottom cover); moderate coral cover (20 to 50 percent bottom cover); dense macroalgae (greater than 50 percent bottom cover), and moderate macroalgae (20 to 50 percent bottom cover). Two additional abiotic bottom cover classes were also mapped, which included pavement (hard bottom) and soft sediment (sand and mud).

Examination of the habitat map reveals several important points. First, while there are gradations between zones, in general the reef zonation pattern is fairly distinct, and allows good distinction of dominant biotic assemblages throughout the area of interest. A second aspect that is apparent is that while Kahului Commercial Harbor is "man-made" the habitats inside and directly outside the harbor structures are comprised of healthy and diverse reef communities. Other than the dredged portions of the harbor basin, it was not evident that the harbor structures had resulted in any impairment or damage to reef community structure. Rather, structures that formed the harbor breakwater provided ideal substrata for settlement of corals.

Of the total 442 acres (179 hectares) of benthic habitat surveyed, about 48 percent (214 acres [87 hectares]) was inside the harbor, while 52 percent (229 acres [93 hectares]) was outside the harbor. Soft sediment comprised the highest percentage of habitat cover overall (58 percent), as well as both inside (69 percent) and outside (47 percent) the harbor. Coral cover greater than 20 percent accounted for a total of about 22 percent of total area coverage or approximately 97 acres (39 hectares); 16 percent inside the harbor, and 27 percent outside the harbor. About 12 percent of the entire survey area was covered with algae that comprised more than 20 percent bottom cover, while 6 percent of the harbor basin and 18 percent of the outer reefs had algal cover of at least this amount.

5.4.3 Invasive Marine Species

Ongoing assessment of nonnative aquatic species in Hawai‘i has identified introduction and successful establishment of at least five marine macroalgae species, 20 marine fish species, and 248 marine and brackish water invertebrate species.[6]

A 2004 report by the Hawai‘i Biological Survey at the Bishop Museum that summarized surveys for nonindigenous marine species conducted in Hawai‘i’s harbors included surveys conducted in 2003 at Piers 1 and 2 of Kahului Harbor which identified heavily fouled concrete pilings along the northeast side of the harbor. The surveys identified individuals of 38 invasive and 11 cryptogenic (neither demonstrably nonindigenous nor native) species at Pier 1, and 31 introduced and 12 cryptogenic species at Pier 2.[7] However, low visibility and high turbidity limited observations of fish and other motile organisms.

The marine algae species *Acanthophora spicifera*, *Gracilaria salicorna*, *Hypnea musciformis*, *Eucheuma denticulatum*, and *Kappaphycus* spp., (not identified at Piers 1 or 2 in the 2004 Hawai‘i Biological Survey report) have become dominant components of reef environments where they become established around the state.

Marine algae may proliferate in Kahului Commercial Harbor, to the extent that the County of Maui occasionally collects seaweed along the shoreline. Currently, the West Breakwater is used as a drying site, before final disposal of the seaweed.

The invasive fish *Lutjanus kasmira* (blueline snapper or *ta‘ape*), *Cephalopholis argus* (peacock grouper or *roi*), and *Lutjanus fulvus* (*to‘au*) are known to be established in the nearshore reef fisheries of Hawai‘i; however, there are strong differences of

[6] State of Hawai‘i, Department of Land and Natural Resources, Division of Aquatic Resources. September 2003. *State of Hawai‘i Aquatic Invasive Species (AIS) Management Plan.*

[7] Coles, S.L., P.R. Reath, K. Longnecker, H. Bolick., and L.G. Eldridge. November 2004. *Assessment of Nonindigenous Marine Species in Harbors and on Nearby Coral Reefs on Kaua‘i, Moloka‘i, Maui, and Hawai‘i*. Bishop Museum Technical Report No 29a. Honolulu, Hawai‘i.

opinion among some fishers and researchers as to the level of impact these species have on native fish and associated fisheries.[8]

5.5 TERRESTRIAL FLORA AND FAUNA

The region of influence for terrestrial flora and fauna includes the project location itself. Threatened and endangered species or their habitats have not been identified at the project site. There have been observations of waterbirds in the drainageway to the west of Pier 2. According to the 2025 Master Plan EA these sightings were intermittent, and the area is not used for nesting by the waterbirds. The U.S. Department of the Interior, Fish and Wildlife Service (USFWS) has provided a list of threatened or endangered terrestrial species in the project vicinity to the U.S. Department of Transportation, Maritime Administration (MARAD).[9] The species list includes the following species which have been observed within the project vicinity: the federally threatened Newell's shearwater (*Puffinus auricularis newelli*) and the federally endangered Hawaiian petrel (*Pterodroma phaeopygia sandwichensis*), Hawaiian hoary bat (*Lasirus cinereus semotus*), Hawaiian duck (*Anas wyvilliana*), Hawaiian coot *(Fulica ala*i), Hawaiian stilt (*Himantopus mexicanus knudseni)* and Blackburn's sphinx moth (*Manduca blackburni*). The USFWS has identified designated critical habitat for the Blackburn sphinx moth 0.8 miles from the project location (Kanahā Pond and Kanahā Park Units[10]), outside the project's region of influence for terrestrial flora and fauna.

The USFWS identifies the project area as "multiple classifications of high and low intensity development, alien grassland, alien forest, and water." Studies conducted as part of the 2025 Master Plan EA and the 2002 USACE EA of the West Breakwater characterized the existing flora as predominantly landscaped plants and weeds[11]. These included a mix of introduced and native species, such as beach naupaka, Bermuda grass, and tree heliotrope. Few faunal resources were identified in prior documents; some migratory birds such as wandering tattler (*Heteroscelus incanus*) and ruddy turnstone (*Arenaria interpres*) were identified on the West Breakwater.

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8 State of Hawai'i, Department of Land and Natural Resources, Division of Aquatic Resources. September 2003. *State of Hawai'i Aquatic Invasive Species (AIS) Management Plan.*

9 Personal Communication. USFWS Pacific Islands Fish and Wildlife Office, and Mr. Michael C. Carter, USDOT MARAD. August 31, 2007.

10 USFWS. Maps Showing Critical Habitat Designations for Blackburn's Sphinx Moth. Map 3 Units 5 and 6 – Island of Maui. www.fws.gov/pacificislands/CHRules/mothmap.pdf. Accessed December 6, 2007.

11 US Army Corps of Engineers, Honolulu District. August 2002. *Decision Document, Environmental Assessment and Finding of No Significant Impact, Kahului Light Draft Navigation Improvements, Kahului, Island of Maui, Hawaii.*

Wetlands

Prior to the 2025 Master Plan EA, the USACE had delineated a portion of an unlined drainage way west of Pier 2 as a wetland. A Botanical Resources Assessment Study was completed by Char & Associates in 1997, which does not list any endangered or threatened species in the area. As the water is supplied by a manmade drainage system owned by the County of Maui, collecting water from off-harbor areas, it is not likely that the area would be a wetland under "normal" conditions (i.e., without introduction of drainage runoff from the manmade system).

Kanahā Pond Wildlife Sanctuary, a wetland complex approximately one-half mile east of the harbor, is outside the region of influence for terrestrial flora and fauna.

5.6 SENSITIVE ENVIRONMENTS

The region of influence for sensitive environments as identified by HRS Chapter 343 includes the project location and immediate vicinity.

FLOOD PLAINS. The harbor area is located in a V23 flood zone, as identified on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) Community Panel 150003 0190D, as of June 1, 1981.[12] This designation identifies the project site as within the area of the 100-year coastal flood and indicates that it is within an area of flooding due to wave action. Base flood (flood which has a one percent or greater chance of occurrence in any given year) elevations range from 10 to 18 feet (3 to 6 m). Storm surges and flooding from heavy rains or coastal storms can also cause damage to structures along the shoreline. According to anecdotal evidence presented by harbor users during scoping meetings, high surf during winter storms occasionally washes across Kahului Beach Road in the area of the harbor. The U.S. Geological Survey (USGS) ranks the stream flooding hazard for the Kahului coastline as "moderately high."[13]

TSUNAMI ZONES. The USGS identifies the tsunami hazard in the vicinity of the Kahului Commercial Harbor as 3 to 4 on a scale of 1 to 4, with 4 being "high."

BEACHES. Kahului Commercial Harbor is located along the north shore of the island of Maui. Sandy beaches are present within and around the harbor. Section 5.15 provides a description of beaches in and around the harbor, and recreational uses of those beaches.

[12] Federal Emergency Management Agency. March 16, 1995. *Flood Rate Insurance Map (FIRM).* Maui County, Hawai'i. Community Panel 15003 190 D.

[13] Fletcher, C.H., E.E. Grossman, B.M. Richmond, and A.E. Gibbs. 2002. *USGS Atlas of Natural Hazards in the Hawaiian Coastal Zone. Geologic Investigations Series I-2761.* U.S. Department of the Interior, U.S. Geological Survey.

STREAMS AND RIVERS. Streams in the project area are described in Section 5.8.3.

OTHER SURFACE WATERS. No rivers are present in the project vicinity.

OCEAN. The marine resources in the project area are described in Section 5.8.2, Marine Waters.

ESTUARIES. HAR 11-54 defines an estuary as "characteristically brackish coastal waters in well-defined basins with a continuous or seasonal surface connection to the ocean that allows entry of marine fauna. Estuaries may be either natural or developed." While the Kanahā Pond wetland complex (see Section 5.8.3) is within a half-mile of the project site, it is not defined as an estuary in the DOH administrative rules.

ANCHIALINE PONDS. HAR 11-54 defines anchialine ponds as "coastal bodies of standing waters that have no surface connection to the ocean but display both tidal fluctuations and salinity ranges characteristic of fresh and brackish waters, indicating the presence of subsurface connection to the water table and ocean. Anchialine pools are located in porous substrata (recent lava or limestone) and often contain a distinctive assemblage of native aquatic life." No anchialine ponds are present in the vicinity of the project location.

FRESH OR COASTAL WATERS. Fresh water and coastal waters in the project area are described in Section 5.8.3, Other Surface Waters.

EROSION-PRONE AREAS. According to the USGS, coastal erosion is a widespread problem in the Hawaiian Islands, and typical erosion rates are in the range of one-half to one foot per year.[14] The project location is on the north shore of the island of Maui. The USGS ranks the coastal erosion hazard for the area as "high" due to the exposure to annual wave heights of 20 feet (6 m) during the winter and hurricanes approaching from the east. A 1991 coastal erosion analysis identified the Kahului Commercial Harbor area (from the West Breakwater to Kaʻa, east of the harbor) as having an annual erosion hazard rate (AEHR) of −1.6 feet (−0.5 m) per year. The analysis identified the shoreline within the harbor (Hoaloha Park and Kahului Beach) as having an AEHR of −0.5 feet (−0.15 m) per year.[15]

[14] Fletcher, C.H., E.E. Grossman, B.M. Richmond, and A.E. Gibbs. 2002. *USGS Atlas of Natural Hazards in the Hawaiian Coastal Zone. Geologic Investigations Series I-2761.* U.S. Department of the Interior, U.S. Geological Survey.

[15] Makai Ocean Engineering and Sea Engineering. 1991. *Aerial Photograph Analysis of Coastal Erosion on the Islands of Kauai, Molokai, Lanai, Maui, and Hawaii.* State of Hawaiʻi Office of Planning Coastal Zone Management Program. As cited in *Kahului Harbor, Maui, Hawaii Smoothed Erosion Rates*. Undated. Provided for the County of Maui by Coastal Geology Group, Department of Geology and Geophysics, School of Ocean and Earth Science and Technology, University of Hawaiʻi at Mānoa. Published under Contract G0605

GEOLOGICALLY HAZARDOUS LAND. Kahului Commercial Harbor is in seismic zone 2B as established by the Uniform Building Code (UBC). The UBC zones range from one to four based on relative seismic hazard, with one as the lowest and four as the highest seismic hazard area. The zones are used to determine seismic design loads on structures. The USGS ranks the seismicity hazard for the area as "moderately high."

5.7 GEOLOGY, TOPOGRAPHY, AND SOILS

The region of influence for geologic, topographic, and soil conditions includes the project location itself.

GEOLOGY, SOILS, AND SEDIMENTS. Geologic conditions underlying the harbor include volcanic deposits, marine sediments, terrestrial sediments, and fill. The West Breakwater is composed of dredged marine sediments and fill. Lands adjacent to the harbor typically consist of sand dune deposits and lava flows.

Soils at the harbor are predominantly fill land, which typically consists of areas filled with material from dredging, upland excavation, garbage, and bagasse and slurry from sugar mills. Soils on lands adjacent to the property primarily consist of Puuone sand (as defined by the US Department of Agriculture), a grayish-brown calcareous sand about 20 inches thick, underlain by grayish-brown cemented sand.

TOPOGRAPHY. The topography of the project area is relatively flat, and elevations range from sea level to approximately 20 feet (6 m) above sea level.

BATHYMETRY. The contours of the harbor are defined by man-made dredged areas. The natural harbor bottom of the western part of the harbor slopes gently to the dredge line. The bottom goes to as much as 35 ft (11 m) deep in the turning basin.

5.8 GROUNDWATER AND SURFACE WATER RESOURCES

5.8.1 Groundwater

The region of influence for groundwater is the aquifer over which the project site is located. Groundwater resources underlying the site include a basal aquifer in Honomanu Basalts. This aquifer, overlain by a caprock confining layer, is located at about 100 feet (30 m) below ground surface in the project area. It is identified as a drinking water resource in some areas. The likelihood of contamination from surface activities is low due to its depth below the surface.

The project area is downgradient and seaward of the State of Hawai'i DOH-established Underground Injection Control (UIC) line. The State of Hawai'i UIC program was established to protect the quality of underground sources of drinking water from pollution by subsurface disposal of fluids.[16] The UIC line is the boundary between non-drinking water aquifers (generally seaward of the UIC line) and underground sources of drinking water (generally inland of the UIC line).

5.8.2 Marine Waters

The region of influence for marine waters includes the water within Kahului Commercial Harbor itself and nearshore waters in the vicinity of the project which may be affected by proposed activities.

Kahului Commercial Harbor is designated as Class A marine waters by HAR 11-54, and is identified as a zone of mixing by the State DOH. Class A waters are recommended for recreational purposes and aesthetic enjoyment. Other uses are permitted as long as they are compatible with the protection and propagation of fish, shellfish, and wildlife, and with recreation in and on these waters. Kahului Bay (inshore of the harbor mouth) has been listed as impaired for nutrients and turbidity by the DOH. Under Section 303(d) of the Clean Water Act, Total Maximum Daily Loads (TMDLs) must be established for listed impaired water bodies, but they have not yet been established for Kahului Bay.

HAR 11-54-6 defines numeric water quality standards for embayments, including Kahului Bay. A 2003 water quality assessment was conducted for the 2025 Master Plan EA.[17] Results of water quality sampling conducted on October 16, 2002, indicated the following conditions:

- Dissolved oxygen (DO) concentrations generally typical of nearshore marine waters, ranging from 6.0 to 4.8 milligrams per liter (mg/l), which is greater than 90 percent oxygen saturation at their respective temperatures and salinities. This is better than the 75 percent DO saturation standard defined in HAR 11-54-6.
- pH levels typical for nearshore marine waters. HAR 11-54-6 states that pH units shall not deviate more than 0.5 units from a value of 8.1, except at coastal locations where freshwater may depress the pH to a minimum level of 7.0. The harbor is a coastal location which receives freshwater inflow.

[16] Hawai'i Administrative Rules, Title 11, Chapter 23. September 22, 1992.

[17] Ziemann, D.A. August 2003. *Kahului Commercial Harbor 2025 Master Plan Environmental Assessment Water Quality, Marine Biological, and Natural Resources Impact Assessment*. Prepared for E.K. Noda and Associates. In State of Hawai'i Department of Transportation. November 2005. *Final Environmental Assessment and Finding of No Significant Impact, 2025 Master Plan Improvements, Kahului Commercial Harbor.*

- Salinity levels ranging from 29.66 parts per thousand (ppt) at the shoreline to 34.35 ppt in nearshore samples outside the harbor; lower than typical levels which likely reflected recent input of fresh water from rain and runoff.
- Variable turbidity levels, ranging from 1.6 nephelometric turbidity units (NTU) to 10.4 NTU at nearshore stations and 1.9 to 9.4 NTU within the harbor, corresponding to visual observations of high surf and stream-borne sediment suspension from heavy rains. The water quality standards for turbidity are 1.5 NTU when the average freshwater inflow from the land equals or exceeds one percent of the embayment volume per day, and 0.40 NTU when less than one percent. Existing conditions within the harbor may not meet water quality standards for turbidity when influenced by storm water runoff from sources other than the harbor.
- Levels of dissolved nutrients reflecting the influence of groundwater on the harbor. The most conservative water quality standard for total nitrogen is 150 micrograms per liter, while the most conservative water quality standard for total phosphorus is 25 micrograms per liter.

5.8.3 Other Surface Waters

No intermittent or perennial streams are identified within the project area. Surface waters in the vicinity of the project include Kanahā Pond Wildlife Sanctuary, a wetland complex approximately one-half mile east of the harbor, and drainage channels which direct storm water runoff into the harbor. Aside from Kanahā Pond Wildlife Sanctuary, which is a designated refuge, the nearest inland surface water identified on the USGS topographic map is ʻĪao Stream, located less than one mile northwest of the West Breakwater. ʻĪao Stream is designated as Class 2 inland waters, which are defined in HAR Title 11, Chapter 54 (11-54). Class 2 waters are recommended for agricultural and industrial water supply, compatible recreation, shipping, navigation, and propagation of fish and aquatic life.

The USACE has delineated a portion of the unlined drainageway near Pier 2 as a wetland; field studies cited in Section 5.5 have determined that no endangered or threatened species are within the project area. This drainageway is man-made, and water contributions to the area delineated as a wetland are entirely from the County of Maui's man-made storm water drainage system.

5.9 SOCIO-ECONOMIC CONDITIONS

As the sole commercial harbor on Maui, Kahului Commercial Harbor serves an important role for the island and Maui County (including Molokaʻi and Lanaʻi) as well as the State of Hawaiʻi. These areas are considered regions of potential socio-

economic impact of harbor operations and facilities. An introduction to Kahului is provided in Section 5.9.1. Section 5.9.2 details existing socio-economic conditions for the region of influence, including population, economy, and information on neighborhoods in the vicinity of the harbor as related to the federal mandate for evaluating environmental justice considerations. Section 5.9.3 discusses emerging trends affecting socio-economic conditions. Section 5.9.4 identifies known existing or planned development activities which may influence socio-economic conditions, and is followed in Section 5.9.5 by a description of community issues ascertained during interviews conducted as part of this socio-economic impact analysis.

5.9.1 Overview of Kahului

Kahului Commercial Harbor extends along the north side of Kahului, and its presence and location contribute to the urban form, circulation and views within and from the town. In addition to general discussion of Maui County and the Island of Maui, this section describes parts of the Kahului urban area within a half-mile of the harbor, as they could be affected by variation in levels of activity and location of operations at the commercial harbor.

The town of Kahului became a center of commerce and transportation for the Island of Maui in the mid-1800s.[18] The Kahului Railroad, founded in 1879, brought both passengers and freight to the harbor area. The Railroad influenced urban planning through its land use lease structure and allocation of land for parks and other civic uses.

In response to the growing need for harbor facilities, the East Breakwater was built and the harbor was dredged in the early 1900s. At that time, the federal and territorial governments took responsibility for developing and managing the harbor. Work on the West Breakwater began in 1917. After World War II, Kahului expanded as Hawai‘i’s first master-planned community called “Dream City,” with homes offered for sale to residents. Kahului’s commercial and industrial area faced the waterfront. New residential areas surrounded it on the west and south.

[18] Welch, Morgan, Magnuson and Prasad, 2004. *Archaeological and Cultural Impact Assessment of Cultural Resources at Kahului Harbor.* Prepared for Edward K. Noda Associates, Honolulu, Hawai‘i. (International Archaeological Research Institute, Inc. Report ID483).

While Kahului and Wailuku (the island's government center) have long been separate towns, they form the core of Central Maui's development zone, recognized by the County as the Wailuku-Kahului Community Plan Area (Figure 5-2. This is the most populous planning area in the county. Kahului serves as Maui's transportation hub and retail and industrial center. Kahului Airport is the major airport in the county, with scheduled flights to and from the rest of Hawai'i and the western United States. Charter flights from Canada and Japan arrive regularly at Kahului Airport.

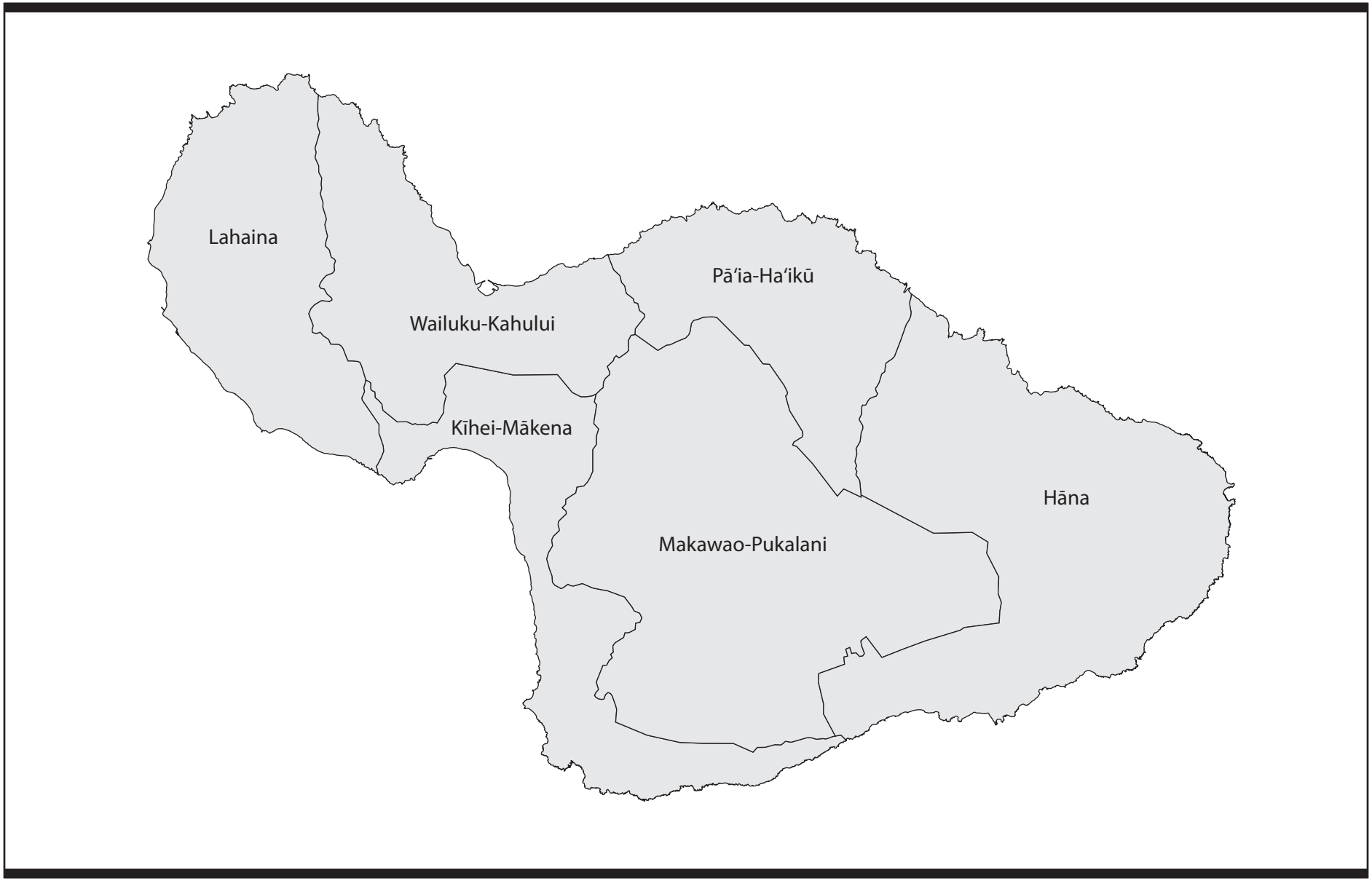
As shown on Figure 5-3, neighborhoods and other points of interest near the harbor include (from north and west to south and east):

- low-rise commercial and residential areas;
- the Harbor Lights condominium complex, with approximately 350 units overlooking the harbor;
- recreation fields and the Maui Arts and Culture Center;
- Maui Community College, which serves approximately 2,900 students and 180 faculty;[19]
- two low-rise hotels along the waterfront, with a total of approximately 380 rooms;
- Hoaloha Park, with recreational facilities for the canoe clubs that practice in the harbor,[20]
- three retail centers inland of Ka'ahumanu Avenue and a bank, an automobile dealer's lot, and two older buildings leased to multiple tenants on the seaward side of the road in the vicinity of the harbor; and
- an industrial area adjacent to the harbor, with harbor-related operations and warehouses.

The West Breakwater harbor area contains a site owned by the State Department of Land and Natural Resources (DLNR) with a recreational boat-launch ramp, a shelter built by boat users, and parking. Most of the West Breakwater harbor area is currently unused; however, off-road motorbikes occasionally use the undeveloped portion.

[19] County of Maui, Office of Economic Development. December 2006. *Maui County Data Book 2006.*

[20] The clubhouses are centers of social activity as well as places to store canoes. They are gathering places for paddlers and their supporters. Also, the Hawaiian Canoe Club house is used for an alternative school program serving about 20 students.



Belt Collins

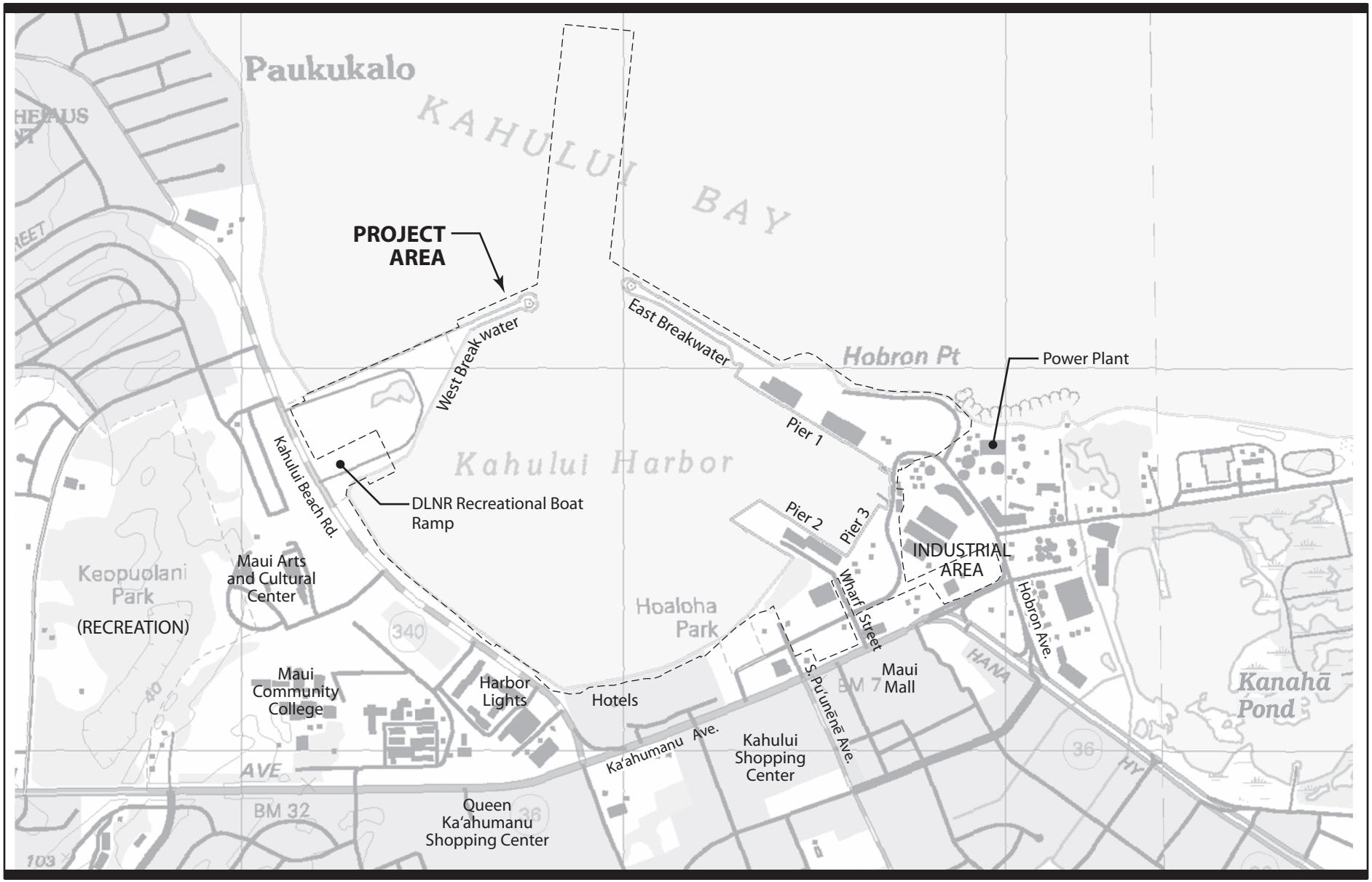
NORTH

0 3 6

SCALE IN MILES

Figure 5-2
MAUI COMMUNITY PLAN AREAS

Kahului Commercial Harbor 2030 Master Plan
Draft Environmental Impact Statement
December 2007



BeltCollins

NORTH

0 750 1500

SCALE IN FEET

Source: U.S. Geological Survey. October 2004. Digital Raster Graphic. Project area boundary determined from Tax Map Key (First American Real Estate Solutions. 2006. Realty Atlas, Hawaii. Counties of Maui and Kalawao. Zones 3 thru 6.)

Figure 5-3
VICINITY MAP

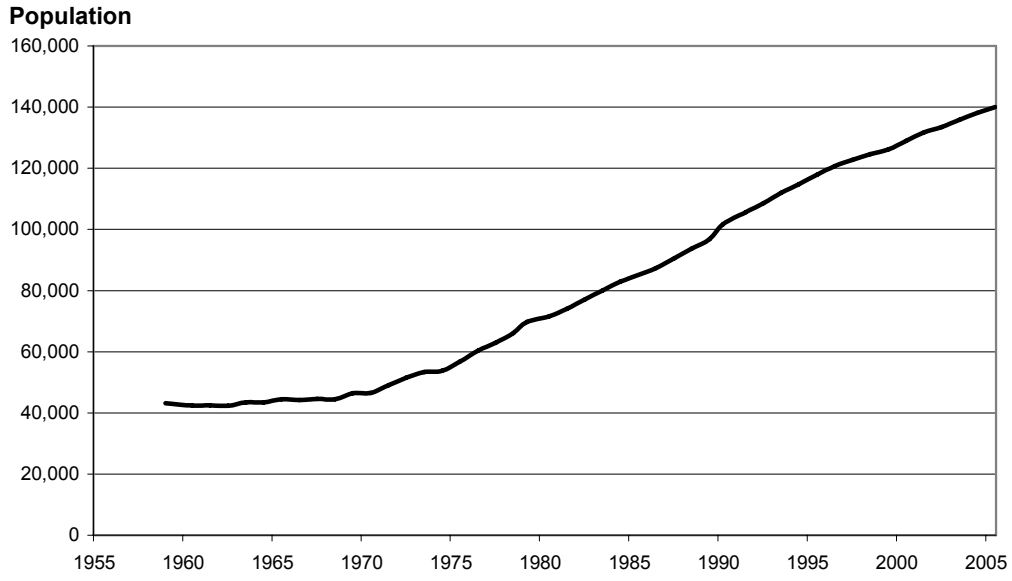
Kahului Commercial Harbor 2030 Master Plan
Draft Environmental Impact Statement
December 2007

Cargo moves between Kahului Commercial Harbor and Honolulu, Kaunakakai on Moloka'i, and ports on the island of Hawai'i. Lana'i receives fuel oil shipments from Kahului but is served by direct barge shipments from Honolulu.

5.9.2 Population Characteristics

Maui County's estimated 2006 population was 141,320 residents, 11 percent of the state total.[21] Since 1959, when Hawai'i became a state, Maui County's resident population has risen, on average, by 2.6 percent annually (Figure 5-4). Growth was highest in the 1980s at an annual average of 3.6 percent. Since 2000, the population increase has slowed to approximately 1.7 percent annually.

Figure 5-4. Maui County Resident Population 1959 to 2005



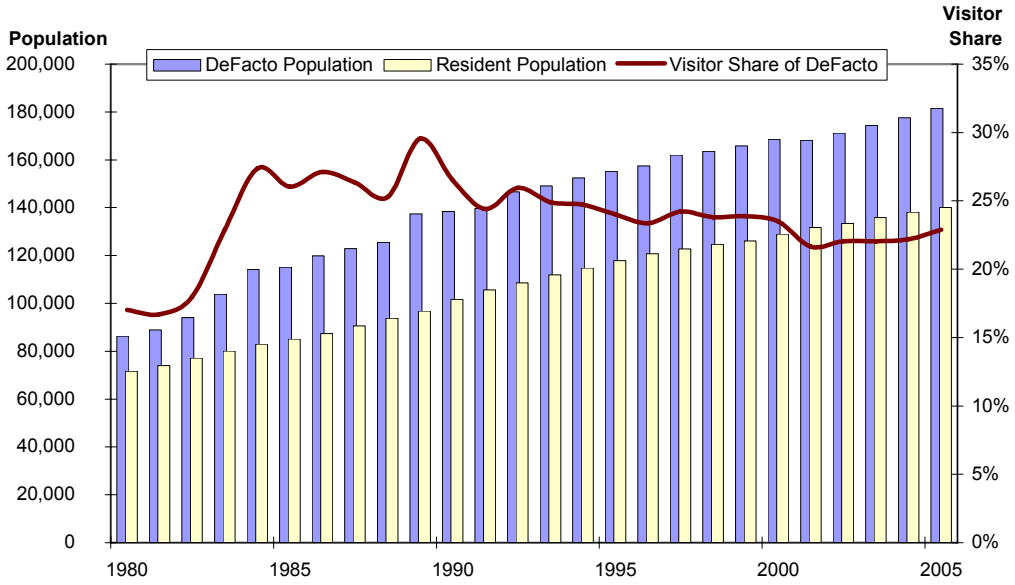
Source: Department of Business, Economic Development and Tourism (DBEDT). 2007.

The annual visitor population has also grown. By 1989, visitors accounted for 30 percent of the average population in Maui County. The visitor share of de facto population has gone down in recent years to about 23 percent of the average population on-island (Figure 5-5).[22] The decline in the visitor share of the island population is due to growth in the resident economy and society, not a loss of visitors. Maui continues to attract about a quarter of the state's visitors.

[21] State of Hawai'i Department of Business, Economic Development, and Tourism website. www.hawaii.gov/dbedt/info/economic/databook/Data_Book_time_series/sec01update.xls. Accessed May 28, 2007

[22] DeFacto population is the average island population on any given day. It is hence composed of the average visitor census plus resident population, minus those residents who are off-island.

Figure 5-5. Maui County De Facto Population 1980 to 2005



Source: DBEDT (2007)

Maui has about 92 percent of the county's resident population (as of 2000, as shown in Table 5-2), 96 percent of its visitor units, and 97 percent of the county visitor census (as of 2005)[23].

Maui's age and ethnic structure is similar to that of Hawai'i as a whole. Although the federal ethnic categories in Table 5-2 are less useful in Hawai'i than elsewhere in the country, they serve to indicate that Kahului includes about the same proportions of Native Hawaiians and persons recognizing two or more races in their ancestry as elsewhere in the state. Kahului has a higher share of persons of Asian ancestry and fewer Whites than the statewide average.

[23] A visitor unit is any hotel room, condo, bed-and-breakfast room, or other housing rented to visitors. The "visitor census" is the average number of visitors on-island in a given year. Data are from Hawai'i State Department of Business, Economic Development and Tourism, *State of Hawaii Data Book 2005*. Honolulu, HI: 2006.

Table 5-2. Population Characteristics, 2000 Census

Population	State of Hawai'i	Maui County	Island of Maui	Wailuku CCD	Kahului CCD
Total Population[1]	1,211,537	128,094	117,644	17,623	20,134
Male	608,671	64,329	59,175	8,793	9,929
Female	602,866	63,765	58,469	8,830	10,205
Age Groups[1]					
Under 5 years	78,163	8,579	7,822	1,195	1,438
5 to 14 years	168,086	18,415	16,496	2,705	2,846
15 to 19 years	81,002	8,658	7,798	1,284	1,415
20 to 64 years	738,944	79,178	73,621	10,384	11,322
65 to 74 years	85,262	7,715	6,963	1,172	1,621
75 and over	75,339	6,914	6,222	1,063	1,742
Median Age	36.2	36.8	NA	36.1	35.8
Race (Federal Classification)					
White alone	24.3%	33.9%	35.7%	15.1%	10.0%
Black or African American alone	1.8%	0.4%	0.4%	0.3%	0.2%
American Indian and Alaska Native alone	0.3%	0.4%	0.4%	0.3%	0.3%
Asian alone	41.6%	31.0%	31.1%	44.0%	53.6%
Native Hawaiian and Other Pacific Islander alone	9.4%	10.7%	9.3%	12.8%	9.9%
Some other race alone	1.3%	1.4%	1.5%	1.1%	1.5%
Two or more races	21.4%	22.2%	21.7%	26.5%	24.4%
Mobility: Residence in 1995 for Persons 5 and Older[2]					
Same house	56.8%	55.8%	55.0%	73.6%	58.4%
Different house, same county	26.0%	26.2%	26.6%	19.8%	28.3%
Different county in Hawaii	2.1%	4.2%	4.0%	3.1%	4.5%
Different state	11.0%	10.9%	11.4%	3.0%	4.4%
Outside the U.S.	4.1%	3.0%	3.1%	3.2%	4.3%

Island of Maui data compiled by adding information for constituent census districts (CCD).

1 Information collected from all households. Data from U.S. Census Bureau. *Census 2000 Summary File 1.* www.census.gov.

2 Information collected from all households. Data from U.S. Census Bureau. *Census 2000 Summary File 3.* www.census.gov.

In 2000, most Hawai'i residents had lived in the same house for five years or more, and over 80 percent had lived in the same county during that time. Kahului data are similar, although the number of in-migrants from other states was low. Wailuku residents were even more settled, with nearly three-quarters living in the same home since 1995. Housing data (in Table 5-3) show that more Wailuku households were owner-occupants than the state average, which may explain the low mobility in that town.

As shown in the 2000 U.S. Census data provided in Table 5-3, few housing units in Wailuku or Kahului were vacant, and very few were held for non-resident use. While many housing units are held for seasonal or vacation use in much of Hawai'i, Wailuku and Kahului are communities of local residents with few part-time owners.[24]

Households in Kahului were, on average, larger than elsewhere on Maui. However, crowding as defined by the U.S. Census occurred only slightly more often in Kahului than islandwide.

Rents in both Kahului and Wailuku were below the island average, while mortgage payments in Kahului were at the same level as islandwide. In Kahului, housing costs were a burden on many households, that is, they were paying 30 percent or more of their income for housing, but the number of households in this category was lower than islandwide and statewide.

Census data from 2000 (Table 5-4) show that most Kahului and Wailuku commuters spent less than a half-hour traveling to work. The distribution of morning departure times was concentrated before 8:00 AM. These trends—short commutes with many residents leaving at the same time—suggest that traffic congestion was not a major problem in 2000 affecting most Kahului residents.

Table 5-3. Housing Characteristics, 2000 Census

Housing	State of Hawai'i	Maui County	Island of Maui	Wailuku CCD	Kahului CCD
Housing Units[1]					
Total	460,542	56,377	51,980	6,065	6,074
Occupied	403,240	43,507	40,041	5,792	5,875
Vacant	57,302	12,870	11,939	273	199
Vacant for seasonal use	25,584	9,746	9,488	54	29

[24] In 2004, 13 percent of residential transactions in the Wailuku-Kahului Community Plan Area resulted in sales to out-of-state residents. This is far lower than for other districts on Maui Island. Maui County Planning Department, *Socio-Economic Forecast: The Economic Projections for the Maui County General Plan 2030.* Wailuku, HI: 2006. Available at www.co.maui.hi.us/departments/Planning/pdf/ser.pdf.

Table 5-3. Housing Characteristics, 2000 Census *(continued)*

Housing	State of Hawai'i	Maui County	Island of Maui	Wailuku CCD	Kahului CCD
Vacant share of units	12.4%	22.8%	23.0%	4.5%	3.3%
Tenure of occupied housing units					
Owner occupied	57%	58%	57%	64%	54%
Renter occupied	43%	42%	43%	36%	46%
Households[1]					
Number	403,240	43,507	40,041	5,792	5,875
Persons in households	1,175,755	126,693	116,270	17,612	19,334
Average household size	2.92	2.91	2.90	3.04	3.29
Crowding[2,3]					
1.01 to 1.50 persons/room	3.9%	4.5%	2.2%	6.0%	3.2%
Over 1.5 persons/room	2.9%	3.3%	3.1%	4.4%	5.4%
Year Structure was Built[2]					
1990 to march 2000	18.1%	23.9%	25.4%	30.6%	15.7%
1980 to 1980	16.6%	24.9%	24.8%	17.1%	18.6%
1970 to 1979	26.2%	29.4%	29.2%	15.2%	26.1%
1960 to 1969	18.5%	9.9%	9.8%	12.3%	24.5
Before 1960	20.6%	11.9%	10.7%	24.9%	15.1%
Median Contract Rent	$721	$716	NA	$578	$600
Median Gross Rent	$779	$788	NA	$648	$642
Owner-Occupant Housing Costs					
Median, for owners with a mortgage	$1,636	$1,638	NA	$1,493	$1,635
Share of Households with High Housing Costs					
Renters, paying 30% to 39% of income	14.8%	13.9%	14.3%	11.4%	13.7%
Renters, paying 40%+ of income	28.5%	26.1%	26.5%	29.4%	17.2%
Owners, paying 30% to 39% of income	12.2%	12.5%	12.9%	12.1%	9.7%
Owners, paying 40%+ of income	15.6%	18.9%	19.3%	15.9%	14.2%

NA = not available

Island of Maui data compiled by adding information for constituent census districts (CCD)

1 Data from U.S. Census Bureau. *Census 2000 Summary File 1.* www.census.gov. Information collected from all households

2 Data from U.S. Census Bureau. *Census 2000 Summary File 3.* www.census.gov. Information collected from a sample of households.

3 Homes with 1.01 to 1.5 persons per room are considered "mildly" crowded. Homes with more than 1.5 persons per room are considered "severely" crowded.

Table 5-4. 2000 U.S. Census Commuting Patterns

Commuting	State of Hawai'i	Maui County	Island of Maui	Wailuku CCD	Kahului CCD
Travel Time for Workers					
Worked at home	20,196	2,998	2,903	258	113
Commute less than 15 minutes	146,296	22,369	20,510	3,355	3,853
Commute 15 to 29 minutes	185,326	18,737	17,534	1,891	1,982
Commute 30 to 44 minutes	119,135	9,933	9,544	1,309	1,184
Commute 45 to 59 minutes	48,025	4,444	4,315	784	742
Commute 1 hour or more	44,176	2,781	2,659	350	329
Share of Commuters					
Commute less than 15 minutes	26.6%	38.4%	37.6%	43.6%	47.6%
Commute 15 to 29 minutes	34.1%	32.2%	32.1%	24.6%	24.5%
Commute 30 to 44 minutes	21.9%	17.0%	17.5%	17.0%	14.6
Commute 45 to 59 minutes	8.8%	7.6%	7.9%	10.2%	9.2%
Commute 1 hour or more	7.8%	4.5%	4.6%	4.4%	4.0%
Time Leaving Home					
Did not work at home	542,958	58,264	54,333	7,689	8,090
12:00AM to 4:59AM	4.5%	4.1%	4.1%	3.7%	4.5%
5:00AM to 5:59AM	13.0%	8.5%	8.5%	9.2%	9.7%
6:00AM to 6:59AM	24.5%	20.3%	20.0%	24.3%	20.8%
7:00AM to 7:59AM	26.1%	30.3%	30.1%	32.4%	31.0%
8:00AM to 8:59AM	10.8%	12.3%	12.5%	10.7%	9.4%
9:00AM to 11:59AM	8.2%	8.2%	8.4%	6.8%	7.3%
12:00PM to 3:59PM	6.9%	9.9%	10.1%	8.2%	9.8%
4:00PM to 11:59PM	6.0%	6.3%	6.4%	4.7%	7.5%

CCD = constituent census district

Source: U.S. Census Bureau. *Census 2000 Summary File 3*. www.census.gov.

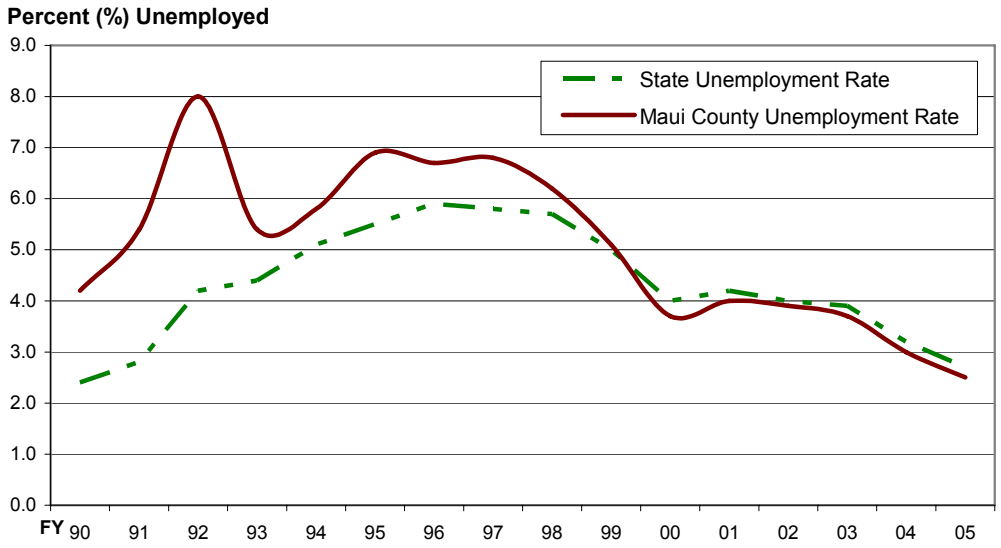
5.9.3 Economy

Hawai'i's economy changed after the 1960s from reliance on agriculture to tourism. As O'ahu is the center of military, economic, and transport activity, its economy was and remains diversified. The other islands have historically been much more reliant on tourism and, hence, more vulnerable to abrupt changes in visitor traffic. Since 1980, Maui's economy has grown steadily to an extent not found on Hawai'i, Kaua'i, Moloka'i, or Lana'i. Maui weathered the economic slowdown of the mid-1990s with continuing growth while other islands experienced disruption. This is partly due to

diversification of the local economy but largely due to a strong visitor industry. In 2005, 29 percent of Maui County jobs were in the accommodations and food service sector, as compared to 20 percent for Hawai'i County and 16 percent statewide.[25] Maui industry leaders and policy-makers have encouraged upscale resort development, with the intention of attracting affluent visitors rather than increasing the number of visitors. Their efforts have helped to brand the island as a leading vacation destination.

Figure 5-6 shows a key impact of the healthy Maui economy: unemployment has dropped to a level slightly below the very low state average. The 2000 unemployment data in Table 5-5 indicates that Kahului unemployment was higher than for Maui as a whole, while still below the State average.[26] The distribution of workers by industry in Kahului was similar to the islandwide distribution.

Figure 5-6. Average Annual Unemployment, State and County, 1990 to 2005



Source: DBEDT. 2007. State of Hawaii Data Book, 2006.

[25] Hawai'i State Department of Business, Economic Development and Tourism (DBEDT), 2006. *State of Hawaii Data Book, 2005.*

[26] Unemployment rates in decennial Census publications are based on large samples, and show differences between small areas. Other unemployment data are collected using a different methodology. Rates computed in different ways should not be compared to each other.

Table 5-5. Labor Force Characteristics, from 2000 Census

Labor Force	State of Hawai'i	Maui County	Island of Maui	Wailuku CCD	Kahului CCD
Persons 16 and Older					
In armed services	39,036	88	86	0	37
In civilian labor force (CLF)	573,795	66,219	61,668	8,530	8,904
Employed	537,909	62,935	58,801	8,114	8,365
Unemployed	35,886	3,284	2,929	416	539
Not in labor force	337,224	33,019	29,991	4,842	6,539
Unemployment % (of CLF)	6.3%	5.0%	4.7%	4.9%	6.1%
Labor force participation % (of population 16 and older)	64.5%	66.8%	66.%	63.8%	57.8%
Workers by Industry					
Agriculture, forestry, fishing, and hunting	2.2%	3.6%	3.3%	2.7%	4.1%
Mining	0.0%	0.0%	0.0%	0.0%	0.0%
Construction	6.0%	6.9%	6.8%	5.6%	5.3%
Manufacturing	3.5%	3.4%	3.6%	6.6%	4.4%
Wholesale trade	3.2%	2.8%	2.9%	2.8%	4.9%
Retail trade	12.2%	12.1%	12.5%	15.3%	13.4%
Transportation and warehousing, and utilities	5.3%	4.5%	4.5%	4.4%	4.2%
Utilities	1.0%	1.3%	1.3%	1.8%	1.8%
Information	2.5%	1.9%	1.9%	2.4%	2.0%
Finance, insurance, real estate	7.0%	6.7%	6.9%	5.8%	5.9%
Professional, scientific, and technical services	4.8%	3.1%	3.3%	2.5%	2.5%
Administrative and support services	4.7%	5.0%	4.9%	5.2%	5.1%
Educational services	9.3%	7.0%	6.7%	7.3%	6.2%
Health care and social assistance	9.7%	8.1%	8.1%	7.5%	8.3%
Arts, entertainment, and recreation	2.6%	3.6%	3.5%	2.1%	2.2%
Accommodation and food services	13.4%	22.0%	21.9%	16.6%	21.3%
Public administration	8.1%	4.1%	4.0%	6.3%	4.6%
Other services	4.4%	4.0%	4.0%	5.0%	3.8%

CCD = Census District

Source: U.S. Census Bureau. *Census 2000 Summary File 3.* www.census.gov.

Census information on incomes and poverty (Table 5-6) shows that Maui residents tended to have household incomes close to the state median. The Kahului median household income was 94 percent of the state median. The share of residents with incomes below the poverty line was higher in Kahului than statewide. Elderly residents formed a larger share of persons below the poverty line than in the other areas listed in Table 5-6.

Table 5-6. Income and Poverty Characteristics, from 2000 Census

Income and Poverty	State of Hawai'i	Maui County	Island of Maui	Wailuku CCD	Kahului CCD
Household Income in 1999					
Under $25,000	23.0%	23.0%	22.2%	24.1%	26.1%
$25,000 to $49,999	27.2%	27.5%	27.0%	28.4%	27.8%
$50,000 to $74,999	20.6%	22.2%	22.0%	23.5%	20.1%
$75,000 to $99,999	12.7%	11.8%	11.9%	12.1%	12.5%
$100,000 to $199,999	13.6%	12.7%	12.9%	10.0%	11.0%
$200,000 and above	2.5%	2.9%	3.0%	1.7%	2.3%
Median Household Income	$49,820	$49,489	NA	$48,165	$46,672
Poverty Status					
Share of total population below poverty line	10.7%	10.5%	9.8%	10.3%	11.8%
Age distribution, persons below poverty line					
0 to 17 years	32.1%	30.8%	28.7%	32.8%	32.7%
18 to 64 years	58.6%	61.0%	63.0%	62.8%	50.1%
65 to 74 years	4.6%	3.4%	3.3%	0.7%	6.9%
75 years and over	4.7%	4.8%	5.0%	3.7%	10.4%

NA = not available

5.9.4 Neighborhoods Near the Harbor (Environmental Justice)

Land around the harbor is predominantly commercial and industrial, with only limited land in residential use. Potential impacts of harbor improvements on these neighborhoods need to be assessed in light of federal Executive Order (EO) 12898 on environmental justice (February 11, 1994). Under this EO, federal agencies are required to address the potential for disproportionately high and adverse effects of their actions on minority and low-income populations.

In response to this EO, this document provides a demographic frame of reference for the setting in which Kahului Commercial Harbor is located. Census data on neighborhoods within the harbor vicinity is shown in Table 5-7, focusing on race, household size, and economic indicators of poverty. The data are broken down into block groups, the smallest Census areas for which information on household incomes is available. Figure 5-7 delineates these areas.

Table 5-7 includes demographic and economic information needed to compare the areas near the harbor to the overall population of Kahului and Wailuku. It shows:

- About a quarter of the population of the two towns lives in the block groups studied.[27]
- The racial make-up of each area varies. In none of the areas is there a large racial minority that stands out from the mixture found in the surrounding towns.
- Low-income households (i.e., ones with 1999 incomes of $25,000 or below, up to about 50 percent of the county median) account for two-fifths of the East Side population. In all of the areas near the harbor, the share of households earning at or below the county median is higher than for either Maui or the two towns studied.
- The share of the population with household incomes below the federal poverty line is high for the Center and East Side areas near the harbor. In the West Side, the incidence of poverty is lower than the average for either Wailuku or Kahului.
- Households paying a large share of their income for housing are common in the West Side and make up about half the population. High housing costs are about as common in the other areas as in Wailuku as a whole, but more common than in Kahului as a whole.

[27] The population shown in Table 5-7 is larger than the population living within a half-mile of Kahului Harbor. Notably, CT 311.01, block group 1 stretches from Ka‘ahumanu Avenue, in the north, to the southern edge of Kahului. About 23 percent of its population lives within a half-mile of the harbor, mainly in the Harbor Lights condominium.

Table 5-7. 2000 US Census Demographic and Economic Characteristics, Residents of Areas Near Kahului Harbor

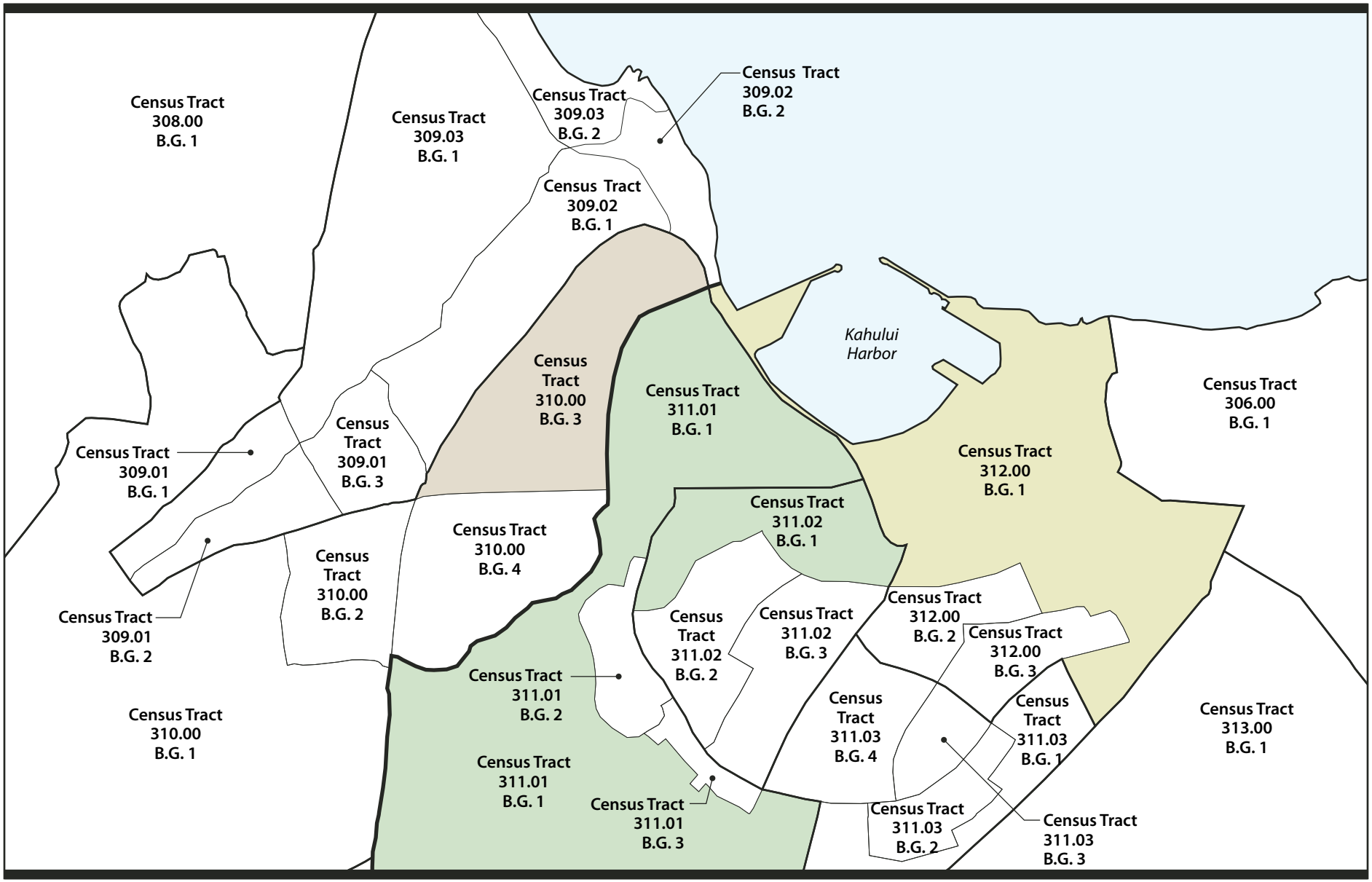
			Areas Near Kahului Harbor		
	Wailuku	Kahului	West Side	Center	East Side
Population	17,623	20,134	2,659	6,092	1,603
Age Structure					
under 20	29.4%	28.3%	19.8%	30.2%	24.1%
20 to 64	57.9%	55.0%	66.8%	60.8%	58.5%
65 or more	12.7%	16.7%	13.4%	8.9%	17.4
Race (federal classification)					
White alone	15.1%	10.0%	15.9%	12.4%	10.4%
Black or African American alone	0.3%	0.2%	0.4%	0.5%	0.2%
American Indian and Alaska Native alone	0.3%	0.3%	0.8%	0.6%	0.2%
Asian alone	44.0%	53.6%	48.9%	40.0%	57.0%
Native Hawaiian and Other Pacific Islander alone	12.8%	9.9%	10.0%	15.7%	7.3%
Some other race alone	1.1%	1.5%	1.4%	2.2%	0.6%
Two or more races	26.5%	24.4%	22.5%	28.7%	24.3%
Households					
Number	5,792	5,875	986	1,677	458
Average household size	3.04	3.29	2.70	3.38	3.42
Economic Indicators					
Household income in 1999					
Under $25,000	24.1%	26.1%	27.7%	32.8%	40.4%
$25,000 to $49,000	28.4%	27.8%	38.0%	32.2%	22.7%
Poverty Status					
Share of total population below poverty line	10.3%	11.8%	9.8%	20.4%	15.6%
Age distribution, persons below poverty line					
0 to 17 years	32.8%	32.7%	10.0%	45.1%	29.8%
18 to 64 years	62.8%	50.1%	83.1%	48.9%	49.6%
65 to 74 years	0.7%	6.9%	0.0%	5.3%	11.3%
75 years and over	3.7%	10.4%	6.9%	0.7%	9.3%

Table 5-7. 2000 US Census Demographic and Economic Characteristics, Residents of Areas Near Kahului Harbor *(continued)*

			Areas Near Kahului Harbor		
	Wailuku	Kahului	West Side	Center	East Side
Share of Households With High Housing Costs					
Renters, paying 30% to 39% of income	11.4%	13.7%	16.1%	17.2%	16.1%
Renters, paying 40%+ of income	29.4%	17.2%	33.0%	20.2%	21.8%
Owners, paying 30% to 39% of income	12.1%	9.7%	26.4%	24.6%	5.9%
Owners, paying 40%+ of income	15.9%	14.2%	22.5%	17.3%	35.3%

Areas near Kahului Commercial Harbor are U.S. Census block groups with populations living within a half-mile of the harbor. The West Side consists of Census Tract (CT) 309.2, Block Group (BG) 2, and CT 310, BG 3. The Center consists of CT 311.02, BG 1 and CT 311.02, BG 1. The East Side consists of CT 312, BG 1. CT 306 extends to within a half-mile of the harbor (along Kanahā Pond and Beach) but no residents were counted in the blocks near the harbor in 2000.

The data in Table 5-7 show that the neighborhoods near the harbor include a higher proportion of low-income households than for Wailuku and Kahului as a whole. They do not suggest that these neighborhoods constitute a low-income community, since the demographic details of the three areas differ. Of the three, the East Side is closest to being a low-income community, based on the 1999 income data.



Source: State of Hawaii GIS. 2000

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SCALE IN MILES

LEGEND

- West Side Census Tract Block Group
- Center Census Tract Block Groups
- East Side Census Tract Block Group

Figure 5-7
KAHULUI AND WAILUKU: CENSUS GEOGRAPHY

Kahului Commercial Harbor 2030 Master Plan
Draft Environmental Impact Statement
December 2007

5.9.5 Emerging Trends: Population and Economic Projections

DBEDT has developed demographic and economic projections for the state and counties to 2030. Maui County has allocated the state projections to its constituent islands and community plan areas on the basis of land available for economic growth and historical growth trends. The County anticipates continuing growth on all islands (Table 5-8). The visitor industry is expected to grow in South and West Maui. The Wailuku-Kahului Community Plan area is to remain the district with the largest population and job count, as shown in Table 5-9.

Maui County expects not only population growth in the Wailuku-Kahului area through 2030, but also demand for more housing development than is now permitted. The problem is overwhelmingly attributed to resident demand in this area (Table 5-10). In Kīhei-Mākena (South Maui), the other area without enough permitted housing to meet demand, the problem is largely due to non-resident demand, as shown in Table 5-10.

Table 5-8. Population and Economic Projections, Maui County and Islands

	Historical		Projected					
	1990	2000	2005	2010	2015	2020	2025	2030
Maui County								
Resident Population	100,504	128,241	140,050	151,300	162,600	174,450	186,850	199,550
Households	33,207	43,622	49,140	54,036	58,913	64,136	69,590	75,019
Wage + Salary Jobs	51,223	62,410	66,722	70,479	74,297	78,163	82,201	88,438
Total Visitor Units	18,035	18,270	18,270	19,380	21,270	22,920	24,690	26,510
Average Visitor Census	38,834	43,854	47,808	51,781	57,260	61,612	66,438	71,370
Ratio (AVC/RP)	0.39	0.34	0.34	0.34	0.35	0.35	0.36	0.36
Lanaʻi								
Resident Population	2,426	3,193	3,452	3,735	4,046	4,308	4,598	4,901
Households	847	1,161	1,285	1,415	1,555	1,680	1,817	1,955
Wage + Salary Jobs	1,534	1,630	1,753	1,891	2,045	2,162	2,293	2,428
Total Visitor Units	113	368	368	368	368	368	368	368
Average Visitor Census	616	1,131	1,224	1,325	1,466	1,577	1,700	1,827
Ratio (AVC/RP)	0.03	0.35	0.35	0.35	0.36	0.37	0.37	0.37

Table 5-8. Population and Economic Projections, Maui County and Islands *(continued)*

	Historical		Projected					
	1990	2000	2005	2010	2015	2020	2025	2030
Moloka'i								
Resident Population	6,717	7,404	7,127	7,276	7,542	7,772	8,068	8,395
Households	2,088	2,420	2,382	2,475	2,603	2,722	2,862	3,006
Wage + Salary Jobs	1,638	2,080	2,058	2,188	2,328	2,434	2,573	2,712
Total Visitor Units	559	429	429	429	429	429	429	429
Average Visitor Census	616	905	909	980	1,082	1,166	1,256	1,349
Ration (AVC/RP)	0.09	0.12	0.13	0.13	0.14	0.15	0.16	0.16
Maui Island								
Resident Population	91,361	117,644	129,471	140,289	151,011	162,370	174,184	186,254
Households	30,272	40,040	45,474	50,146	54,755	59,734	64,911	70,058
Wage + Salary Jobs	48,051	58,700	62,912	66,400	69,924	73,567	77,335	81,298
Total Visitor Units	17,363	17,473	17,473	18,583	20,473	22,123	23,893	25,713
Average Visitor Census	38,150	41,818	45,676	49,476	54,713	58,869	63,482	68,194
Ratio (AVC/RP)	0.42	0.36	0.35	0.35	0.36	0.36	0.36	0.37

AVC = Average Visitor Census
RP = Resident Population
Source: Maui County. 2006.

Table 5-9. Population and Economic Projections, Maui Island and Community Plan Areas

	Historical		Projected					
	1990	2000	2005	2010	2015	2020	2025	2030
Lahaina								
Resident Population	14,574	17,967	19,852	21,577	23,286	25,096	26,979	28,903
Households	4,868	6,031	6,897	7,642	8,376	9,170	9,995	10,816
Wage + Salary Jobs	13,676	16,445	16,663	17,222	17,714	18,284	18,761	19,266
Total Visitor Units	9,285	9,659	9,506	9,916	10,614	11,223	11,877	12,549

Table 5-9. Population and Economic Projections, Maui Island and Community Plan Areas *(continued)*

	Historical		Projected					
	1990	2000	2005	2010	2015	2020	2025	2030
Kīhei-Mākena								
Resident Population	15,365	22,870	25,609	28,114	30,597	33,227	35,962	38,757
Households	5,931	8,946	10,204	11,286	12,353	13,506	14,705	15,897
Wage + Salary Jobs	8,047	10,915	12,721	14,089	15,628	17,509	19,407	21,401
Total Visitor Units	7,318	6,789	7,439	8,121	9,282	10,295	11,382	12,500
Wailuku-Kahului								
Resident Population	32,816	41,503	46,626	51,312	55,957	60,877	65,995	71,223
Households	10,115	12,852	15,205	17,229	19,226	21,383	23,625	25,855
Wage + Salary Jobs	22,462	25,904	27,390	28,553	29,582	30,451	31,477	32,561
Total Visitor Units	589	807	413	431	461	487	515	544
Makawao-Pukalani-Kula								
Resident Population	18,923	21,571	23,176	24,644	26,098	27,640	29,243	30,880
Households	6,179	7,594	8,331	8,965	9,590	10,266	10,969	11,667
Wage + Salary Jobs	2,146	3,061	3,802	4,148	4,541	4,841	5,130	5,434
Total Visitor Units	8	10	7	7	7	7	7	7
Pāʻia-Haʻikū								
Resident Population	7,788	11,866	12,210	12,525	12,837	13,168	13,512	13,863
Households	2,590	4,022	4,180	4,316	4,450	4,595	4,746	4,896
Wage + Salary Jobs	1,088	1,702	1,666	1,703	1,755	1,772	1,826	1,880
Total Visitor Units	0	12	18	18	19	19	20	21
Hāna								
Resident Population	1,895	1,867	1,998	2,118	2,236	2,362	2,493	2,626
Households	586	596	656	708	759	814	871	928
Wage + Salary Jobs	631	672	670	685	705	710	733	754
Total Visitor Units	163	196	90	90	91	91	92	93

Source: Maui County. 2006.

Table 5-10. Land Availability by Community Plan Area for Projected Development

Community Plan Area	Housing Supply		Demand for New Units		Surplus or Deficit	
	2005	Potential Units	Resident	Non-Resident	Resident	Combined
Lahaina	7,440	3,083	4,181	3,669	-1,098	-4,767
Kīhei-Mākena	11,070	12,313	6,015	3,720	6,298	2,578
Wailuku-Kahului	12,569	9,587	15,046	1,503	-5,459	-6,962
Makawao-Pukalani-Kula	9,033	3,658	3,534	840	124	-716
Pāʻia-Haʻikū	4,519	2,092	778	654	1,314	660
Hāna	844	1,297	160	219	1,137	918
Maui Island Total	44,631	30,733	29,554	10,386	1,179	-9,207

Notes: Maui County's Planning Department and its consultants have worked to identify existing and permitted land development. "Potential" units are from the Department's "Maui Island Development Projects Database" listings of approved projects and vacant lands. Non-resident demand is estimated on the basis of trends in residential sales to out-of-state owners.

Source: PlanPacific. 2007.

5.9.6 Development Activity in Kahului and Wailuku

Current and planned development activities in Kahului and Wailuku include the following projects.

- Alexander and Baldwin Properties (A&B Properties) has obtained a Special Management Area (SMA) approval for Kahului Town Center, a mixed-use project to replace the Kahului Shopping Center. The new project will include 442 multifamily units as well as retail and office space. A half-acre park and space for a farmers' market are included in the plans.[28]
- A dormitory building for some 400 Maui Community College students is being built at Lono Avenue and Vevau Street, east of Queen Kaʻahumanu Shopping Center. Space will be offered to students as of August 2007.
- A&B Properties has approvals for a 130-unit airport hotel, between Kanahā Pond and Costco. No immediate development plans have been announced.

[28] A. Gomes, "Kahului Plan Mixes Retail, Condos." *The Honolulu Advertiser*. August 23, 2006. Available at www.honoluluadvertiser.com/article/2006/Aug/23/bz/FP608230329.html.

The A&B Properties website states, "Entitled for hotel development, this project site is being considered for joint venture and/or sale."[29]

- Much of the new housing anticipated in the Wailuku-Kahului Community Plan Area will be in project districts now known as Maui Lani and Kehalani. These project districts cover the area south of Kahului and east of Wailuku, filling in most of the area between these two towns and Waikapu. Permits cover construction of as many as 4,800 units; less than half of these have already been built. Additional new development is under way in Waiehu and Waikapu.

The County's map of proposed projects (Figure 5-8) shows how the area from Waiehu to Waikapu and the open space between Kahului and Wailuku are likely to be filled in the coming decades.

5.9.7 Community Concerns

Maui residents have elaborated their vision for the island's and county's future through planning processes that encourage local and island-level discussions. The 2003 Focus Maui Nui discussions conducted throughout the county identified six key strategies:

1. Improve education;
2. Protect the natural environment;
3. Address infrastructure challenges, particularly housing and transportation;
4. Adopt targeted economic development strategies;
5. Preserve local culture and traditions; and
6. Address human needs (notably substance abuse).

Orderly maintenance and expansion of harbor facilities can be viewed as part of the third and fourth strategies, so long as these do not conflict with the second strategy.

[29] Alexander & Baldwin website.www.abprop.com/development/asp/DevDetail.asp?txtdevid=D25. Accessed May 29, 2007.

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Source: Long Range Planning Division, Department of Planning, County of Maui. Central Maui Development Projects, Waihee to Maui Lani. April 2006

Figure 5-8
CENTRAL MAUI DEVELOPMENT PROJECTS

Kahului Commercial Harbor 2030 Master Plan
Draft Environmental Impact Statement
December 2007

The *Maui County General Plan*, adopted in 1990, endorsed the orderly expansion of the Maui economy, with an emphasis on diversifying the economy so that it would not be narrowly dependent on tourism. The current draft *Countywide Policy Plan*, written by the Maui County Planning Department for review by advisory committees and the general public, includes an objective to "[S]upport the development of efficient, economical, and environmentally sensitive means of moving goods and people throughout the County and between islands." The section on the economy emphasizes the importance of diversified agriculture.

Planning for development in the harbor has involved stakeholder and public meetings where the Department of Transportation, Harbors Division (DOT Harbors), welcomed input from all interested parties. Major findings of those meetings are summarized in Chapter 4. Stakeholders stressed the need to expand harbor facilities. They recognized that Kahului Commercial Harbor is used for recreation as well as commerce, and sought solutions that would allow the two to continue to co-exist.

In addition, two harbor-related issues have focused attention on Kahului Commercial Harbor.

- Planning for the Hawaii Superferry (HSF) has elicited concern from citizens and groups, including the Maui County Council. Issues mentioned in public discussions and the media have included traffic congestion, risk of harm to whales, risks to the environment due to inter-island movement of plants and parasites, and effects of O'ahu residents spending more time on other islands, such as increased pressure on fishery and recreation resources.
- In 2006, Young Brothers Ltd. announced that it would no longer accept less-than-container-load (LCL) shipments. In response to customer protest and an effort by DOT Harbors to increase harbor lands available to Young Brothers, the company has committed to continuing this service to Kahului through 2010. Small business owners throughout Hawai'i viewed the loss of LCL service as serious. The general opinion is that using a freight forwarder to consolidate goods and materials delays shipments and increases costs. Small communities such as Moloka'i, where stores are typically not large enough to order goods in container-size loads, would feel the impact. Maui business owners have argued that small stores would have to increase prices, making it difficult for them to compete with national retailers such as Wal-Mart and Costco.

At a forum sponsored by Wailuku Main Street in May 2007, speakers emphasized the reliance of Maui small businesses on shipping through Kahului Commercial Harbor. They described congestion in and around the Young Brothers yard as a problem that

has grown serious. Much like the Maui Harbor Users Group (MHUG) convened in 2006 and early 2007, they wanted harbor facilities to improve as soon as possible.

In the MHUG meetings and the Wailuku Main Street forum, speakers noted the importance of recreation within Kahului Commercial Harbor for many residents and for the community as a whole. Those who called for harbor expansion also sought a "balance" of commercial and recreational activities.

5.10 TRAFFIC CONDITIONS

Kahului Commercial Harbor is bounded by Kahului Beach Road to the southwest and Kaʻahumanu Avenue to the southeast. Puʻunēnē Avenue, Wharf Street, and Hobron Avenue lead to entrances to the Harbor. The street system, illustrated in Figure 5-9, includes a series of regional and local roadways. Primary regional access to the area is provided by Hāna Highway (Route 36), with access to upcountry Maui and Hāna. Mokulele Highway (Route 311) provides access to and from Kīhei and the southern areas of Maui, and Kūihelani Highway (Route 380) provides access to west Maui. Puʻunēnē Avenue and Kaʻahumanu Avenue provide direct access to these highways from the project site. Kaʻahumanu Avenue and Kahului Beach Road provide access to Wailuku and North Maui.

Figure 5-9. Traffic Study Area

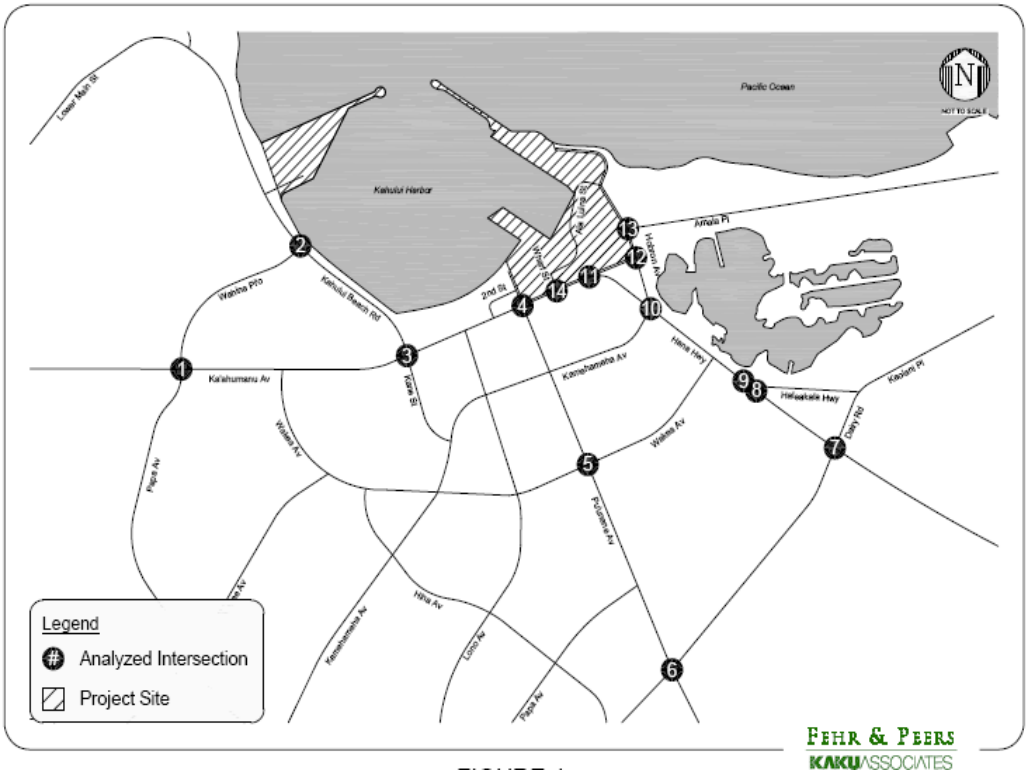


Figure 5-9 shows the 14 intersections selected for data recovery and modeling in the traffic study for this EIS conducted by Fehr & Peers/Kaku Associates (Appendix H). These were:

1. Pāpā Avenue/ Wahine Pi‘o Street and Ka‘ahumanu Avenue
2. Kahului Beach Road and Wahine Pi‘o Street
3. Kahului Beach Road/Kāne Street and Ka‘ahumanu Avenue
4. Pu‘unēnē Avenue and Ka‘ahumanu Avenue
5. Pu‘unēnē Avenue and Wakea Avenue
6. Pu‘unēnē Avenue/Mokulele Highway and Dairy Road
7. Dairy Road and Hāna Highway
8. Haleakalā Highway/Hanakai Street and Hāna Highway
9. Haleakalā Highway and Hāna Highway
10. Hobron Avenue/Kamehameha Avenue and Hāna Highway

11. Ka'ahumanu Avenue and Hāna Highway
12. Hobron Avenue and Ka'ahumanu Avenue
13. Hobron Avenue and Amala Place
14. Wharf Street and Ka'ahumanu Avenue

Traffic volume information was collected in April 2007 for morning and afternoon peak periods, and for a mid-morning period corresponding to the time when HSF is expected to affect local traffic. HSF traffic was added to the counts, using information from the traffic study submitted by HSF[30]. Level-of-service (LOS) analysis was conducted. (This methodology represents traffic delays in terms of grades, with E and F generally regarded as unacceptable.) Table 5-11 summarizes the data for current conditions. It shows that traffic volumes lead to unacceptable delays (LOS E or F) during peak hour traffic at four intersections: #6, Dairy Road and Pu'unēnē Avenue/Mokulele Highway; #8, Haleakalā Highway/Hanakai Street and Hāna Highway; #9. Haleakalā Highway and Hāna Highway; and #13, Hobron Avenue and Amala Place. At no intersection studied do delays reach these levels during the mid-morning period.

Table 5-11. Year 2007 Conditions—Peak Hour Levels of Service

	Intersections	Control	Peak Hour	Delay/vehicle (seconds)	LOS
1.	Ka'ahumanu Avenue and Pāpā Avenue/Wahine Pi'o	Signalized	A.M.	23.8	C
			P.M.	18.8	B
2.	Wahine Pi'o and Kahului Beach Road	Signalized	A.M.	10.7	B
			P.M.	10.7	B
3.	Ka'ahumanu Avenue and Kahului Beach Road/Kāne Street	Signalized	A.M.	22.8	C
			P.M.	39.6	D
4.	Ka'ahumanu Avenue & Pu'unēnē Avenue	Signalized	A.M.	19.3	B
			P.M.	29.5	C
5.	Wakea Avenue & Pu'unēnē Avenue	Signalized	A.M.	27.0	C
			P.M.	29.3	C
6.	Dairy Road & Pu'unēnē Avenue/Mokulele Highway	Signalized	A.M.	32.9	C
			P.M.	55.7	E
7.	Dairy Road and Hāna Highway	Signalized	AM	29.6	C
			PM	33.7	C
8.	Haleakalā Highway/Hanakai Street and Hāna Highway	Side-street Stop	AM	41.0	E
			PM	32.0	D

[30] CH2M Hill, 2006. *Traffic Study for Kahului Ferry Terminal.*

	Intersections	Control	Peak Hour	Delay/vehicle (seconds)	LOS
9.	Haleakalā Hghway and Hāna Hwy	Side-street Stop	AM	37.0	E
			PM	7.0	A
10.	Hobron Avenue/Kamehameha Avenue and Hāna Highway	Signalized	AM	22.4	C
			PM	37.9	D
11.	Ka'ahumanu Avenue/Hāna Highway and Ka'ahumanu Ave	Side-street Stop	AM	12.0	B
			PM	14.0	B
12.	Hobron Avenue and Ka'ahumanu Highway	Side-street Stop	AM	17.0	C
			PM	24.3	C
13.	Hobron Avenue and Amala Place	Side-street Stop	AM	20.0	C
			PM	46.0	E
14.	Ka'ahumanu Avenue and Wharf Street	Signalized	AM	6.7	A
			PM	11.4	B

Maui County is developing a public transit service that combines long-distance routes and free hourly local loop service in Kahului and Wailuku. The Queen Ka'ahumanu Center serves as a hub for both the Kahului loop and commuter routes. In FY 2007, ridership reached about 800,000 passenger-trips.[31] New, larger buses are being put in service. The bus service has attracted riders both among residents and cruise ship passengers. While counts of ship passengers have not been taken, these are recognized as accounting for much of the ridership between Kahului and Lahaina from mid-morning to mid-afternoon.

5.11 PUBLIC SERVICES AND INFRASTRUCTURE

The region of influence for public services and infrastructure includes the areas of Maui which share electrical, water, wastewater, solid waste, and emergency services with the project area. For electrical infrastructure, this includes the areas of the island served by the Maui Electric Company (MECO) generating facility east of the harbor. For potable water, this includes the areas of Maui served by the 'Īao aquifer. For wastewater and solid waste, this includes areas served by the Wailuku-Kahului Wastewater Reclamation Facility (WRF) and the Central Maui Landfill. For emergency services, this includes the Maui Police Department District 1 and the area served by Maui Fire Department Stations #1, Wailuku and #10, Kahului.

[31] Personal communication, Donald Medeiros, Director, Maui County Department of Transportation, July 2007.

ELECTRICAL INFRASTRUCTURE. Electricity is supplied to the harbor by MECO from electrical substations in the vicinity of the project area via overhead transmission lines on Kaʻahumanu Avenue, Wharf Street, Puʻunēnē Avenue, and Hobron Avenue.

POTABLE WATER. Potable water is supplied to the harbor via a 12-inch water main in Kaʻahumanu Avenue and distributed through a network of four- to eight-inch water lines. The projected potable water usage at the harbor is estimated to reach 0.04 million gallons per day (mgd) by the year 2010.

The County of Maui Department of Water Supply (DWS) administers and operates the island's water systems, and the harbor is served by the Central Water System (CWS). Water distributed via the CWS is drawn from four aquifers: Kahakuloa, Waiheʻe, Waikapu, and ʻĪao. Of these, the harbor is served from the ʻĪao aquifer, which has an estimated sustainable yield of approximately 20 mgd. The State Commission on Water Resources Management (CWRM) has designated the ʻĪao aquifer as a Groundwater Management Area. The forecast future demand for all uses of the ʻĪao aquifer is up to 30.5 mgd, which exceeds the sustainable yield. The county has initiated development of alternative water sources in East Maui to serve the island's needs.

WASTEWATER AND SOLID WASTE. Solid waste from the harbor is collected by a private firm contracted by the State and harbor users and disposed of at the Central Maui Landfill. A sewer line runs on DOT Harbors land seaward of Kaʻahumanu Avenue. Wastewater from Kahului Commercial Harbor is sent to the Wailuku-Kahului WRF, located east of the harbor. Effluent is disposed of through injection wells. Discharge of sanitary wastewater from commercial passenger vessels is prohibited in the harbor, per HRS Chapter 342D, Section 102 (342D-102). Cruise ships are required to discharge sewage at least three miles from shore. Solid waste generated on cruise ships is generally incinerated or recycled. The West Breakwater harbor area does not currently have wastewater infrastructure.

EMERGENCY SERVICES. Police and fire services are provided by the County of Maui. In addition, a private company is retained by DOT Harbors to provide security on their property. The Kahului and Wailuku fire stations are located approximately two and three miles from the harbor, respectively. Harbor users must coordinate with county, state, and federal law enforcement to address safety issues as needed.

5.12 Noise Environment

The region of influence for noise impacts is the property line of parcels adjacent to the project site, and includes any sensitive noise receptors such as schools or hospitals. Kahului Commercial Harbor does not share property boundaries with sensitive noise

receptors. The West Breakwater harbor area is approximately a half-mile from existing residential areas, which may be considered sensitive noise receptors. Pier 2 is approximately the same distance from the Harbor Lights condominium.

Normal activities at Kahului Commercial Harbor may generate high ambient noise levels 24 hours a day, seven days a week, but harbor operations typically occur during the day. Noise-generating activities include large truck movements, heavy equipment operations, ship loading and unloading using cranes, lifts, and other mechanical equipment, and ship and tugboat engines. Typical noise levels in an urban environment average 60 to 65 dBA, usually from vehicular traffic. Large vehicles such as heavy trucks may cause noise peaks ranging up to 90 dBA.

Federal guidelines have been developed by Federal Highways Administration. State standards are the same if not more stringent, so references here are to state standards.

HAR 11-46 defines maximum permissible sound levels and provides for protection, control, and abatement of noise pollution from stationary noise sources and agricultural, construction, and industrial equipment. The maximum permissible sound levels in decibels on the A-weighted scale (dBA) for day and night at the property line where the activity occurs in Class C, industrial zoning, is 70 dBA. The maximum permissible sound level for impulsive noise is defined by DOH as 10 dBA above the 70 dBA limit. Maximum permissible sound levels are not to be exceeded more than 10 percent of the time in a 20-minute period without a permit or variance.

5.13 CULTURAL AND HISTORIC RESOURCES

The region of influence for archaeological resources and historic buildings and structures includes the areas where ground disturbance or construction associated with the project would occur.

An archaeological and cultural impact assessment was prepared in 2004 for the 2025 Master Plan EA.[32] The purpose of the project was to identify the archaeological sites, historic properties, and cultural resources and activities present (or potentially present) from historical documentation, previous archaeological research, interviews with native Hawaiians and harbor users, and a survey of the project area; to evaluate the significance of these resources; and to determine the potential for significant effects from the proposed project.

[32] International Archaeological Research Institute, Inc. April 2004. *Archaeological and Cultural Impact Assessment of Cultural Resources at Kahului Harbor*, in State of Hawai‘i Department of Transportation. November 2005. *Final Environmental Assessment and Finding of No Significant Impact, 2025 Master Plan Improvements, Kahului Commercial Harbor.*

5.13.1 Archaeological and Historic Sites

According to the 2004 assessment, 26 archaeological studies have been conducted in the vicinity of Kahului Commercial Harbor since 1973. Only one study was conducted on the actual harbor property: a surface survey and backhoe trenching of eight acres of the harbor property between Wharf Street and Puʻunēnē Avenue, north of Kaʻahumanu Avenue. No surface evidence of archaeological sites was found during the survey. Eleven trenches were excavated in the west half of the property. Historic period artifacts found included a probable fire pit, shard of white porcelain, and a piece of bottle glass. The inland portions of the harbor were built by laying fill on top of the former beach, and finds in these areas indicate a potential for subsurface prehistoric or early historic cultural remains or human burial remains beneath existing harbor fill. The piers and wharves on the seaward side of the harbor and the entire West Breakwater harbor area were developed by filling in the bay and, therefore, present virtually no potential for the presence of intact archaeological resources.

Limited archaeological work has been conducted in the coastal strip surrounding Kahului Commercial Harbor, which is outside of the project scope. Traditional Hawaiian and historic archaeological sites, including human burials and cultural deposits, have been uncovered in sand deposits in this area.

Kahului Commercial Harbor was designated as a historic site on the State Inventory of Historic Places (SIHP), Site 50-50-04-2953. Site 2953 consists of the piers, wharves, breakwaters, and structures that were constructed during the harbor's main period of development between 1901 and 1931. The site is not on the National Register of Historic Places or the Hawaiʻi Register of Historic Places; however, it is potentially eligible. The historical importance of the site is its link to sugar industry development and the development of Kahului as a main commercial center.

Kahului Commercial Harbor formed part of the area defined as the Kahului Historic District, Site 50-50-04-1607. The structures which the SIHP identified as contributing elements to the Kahului Historic District include the Kahului Railroad roundhouse, shop, and other sites. The Railroad office is on a parcel which DOT Harbors acquired in December 2007. The historical importance of the Kahului Historic District is the role that it played in the major period of growth and development of Kahului town. The Kahului Railroad roundhouse and shop remain standing adjacent to the harbor, on the west side of Hobron Avenue. The large concrete brick buildings are still in use and appear to retain their structural integrity. The Kahului Railroad office building, located on the harbor side of Kaʻahumanu Avenue east of Wharf Street on land owned by the State of Hawaiʻi, was in good condition at the time of the 2004 study.

5.13.2 Cultural Practices

A Cultural Impact Assessment was prepared in 2004 for the 2025 Master Plan EA.[33] The area around Kahului Bay was likely a fishing settlement during prehistoric and early historic times.

Traditional uses and cultural activities in the harbor area include surfing, canoe paddling, fishing, and *limu* (seaweed) gathering. According to the 2004 Cultural Impact Assessment, other traditional uses in the past included shellfish gathering, turtle hunting, and salt gathering. Today, very little traditional fishing takes place in the harbor; net fishing and diving occur along the Kahului shoreline. Section 5.15, Recreational Resources, provides more information about present activities in the harbor.

5.14 VISUAL AND AESTHETIC RESOURCES

Visual resources include scenic vistas, scenic overlooks, unique topography, or visual landmarks having scenic value. The region of influence for visual and aesthetic resources includes the project site itself and observation points from surrounding public roadways.

The existing visual environment in the project area is predominantly industrial. Existing harbor facilities include warehouse structures, stacked shipping containers, conveyors, and paved parking and cargo handling areas surrounded by chain-link fences. The West Breakwater harbor area is currently undeveloped, with low shrubs and scrub trees, mounds of coral fill, and a paved parking area. The project area is generally flat, and views from public roadways are currently of existing industrial development or sparsely vegetated areas.

Two Indian Banyan (*Ficus benghalensis*) trees in the vicinity of the Kahului Railroad building have been identified by the Maui County Arborist Committee as "heritage" trees. According to an October 19, 2006, letter from the committee to DOT Harbors, the size of the trees indicate they are historical, and provide some of the only shade in the area.

[33] International Archaeological Research Institute, Inc. April 2004. *Archaeological and Cultural Impact Assessment of Cultural Resources at Kahului Harbor*, in State of Hawai'i Department of Transportation. November 2005. *Final Environmental Assessment and Finding of No Significant Impact, 2025 Master Plan Improvements, Kahului Commercial Harbor.*

5.14.1 Recreational Resources

5.14.2 Introduction

The region of influence for fishing, canoe paddling, and recreational boating resources is within the harbor itself. The region of influence for surfing resources is from Hoʻokipa Beach Park to Waiheʻe Beach Park. John Clark was retained to identify ocean recreation activities taking place in Kahului Commercial Harbor. Following is a summary of his findings.

Current recreation areas in the project vicinity include the following.

- Ocean resources in the harbor itself, including surf breaks and an outrigger canoe paddling course.
- Shoreline fishing areas along the beach within the harbor, and at the West Breakwater. Figure 5-10 shows the fishing areas within Kahului Commercial Harbor, and Section 5.14.4.4 provides additional details for fishing within the harbor.
- The boat-launch ramp and adjacent DLNR land on the West Breakwater harbor area, used primarily as a parking lot and boat wash-down area.
- Hoaloha Beach Park, a two-acre public beach park with two canoe *hale.*

The terrorist attacks of September 11, 2001 (9-11) resulted in a security zone being established around Piers 1 and 2 and all waters inland from the tip of Pier 2 to the tip of the East Breakwater. Non-commercial ocean recreation activities such as fishing and outrigger canoe paddling are prohibited in the zone. A security zone also extends 300 feet (90 m) around commercial passenger vessels (shown in Figure 5-10), and net fishing is prohibited in the turning basin.

5.14.3 Historic Overview and Background

Early accounts of Kahului Commercial Harbor's use by Hawaiians note that the shore of the harbor was a sand beach used as a canoe landing.[34, 35, 36] The shallow reef in the harbor has been documented as a popular surfing area since newspaper accounts in the mid-1800s. The following is a quote from the story of Kamehameha I in the December 8, 1866 issue of *Ka Nupepa Kuokoa*:

Kahekili was living at Pihana in Paukūkalo, Wailuku, with the chiefs, his favorite companions, and his warriors, Kaniuula and Kepoouahi. The chiefs of Wailuku passed their time in the waves of Kehu and Kaʻakau; the chiefs of Waiehu and Napoko in the waves of Niukūkahi and ʻAʻawa; and the chiefs of Waiheʻe in the enjoyable waves of Palaʻie and Kahāhāwai.

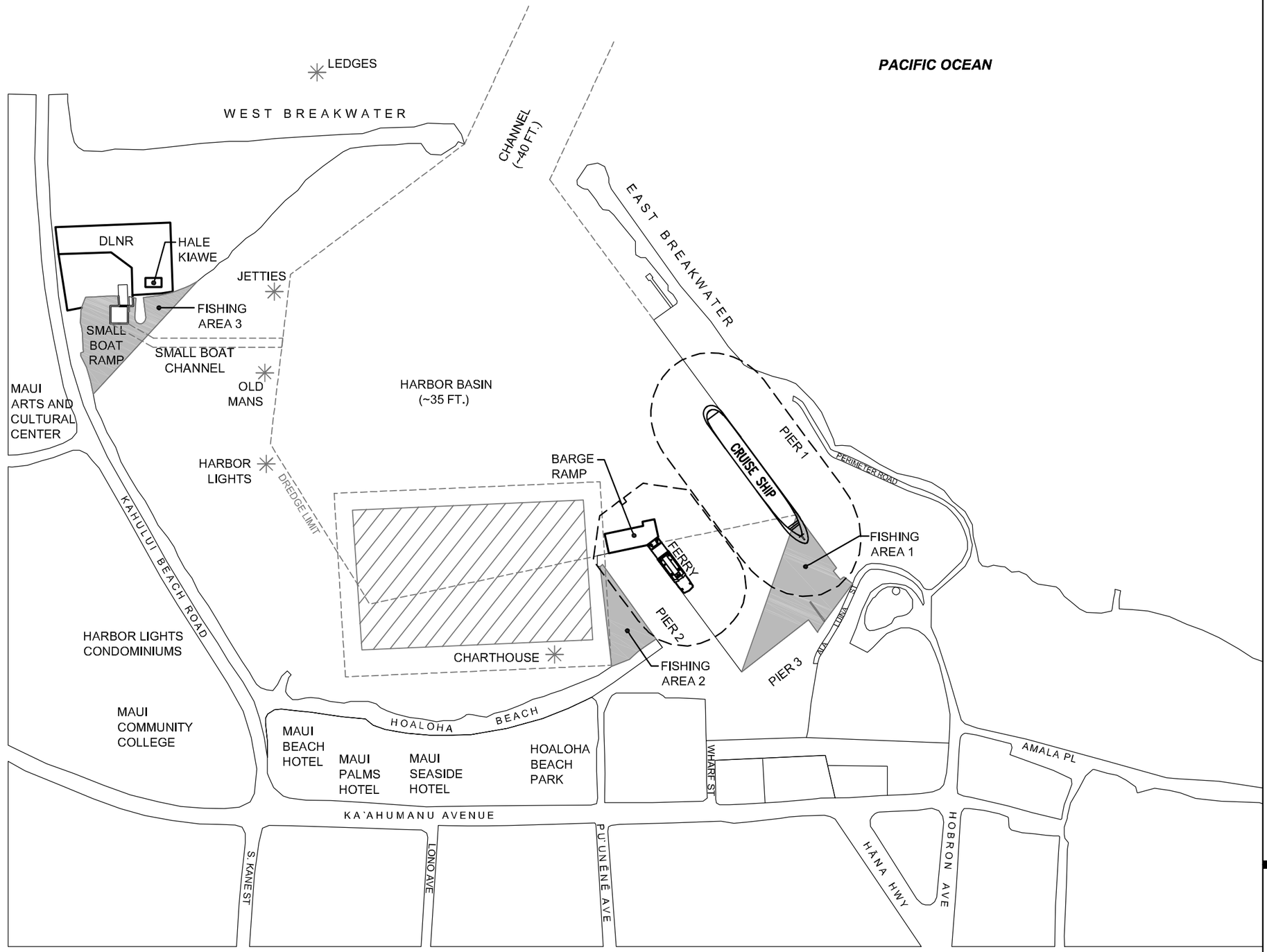
While the surfing account does not identify the exact locations of the surfing sites Kehu and Kaʻakau, it is likely they were on the reef off Kahului, the site of the commercial harbor today. The account also shows that Hawaiians surfed the entire coast from Kahului to Waiheʻe.

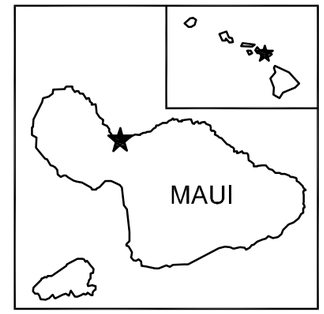
Today, two breakwaters protect the harbor. A 600-foot wide entrance channel lies between the two breakwaters. These improvements converted the natural protected bay into a commercial deep-draft harbor, and with the development of additional piers and support facilities, left only a small section of the original sand beach on the east side of the harbor.

5.14.4 Ocean Recreation Activities

Although Kahului Commercial Harbor has served as Maui's only deep-draft harbor for approximately 100 years, it has also continued to accommodate a wide variety of ocean recreation activities in addition to the maritime activities. The shore of the harbor and the harbor waters outside the secured area are accessible to the public, and are popular ocean activity areas. Most of the activities are concentrated on the calcareous sand beach at Hoaloha Beach on the east side of the harbor and at (or near) the DLNR boat-launch ramp at the West Breakwater harbor area. These activities, which include outrigger canoe paddling, kayak and individual canoe paddling, surfing, bodyboarding, boating, pole fishing, spear fishing, seaweed gathering, and swimming, are addressed in the following sections.

[34] *Ka Hoku o Hawai'i*, January 2, 1862
[35] *Ka Nupepa Kuokoa,* March 14, 1868
[36] *Ke Au Hou,* December 6, 1911





SURF SPOT

CHANNEL & TURNING BASIN

OUTRIGGER CANOE RACE AREA WITH BUFFER

FISHING AREAS

300-FOOT SECURITY ZONE

FISHING AREAS DESIGNATED BY THE *HAWAI'I FISHING REGULATIONS* (JULY 2006) PUBLISHED BY STATE OF HAWAI'I DEPARTMENT OF LAND AND NATURAL RESOURCES, DIVISION OF AQUATIC RESOURCES.

BeltCollins

NORTH

0 150 300 600
SCALE IN FEET

FIGURE 5-10
RECREATIONAL USES AT KAHULUI COMMERCIAL HARBOR

Kahului Commercial Harbor 2030 Master Plan
Draft Environmental Impact Statement
State of Hawai'i, Department of Transportation, Harbors Division
December 2007

5.14.4.1 Outrigger Canoe and Kayak Paddling

Kahului Commercial Harbor is one of the major outrigger canoe paddling and racing sites on Maui. Two canoe clubs practice in the harbor, Hawaiian Canoe Club and Na Kai Ewalu. A third canoe club, Laeula o Kai, from Kanahā Beach Park north of the harbor, occasionally practices in the harbor. Other non-motorized boats such as one-person outrigger canoes, surf skis (racing kayaks), and ocean kayaks (recreational kayaks) traverse the harbor daily, normally for individual recreation or organized training and occasionally for racing.

The harbor is used for canoe practices and races throughout the year. The Kahului Commercial Harbor canoe clubs typically begin organized practice sessions for children and adults in March, and the summer regatta season begins in June. Practice sessions typically start at 3:00 PM for children and end at 7:30 PM for adults, Monday through Friday. Practices are also held on weekends and holidays as necessary. After the summer regatta season, practices and races continue in the long-distance paddling season, which is from August to October and culminates in the Molokaʻi-to-Oʻahu races for women and men. High school paddling begins in November after the Molokaʻi races and ends in February.

The canoe regatta racecourse is a one-quarter-mile-long course which can accommodate up to ten lanes, located off Hoaloha Beach and near Pier 2. The lanes are 80 feet (25 m) wide. The exact dimensions and location of this course and the space recommendations around it were provided by the president of the Hawaiian Canoe Club.[37] During regattas, the land between Puʻunēnē Avenue and Pier 2 is commonly used as a launch and return area for paddlers. This is the only regatta racecourse on the north shore of Maui, and one of three ten-lane courses on the island. The other two are at Hanakoʻo Beach Park (Canoe Beach) between Lahaina and Kāʻanapali, and at Kīhei. On the north shore, Kahului Commercial Harbor provides the only year-round calm water conditions necessary for canoe regattas and for training.

The Maui County Hawaiian Canoe Association (MCHCA) race schedule includes pre-season races, regatta season races, and long-distance races, including the Molokaʻi-to-Oʻahu races. For the 2007 regatta season, three MCHCA regattas were identified for Kahului Harbor.

5.14.4.2 Surfing

The surf sites within the harbor break best on large north swells. High surf within the harbor creates a powerful rip current that runs alongside the West Breakwater and then pushes east. Surf conditions in the harbor also create heavy surge at Piers 1 and 2. The

[37] Personal communication, David Ward, July 2007.

waves in the harbor are best with no wind or a light *kona* wind, which blows offshore in the harbor. Some surfers who consider the harbor water to be too polluted for surfing under normal conditions only surf in the harbor when the waves are big and there is a lot of water movement to flush out the pollution.

The primary surfing sites in the harbor are currently defined by the edge of the turning basin. Surfers typically park on the West Breakwater harbor development area to access most of the surf spots in the harbor, usually near the boat-launch ramp. Spectators also park in the same area to watch surfing in the harbor. Surfing at the primary surfing sites in the harbor, depending on the size of the waves, includes bodyboarding, longboard and short board surfing, stand-up board surfing (using paddles), outrigger canoe surfing, kayak surfing, and wave-ski surfing,

Several secondary surfing sites are located off the beach fronting Hoaloha Beach. These sites break over small patch reefs and form both left-breaking and right-breaking waves for surfers and bodyboarders.

The primary surfing sites in the harbor from west to east are as follows (see Figure 5-10):

JETTIES. This surfing site is located on the edge of the reef between the West Breakwater and the channel from the boat-launch ramp to the turning basin. It is about 100 feet (30 m) away from the West Breakwater. The waves here are powerful and hollow, or very concave, breaking from right to left (when viewed from the beach). During large swell events, the waves jump up very quickly when they hit the shallow reef shelf, often reforming once or twice before they break. This characteristic makes it hard for board surfers to ride, so "Jetties" is almost exclusively a bodyboard site during large surf conditions. The fifth and final contest of the United States Bodyboarding Association's National Championship Tour for 2007 was scheduled for Jetties. On days when waves are smaller, board surfers ride left-breaking waves at Jetties that terminate at the edge of the boat channel.

OLD MANS. This surfing site is located on the edge of the reef on the east side of the channel from the boat-launch ramp to the turning basin. The take-off spot is just inside a buoy that marks the edge of the turning basin for ships. The waves here break both right towards the channel and left. Older longboard surfers ride here, giving the site its name, and many women surf here, too. Old Mans, considered to be a good site for longboard surfers, gets crowded on days when the surf is good.

HARBOR LIGHTS OR MIDDLE LEFTS (SOMETIMES BUOYS). This surfing site is located on the edge of the reef off the Harbor Lights condominium complex on Kahului

Beach Road. The take-off spot is just inside a buoy that marks the edge of the turning basin for ships. The waves here are long, fast, hollow lefts with two distinct bowls along the faces of the waves. During ideal conditions, Harbor Lights is regarded as one of the best left-breaking locations on Maui.

CHARTHOUSE. This surfing site is located off Hoaloha Beach near Pier 2. It was named for the former Charthouse Restaurant that was near the park. When the surf is large, the right-breaking waves here are ridden by longboard or bodyboard surfers. It is considered a secondary surf site in the harbor.

LEDGES. This surf site is located outside of the harbor on the west side of the West Breakwater. Surfed primarily during the winter months, it is a right that is best on overhead-sized waves. A very hollow (concave) and steep wave, it is surfed primarily by bodyboarders. The fifth and final contest of the United States Bodyboarding Association's National Championship Tour for 2006 was held at Ledges. As the region of influence for the project is within the harbor itself, information about this surf site is provided for context only.

5.14.4.3 Boating

The DLNR Division of Boating and Ocean Recreation (DOBOR) new recreational boat-launch ramp and dock were completed in 2006. Part of the approximately $7.5 million project included re-aligning and dredging the entrance channel. The contractor, Healy Tibbetts Builders, Inc., removed approximately 14,000 cubic yards of material, including the large boulders that are in the boat-launch ramp parking area. In addition to recreational trailered boats, the boat-launch ramp, which is the only ramp on the north shore of Maui, is also used by the Maui Fire Department and the Coast Guard to launch boats for training and for ocean rescues.

Two fishing tournaments which originate from the harbor are put on by the Maui Trailer Boat Club (MTBC) each year. The MTBC is a volunteer organization of fishers that uses the DLNR boat-launch ramp and helps to maintain the ramp area.

Recreational boaters fish outside the harbor, notably near several fish aggregation devices (FADs) off Haʻikū. In general, this side of the island with its exposure to strong trade winds is considered a rough area for trolling. It also does not attract many scuba divers because of the same rough conditions.

5.14.4.4 Fishing

With no estuaries on Maui, schooling fish such as *akule* (big-eyed scad, *Selar crumenophthalmus*) often come into the harbors. Harbors, therefore, are popular places to fish, including Kahului Commercial Harbor. In addition to *akule*, fishers also

catch *halalū* (juvenile *akule*), *pāpi'o* or juvenile *ulua* (giant trevalley, *Caranx ignobilis*), mullet (*'ama'ama, Mugil cephalus*), and *nehu* (anchovy, *Encrasicholina purpurea*) in the harbor.

Commercial fishers come into the harbor with the Maui District Manager's permission and use surround nets in the Harbor basin to catch large schools of *akule*. *Halalu* come in the harbor, usually on the east side around Piers 1 and 2. They are caught only with a hook and line. Lay nets in the harbor are illegal and are also illegal for catching *halalū*. In 2007, a *halalū* school remained in the harbor for almost two months. Pole fishers caught them from the sand beach near Pier 2.

Nehu are netted as bait fish for *aku* (skipjack tuna, *Katsuwonus pelamis*) fishing. *Pāpi'o* are found around the schools, where they feed on the *nehu*.

In the past, there have been user conflicts in Kahului Commercial Harbor between *akule* fishers, pole fishers, and other fishers. The DLNR Division of Aquatic Resources (DAR) has attempted to address these conflicts since 1998 and produced a *Summary of Issues Paper: Fishing in Kahului Harbor*, dated September 8, 2006. A follow-up meeting to discuss recommendations to regulate fishing activities in the harbor was held on October 6, 2006.

Diving for octopus (*Octopus cyanea*), also commonly known as *tako* (their Japanese name) or *he'e*, occurs on the shallow reef in the harbor. Diving for reef fish also occurs on the reef. However, the corner of the reef near the intersection of Ka'ahumanu Avenue and Kahului Beach Road is considered to be an area of poor water quality. Rubbish and other debris accumulate there and most fishers avoid the area. Some night diving occurs on the reef in the Harbor and to a lesser extent across the entrance channel along the interlocking tetrapods that form the outer end of the West Breakwater.

Throw-net fishing for various schooling fish occurs occasionally in Kahului Commercial Harbor, mainly off Hoaloha Beach and the pocket beaches fronting the hotels, such as the Maui Beach Hotel. There is a perception among throw-net fishers, however, that fish from this area of the harbor are not safe to eat due to pollution.

Some fishing for *'oama* (juvenile goatfish, *Mulloides flavolineatus*) occurs in the harbor, primarily by the DLNR boat-launch ramp, where they congregate on a small sandbar.

HALE KIAWE. The County of Maui under the administration of Mayor Alan Arakawa gave this club of retirees, also known as the Senior Boaters Club, permission to build a clubhouse at the West Breakwater harbor area near the boat-launch ramp and to improve the area around it with landscaping. Members moved into their present site

on June 30, 2006. Prior to that they had been on state land closer to the boat-launch ramp for approximately 25 years. Club members are retirees from the Kahului/ Wailuku side of the island and number about 70 members, most of them senior citizens over age 60. Hale Kiawe club members fish in the harbor area from the boulder revetment adjacent to their clubhouse, mainly for *pāpi'o* and *ulua*.

RESTRICTED FISHING AREAS IN THE HARBOR. The DLNR DAR publishes a pamphlet called *Hawai'i Fishing Regulations.* The latest issue of the pamphlet, dated July 2006, identifies three regulated fishing areas in Kahului Commercial Harbor that are subject to State laws and rules. These areas are shown in Figure 5-10.

- Area 1 is located from the shore between Piers 1 and 2 to a line from the base of Pier 2 to the southernmost corner of the building on Pier 1.
- Area 2 is located from the shore between Pier 2 and the extension of Pu'unēnē Avenue to a line from the northwestern corner of Pier 2 to the intersection of the shore and the Pu'unēnē Avenue extension.
- Area 3 is located at the DLNR boat-launch ramp the West Breakwater harbor area. The area is located west of a line that follows the inner edge of the west breakwater to the shore at Kahului Beach Road. Fresh water springs are found in this corner of the harbor, and mullet congregate there to feed on seaweed. Signs are posted on the shore.

The following activities are permitted in Areas 1, 2, and 3:

- Netting of crabs with crab nets and netting of shrimp with hand nets.
- Netting of bait fish such as *nehu* by commercial marine licensees with a bait license.
- Netting of young mullet (*pua*) by licensed pond owners or operators for stocking their fishponds.

The following activities are prohibited in Areas 1, 2, and 3:

- Netting of any type except as described in the permitted activities above. It should be noted that Area 1 now falls within the harbor security zone that resulted from the security restrictions imposed after 9-11, and that no fishing activities of any kind are permitted there.

In addition to the Hawai'i Fishing Regulations pamphlet, the administrative rules for Hawai'i's marine management areas, including Kahului Commercial Harbor, are found on the internet at DLNR's website.

5.14.4.5 Gathering

SEAWEED. Some seaweed, or *limu*, gathering occurs in the harbor on the shallow reef near Kahului Beach Road. At one time there was an abundance of *limu manauea (Gracilaria coronopifolia)* and *limu wawae'iole (Codium edule)* on the reef, due to fresh water springs in the ocean. *Limu manauea* and other seaweeds like *limu wawae'iole* grow better where fresh water merges with the salt water, but these *limu* are scarce in the harbor today.

SAND. Some salt water aquarium owners gather sand for their aquariums from the ocean bottom on the east side of Kahului Commercial Harbor. They believe the sand has an abundance of nutrients and that it is good for the marine life in their aquariums.

MARINE SPECIMENS. The Maui Ocean Center gathers various marine specimens from the Harbor for their exhibits. The center has a scientific collection permit, which allows them to collect fish, coral, and other marine life. The harbor is a nursery for hammerhead sharks (*manokihikihi*; *Sphyrna lewini*). Pups are collected using a hook and line, primarily from shore at Hoaloha Beach. Pups also congregate near Piers 1 and 2, but no collecting occurs in those areas, which have been off-limits since 9-11.

The Maui Ocean Center also catches other species of fish, such as *to'ao*, or black tail snappers (*Lutjanus fulvus*), using a net where the reef drops off into the turning basin near the red buoys. On the reef itself they collect feather-duster worms and sponges by hand. From their perspective, the reef is healthy and the corals and sponges are thriving, largely because of the high water flow over the reef from surf, especially during the winter.

During collecting activities, Maui Ocean Center personnel have observed green sea turtles (a threatened species), rays, sharks, and occasionally dolphins in the harbor.

5.14.4.6 Swimming

Swimming occurs primarily at Hoaloha Beach on the east side of the Harbor. The beach, however, is not highly regarded as a swimming area due to the murky and sometimes polluted water conditions in the harbor.

Some swimming by children from the neighborhoods near the harbor also occurs off the pier at the DLNR boat-launch ramp at the West Breakwater harbor area.